DOE/EA-1715

Final Environmental Assessment

For Chemetall Foote Corporation

Electric Drive Vehicle Battery and Component Manufacturing Initiative Kings Mountain, NC and Silver Peak, NV

September 2010

Prepared for:
Department of Energy
National Energy Technology Laboratory

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National Environmental Policy Act (NEPA) Compliance Cover Sheet

Proposed Action:
The U.S. Department of Energy (DOE) proposes, through a cooperative agreement with Chemetall Foote Corporation (Chemetall) to partially fund: (1) the establishment of a new 5,000 metric ton per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina; and (2) the refurbishment and expansion of an existing lithium brine production facility and lithium carbonate plant in Silver Peak, Nevada. Both projects would support the anticipated growth in the electric drive vehicle (EDV) industry and hybrid-electric vehicle (HEV) industry. If approved, DOE would provide approximately 45 percent of the funding for the project.

Type of Statement: Final Environmental Assessment (EA)

Lead Agency: U.S. Department of Energy (DOE); National Energy Technology Laboratory (NETL)

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Abstract:
DOE prepared this EA to assess the potential for impacts to the human and natural environment of its proposed action to provide financial assistance to Chemetall under a cooperative agreement. DOE's objective is to support the development of the Electric Drive Vehicles (EDV) industry in an effort to reduce the United States' consumption of petroleum, in addition to stimulating the United States' economy. More specifically, DOE's objective is to accelerate the development and production of various EDV systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and EDV components. This work will enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing.

Under the terms of the cooperative agreement, DOE is to provide approximately 45 percent of the funding for Chemetall to establish a new 5,000 metric tons per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina and to upgrade and expand an existing lithium brine production facility and an existing lithium carbonate plant in Silver Peak, Nevada.

The Kings Mountain site is located in an industrial area directly south of Kings Mountain, in Cleveland County, North Carolina, and serves as the headquarters for Chemetall. The site is located on 720 acres, with the operations concentrated within an approximately 20-acre developed area that is centrally located within the property. Production currently includes a specialty lithium manufacturing plant, which produces various lithium salt products by reacting lithium carbonate with different materials to produce lithium bromide, lithium chloride, and lithium aluminate. The proposed project would expand operations at the facility by adding a lithium hydroxide plant. The project at Kings Mountain would create approximately *19* ~~25~~ permanent jobs.

The Silver Peak site is approximately 15,000 acres. Chemetall uses the Silver Peak site for the production of lithium carbonate, and to a lesser degree, lithium hydroxide from lithium-bearing brines that are pumped from a well field. Silver Peak is the only major source of lithium carbonate in the United States. The proposed project would rework the existing brine field's production system, rework and expand the capacity of the existing brine evaporation pond system, and refurbish the existing lithium carbonate plant. All the improvements would occur within Chemetall's patented mining claims. The project at Silver Peak would create approximately *14* ~~10~~ permanent jobs.

Chemetall may also construct a geothermal power plant in the western portion of its Silver Peak unpatented mining claims. However, that action would be evaluated separate EAs prepared by the Bureau of Land Management (BLM) and is not part of this EA.

The environmental analysis identified that the most notable changes, although minor, to result from Chemetall's proposed project would occur in the following areas: air quality, solid and hazardous wastes, and human health and safety *for both Kings Mountain and Silver Peak, with the exception of solid and hazardous waste for Silver Peak, which was negligible. Additionally for Silver Peak, minor impacts would occur to groundwater, transportation and traffic.* No significant environmental effects were identified in analyzing the potential consequences of these changes.

Public Participation:
DOE encourages public participation in the NEPA process. This EA was released for public review and comment. The public were invited to provide oral, written, or e-mail comments on this Draft EA to DOE by the close of the comment period on June 9, 2010. Copies of the Draft EA were also distributed to cognizant Federal and State agencies. Comments received by the close of the comment period were considered in preparing this Final EA for the proposed DOE action. *Therefore, the EA was revised were appropriate to address agency and public comments, and thus additions and revisions to the text are presented in italics and underlined, while deleted text is presented as strike-through. Public comments received on the EA and responses are provided in Appendix B.* The EA is also available on DOE website at http://www.netl.doe.gov /publications/others/nepa/ea.html.

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ACRONYMS

Acronym	Definition
µg	Microgram
ACM	asbestos containing material
APE	Area of Potential Effect
AQRV	air quality related values
AST	aboveground storage tank
BMP	best management practices
BLM	Bureau of Land Management
CAA	Clean Air Act
CE	categorically excluded
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
Chemetall	Chemetall Foote Corporation
CO	carbon monoxide
CO_2	carbon dioxide
DAQ	Division of Air Quality
DOE	Department of Energy
EA	Environmental Assessment
EDV	electric drive vehicles
EERE	Energy Efficiency and Renewable Energy
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FIRM	Flood Rate Insurance Map
FONSI	Finding of No Significant Impact
GHG	greenhouse gases
I	Interstate
HAP	hazardous air pollutants
LEPC	Local Emergency Planning Committee
Li_2CO_3	lithium carbonate
LiOH	lithium hydroxide
mg	milligram
MMt	million metric tons
$MMtCO_2e$	million metric tons of carbon-dioxide equivalent
mtpy	metric tons per year

Acronym	Definition
NAAQS	National Ambient Air Quality Standards
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NDCNR	Nevada Department of Conservation and Natural Resources
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NETL	National Energy Technology Laboratory
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPL	National Priorities List
NRS	Nevada Revised Statutes
O_3	ozone
PCS	petroleum contaminated soil
PM	particulate matter
PM_{10}	particulate matter 10 microns
$PM_{2.5}$	particulate matter 2.5 microns
PPE	personal protective equipment
ppm	parts per million
PSD	prevention of significant deterioration
Pw	Pits, quarry
RCRA	Resource Conservation and Recovery Act
Recovery Act	American Recovery and Reinvestment Act of 2009, Public Law 111-5
ROD	Record of Decision
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention Countermeasures and Control
SERC	State Emergency Response Committee
TPH	total petroleum hydrocarbons
tpy	tons per year
TSD	treatment, storage and disposal
U.S.	United States
U.S.C.	United States Code
UdC	Udorthents, loamy
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VOCs	volatile organic compounds
VT	Vehicle Technologies

1.0 PURPOSE AND NEED

1.1 Background

The Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy (EERE). A key objective of the VT program is accelerating the development and production of electric drive vehicle (EDV) systems to reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically to increase the use of EDVs.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. DOE solicited applications for this funding by issuing a competitive Funding Opportunity Announcement (DE-FOA-0000026), Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative, on March 19, 2009. The announcement invited applications in seven areas of interest:

- Area of Interest 1 – Projects that would build or increase production capacity and validate production capability of advanced automotive battery manufacturing plants in the United States.
- Area of Interest 2 – Projects that would build or increase production capacity and validate production capability of anode and cathode active materials, components (e.g., separator, packaging material, electrolytes and salts), and processing equipment in domestic manufacturing plants.
- Area of Interest 3 – Projects that combine aspects of Areas of Interest 1 and 2.
- Area of Interest 4 – Projects that would build or increase production capacity and validate capability of domestic recycling or refurbishment plants for lithium ion batteries.
- Area of Interest 5 – Projects that would build or increase production capacity and validate production capability of advanced automotive electric drive components in domestic manufacturing plants.
- Area of Interest 6 – Projects that would build or increase production capacity and validate production capability of electric drive subcomponent suppliers in domestic manufacturing plants.
- Area of Interest 7 – Projects that combine aspects of Areas of Interest 5 and 6.

The application period closed on May 19, 2009, and DOE received 119 proposals across the seven areas of interest. DOE selected 30 projects based on the evaluation criteria set forth in the funding opportunity announcement; special consideration was given to projects that promoted the objectives of the Recovery Act – job preservation or creation and economic recovery – in an expeditious manner.

This project, proposed by Chemetall Foote Corporation (Chemetall), was one of the 30 projects that DOE selected for funding. DOE's proposed action is to provide $*17.8* ~~16.1~~ million in financial assistance in a cost-sharing arrangement with the project proponent, Chemetall. The total cost of the project is estimated at $35.6 million.

1.2 Purpose and Need for Department of Energy Action

The overall purpose and need for DOE action pursuant to the VT program and the funding opportunity under the Recovery Act is to accelerate the development and production of various EDV systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, recycling facilities, and EDV components, in addition to stimulating the United States' economy. This work will enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing. DOE intends to further this purpose and satisfy this need by providing financial assistance under cost-sharing arrangements to this and the other 29 projects selected under this funding opportunity announcement.

This and the other selected projects are needed to reduce the United States' petroleum consumption by investing in alternative VTs. Successful commercialization of EDVs would support DOE's Energy Strategic Goal of "protect[ing] our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy." This project will also meaningfully assist in the nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

1.3 National Environmental Policy Act and Related Procedures

This Environmental Assessment (EA) is prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 U.S.C 4321), the President's Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR 1021). This statute and the implementing regulations require that DOE, as a Federal agency:

- Assess the environmental impacts of any proposed action;
- Identify adverse environmental effects that cannot be avoided, should the proposed action be implemented;
- Evaluate alternatives to the proposed action, including a No Action Alternative; and
- Describe the cumulative impacts of the proposed action together with other past, present, and reasonably foreseeable future actions.

These provisions must be addressed before a final decision is made to proceed with any proposed Federal action that has the potential to cause impacts to the human environment, including providing Federal funding to a project. This EA evaluates the potential individual and cumulative effects of the proposed project and the No Action Alternative on the physical, human, and natural environment. The EA is intended to meet DOE's regulatory requirements under NEPA and provide DOE with the information needed to make an informed decision about providing financial assistance.

NEPA requires Federal agencies to take into account the potential consequences of their actions on both the natural and human environments as part of their planning and decision-making processes. To facilitate these considerations, a number of typical actions that have been determined to have little or no potential for adverse impacts are "categorically excluded" (CE) from the detailed NEPA assessment process. Thus, the first step in determining if an action would have an adverse effect on the environment is to assess whether it fits into a defined category for which a CE is applicable. If a CE is applied, the agency prepares a Record of Categorical Exclusion to document the decision and proceeds with the action.

For actions that are not subject to a CE, the agency prepares an EA to determine the potential for significant impacts. If through the evaluation and analysis conducted for the EA process, it is determined that no significant impacts would occur because of the action, then the determination would result in a Finding of No Significant Impact (FONSI). The Federal agency would then publish an EA and the FONSI. The NEPA process is complete when the FONSI is executed.

If significant adverse impacts to the natural or human environment are indicated or other intervening circumstances either exist at the onset of a project or are determined through the EA process, an Environmental Impact Statement (EIS) may be prepared. An EIS is a more intensive study of the effects of the proposed action, and requires more rigorous public involvement. The agency formalizes its decisions relating to an action for which an EIS is prepared in a Record of Decision (ROD). Following a 30-day waiting period after publication of the Final EIS, the Agency may issue a ROD and then the NEPA process is complete.

1.4 Agency Consultation and Public Involvement

DOE conducted consultations with the local U.S. Fish and Wildlife Service (USFWS) office, the National Heritage Program office in each State, and the State Historic Preservation Office of each State per requirements of Section 7 of the Endangered Species Act, and Section 106 of the National Historic Preservation Act. Copies of the agency response letters are included in Appendix A of this EA.

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2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Department of Energy's Proposed Action

DOE proposes, through a cooperative agreement with Chemetall, to partially fund two projects that would produce or increase production of battery-grade lithium salts to be used in lithium-ion batteries. (1) A new lithium hydroxide plant would be established at an existing Chemetall building in Kings Mountain, North Carolina, and (2) an existing lithium carbonate plant, evaporation pond system, and lithium brine field would be refurbished and expanded in Silver Peak, Nevada. Both projects would support the anticipated growth in the EDV industry and HEV industry. If approved, DOE would provide approximately 45 percent of the funding for the two projects.

2.2 Chemetall's Proposed Project

Chemetall proposes (1) to establish and operate a new lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina and (2) to upgrade an existing brine field production system, brine evaporation pond system, and lithium carbonate plant in Silver Peak, Nevada.

The Kings Mountain proposed project would produce 5,000 metric tons per year of lithium hydroxide using conventional technology for reacting lithium carbonate with lime and purifying, drying and packaging the product for sale to the battery industry. This plant would be setup within an existing building owned by Chemetall and located within Chemetall's existing industrial complex. Currently, the existing building is approximately 58 feet in height and would be extended two floors (30 feet) with a final building height of approximately 88 feet. A new addition of 8,200 square feet would be connected to the existing building at grade level for a packaging room, and a 15-foot wide by 60-foot long covered aisle-way would be constructed between the new packaging room and the existing warehouse. As part of the project, a concrete walled tank farm containing six new aboveground storage tanks (ASTs) would be erected adjacent to the proposed plant building. Four ASTs would be 21 feet in height (two at 13,700 gallons and two at 18,900 gallons); the fifth would be 39 feet in height (32,600 gallons); and the sixth would be 18.5 feet in height (11,600 gallons). The evaporator feed tank and the evaporator, crystallizer boilout tank would both contain weak lithium hydroxide solution that would be stored in the 13,700-gallon ASTs. Process condensate water and the weak liquor tank liquids (weak lithium hydroxide solution) would be stored in the 18,900 gallon ASTs. The 36,200-gallon tank would serve as the strong liquor tank storing strong lithium hydroxide solution. Potentially acidic streams would be neutralized in the 11,600-gallon tank prior to release to the sewer or prior to transport off site to an approved liquid waste disposal facility. There would be minor demolition activities to make way for the new construction. All new construction would occur on previously disturbed land. Lithium carbonate feed stock would be imported from Chemetall's facility in La Negra, Chile and from Chemetall's facility in Silver Peak, Nevada. Lithium waste streams *consisting of calcium carbonate with small amounts of lithium would not be sent to other sites for reprocessing. Other streams from the new Kings Mountain plant with higher lithium concentrations would be concentrated and reprocessed at the Kings Mountain site as normal practice, but there is a low probability that occasional shipments of lithium could be sent to Silver Peak if this is determined to be more economical*. ~~from the Kings Mountain operation would be concentrated and recycled internally at Kings Mountain, Silver Peak, or other Chemetall facilities.~~

The Silver Peak proposed project would expand Chemetall's current lithium brine production and processing by reworking some existing brine production wells, installing new production wells, dredging and expanding the current evaporation pond system, and refurbishing an existing lithium carbonate plant.

Rehabilitation of the existing ponds would involve dredging or plowing out deposits to increase depth and shoring up the earthen berm walls of the ponds. The proposed expansion of brine ponds would occur entirely on the site of old ponds within Chemetall's patented mining claims. The rehabilitation of the lithium carbonate plant would involve minor renovations of the existing building. Existing equipment would be retained along with the installation of some new equipment

2.3 General Description and Location

2.3.1 Kings Mountain

The Kings Mountain site is located in an industrial area directly south of Kings Mountain, in Cleveland County, North Carolina (see Figure 2-1). The site serves as the U.S. headquarters for Chemetall and contains approximately 720 acres, which is divided by Interstate 85 (I-85). The Kings Mountain site has four primary functions: production, corporate offices, research and development, and chemical storage. Production currently includes a specialty lithium manufacturing plant, which produces various lithium salt products by reacting lithium carbonate with different raw materials to produce lithium bromide, lithium chloride, and lithium aluminate. Additional manufacturing activities at the site includes casting lithium metal ingots from bulk lithium metal and extrusion of lithium foils and other primary battery products for consumer, medical and military applications. The facility operates 24 hours per day, five to seven days per week.

In the early 1950s, Foote Minerals acquired the rights to mine (quarry) spodumene ore and began to produce lithium products from spodumene and invest in lithium research. During this period, two quarries were opened and remained active until the early 1990s when lower-cost production of lithium from brines at other locations in the world took the market from the more costly hard rock mining conducted at the Kings Mountain site. One of the two quarries was closed and reclaimed; the other quarry remains open for periodic sand extraction by external customers.

Currently, a majority of the approximate 720 acres remains undeveloped with some areas previously disturbed by past mining operations. Current operations are concentrated within an approximate 20-acre developed area that is centrally located within the property. As a result, the existing Chemetall landholdings surrounding the 20-acre developed area buffers Chemetall's current operations from surrounding land uses by a combination of distance, forested vegetation, and topography. Adjacent land uses and approximate distances from the 20-acre developed area include: I-85 is located approximately 1,000 feet to the southeast; the Martin Marietta Aggregates quarry is located approximately 1,000 feet to the northeast; and commercial and residential developments are located over 2,000 feet to the west and to the north.

The proposed lithium hydroxide plant would be sited within the 20-acre developed area and would be housed inside an existing building. The existing building is approximately 58 feet in height, and under the proposed project it would be heightened another two floors (additional 30 feet) for an approximate height of 88 feet. In addition to changing the existing building, Chemetall would construct a new 8,200 square foot packaging room connected to the existing building, a 15 feet wide by 60 feet long covered aisle-way located between the new addition and the existing warehouse, and a concrete-walled tank farm containing six new ASTs ranging in height from 18.5 feet to 39 feet. Land at the site for the proposed project is flat, heavily disturbed, and supports almost no vegetation. No additional land disturbance or acquisition of new land is required for this action.

2.3.2 Silver Peak

The Silver Peak site is located in a rural area approximately 30 miles southwest of Tonopah, in Esmeralda County, Nevada (see Figure 2-2). It is located in the Clayton Valley, an arid valley historically covered with dry lake beds (playas). The Silver Peak site borders the small unincorporated town of Silver Peak (see Figure 2-3); Chemetall uses the Silver Peak site for the production of lithium brines, which are used to make lithium carbonate and, to a lesser degree, lithium hydroxide. Chemetall's Silver Peak site occupies approximately 15,000 acres and is dominated by large evaporation ponds on the valley floor, some in use and filled with brine while others are dry and unused. The manufacturing and administrative activities are confined to an area approximately 20 acres in size, portions of which were previously used for silver mining through the early 20th century.

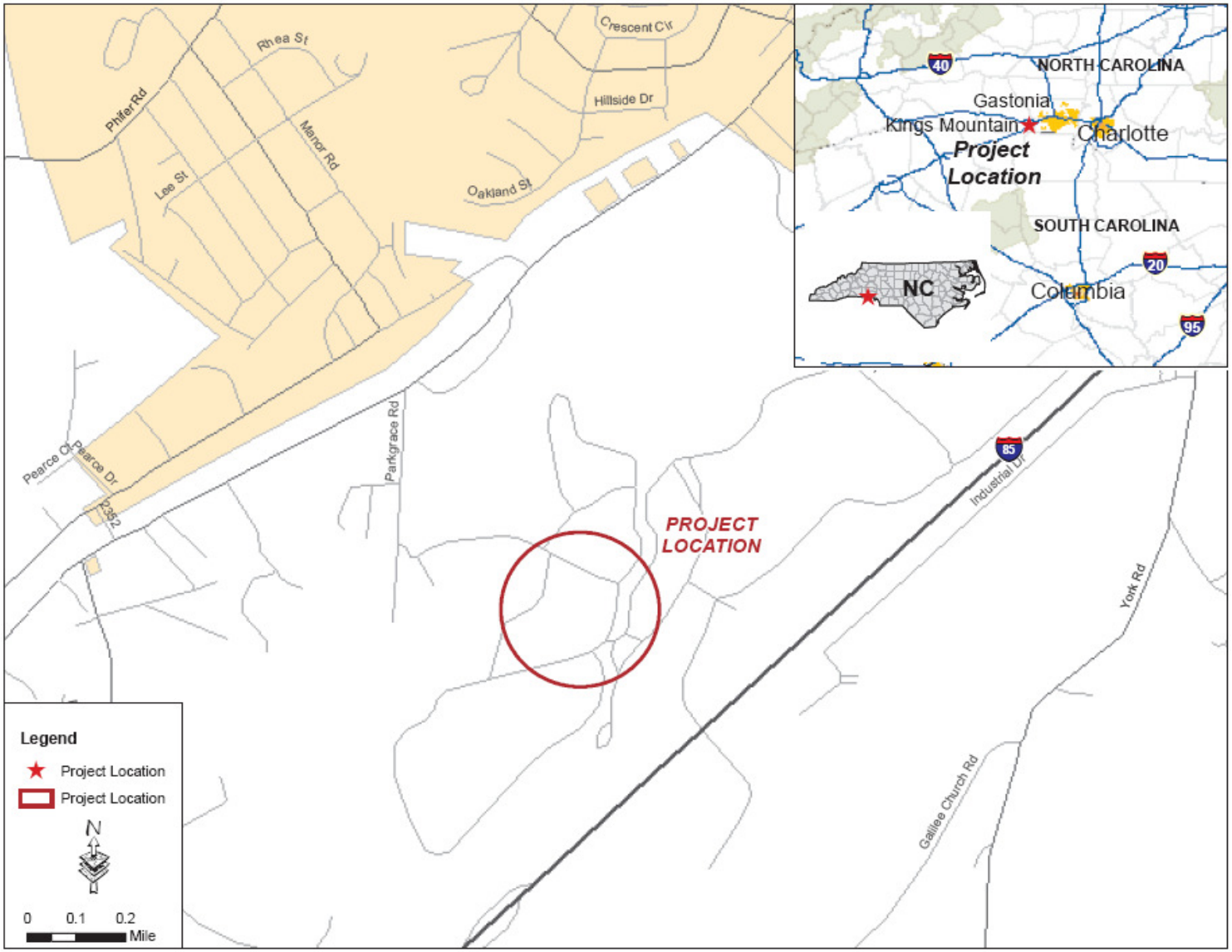

Figure 2-1. Regional Location Map – Kings Mountain, North Carolina

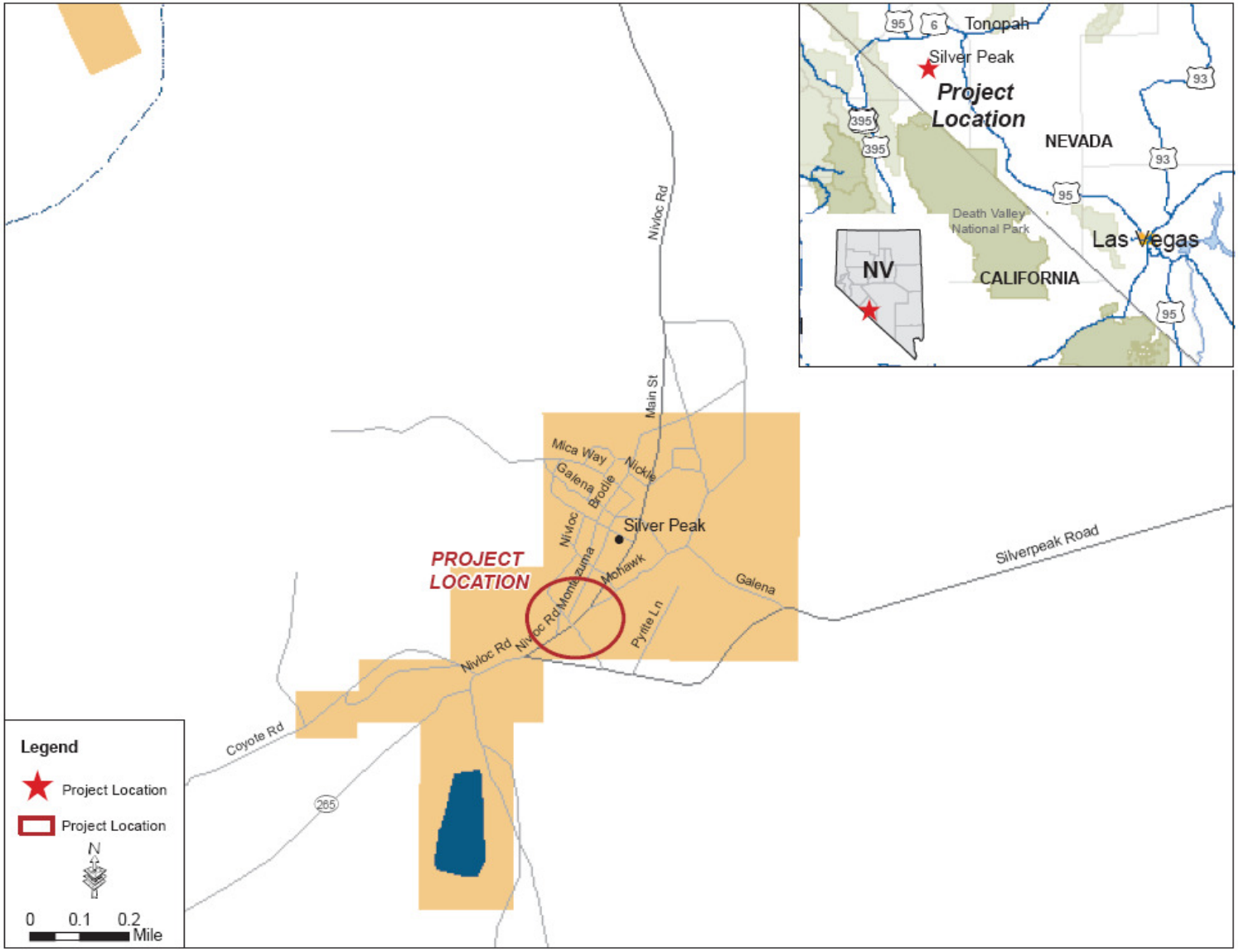

Figure 2-2. Regional Location Map – Silver Peak, Nevada

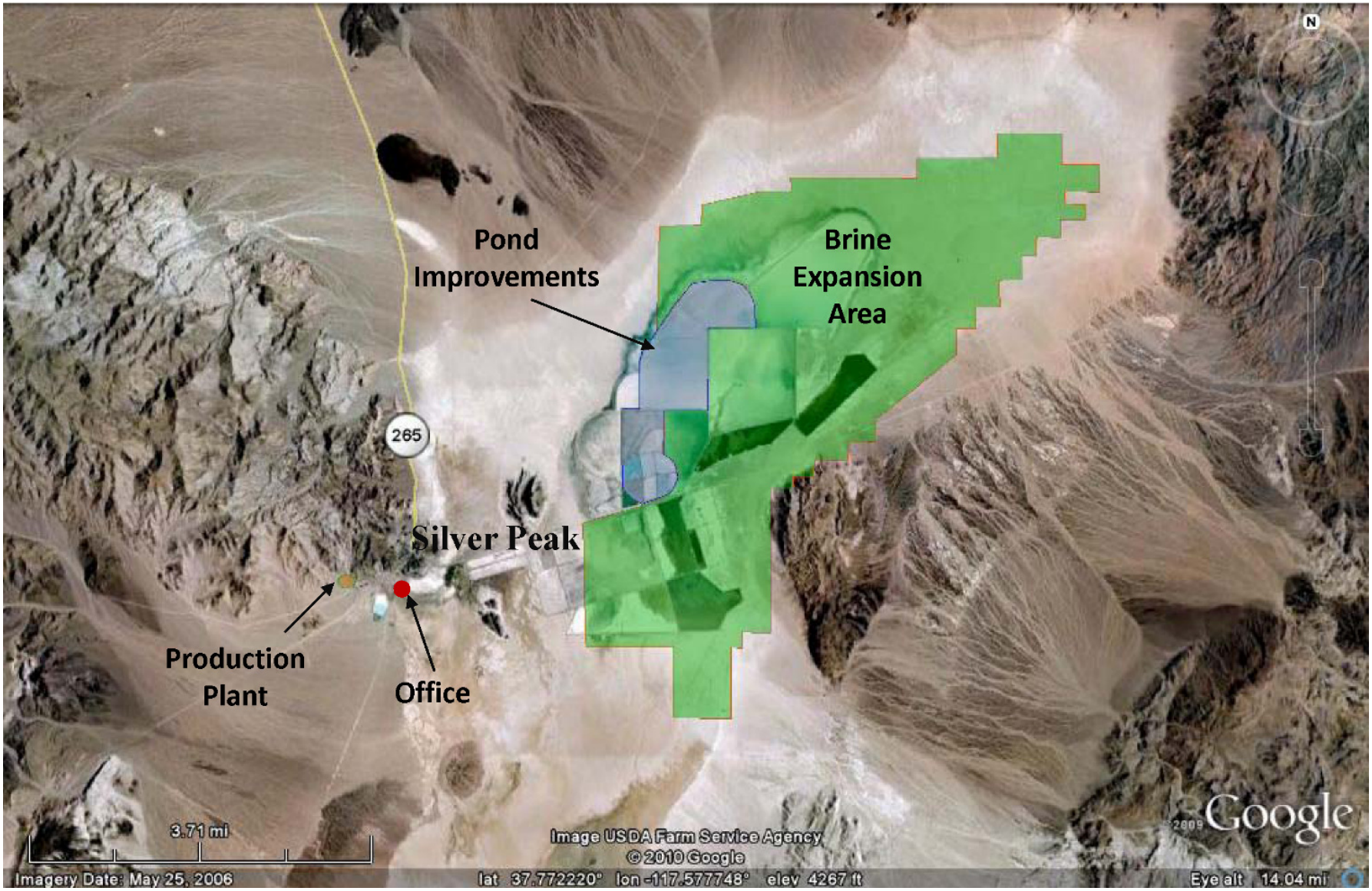

Figure 2-3. Site Location Map – Silver Peak, Nevada

The nearby town of Silver Peak contains private residences, a small school (eight enrolled students), a Post Office, a Fire/EMS Station, a small church, a park, and a tavern. In addition, many abandoned and partially destroyed structures, dating back to the peak of silver mining between approximately 1866 and 1913, are located in town. The closest occupied structures to Chemetall's Silver Peak facilities (as measured from the Administrative Office) are approximately 1,000 feet away. Immediately to the west, past the town of Silver Peak, is a rugged, undeveloped, mountainous area.

The majority of the Clayton Valley is undeveloped land consisting of patented and unpatented mining claims granted by the Bureau of Land Management (BLM), as well as a cattle grazing allotment (including a corral and stock water points) issued by the BLM. ~~During the site visit conducted on October 29, 2008, Chemetall's personnel indicated that several geothermal exploration firms may be seeking future claims in this valley, but this was not verified~~. *Nearly the entire Clayton Valley has mining claims staked, and there has been active exploration for lithium immediately adjacent to Chemetall's holdings (BLM, 2010).* Near Chemetall's patented mining claims, *there are six geothermal leases, along with one geothermal unit, where active exploration has been conducted and where additional exploration will occur in the future. These geothermal leases are held by Sierra Geothermal Power, Inc. and Ram Power Corp (BLM, 2010).*

At this time, Silver Peak is the only major supplier of lithium carbonate in the United States. Lithium is produced from brines located in several deep aquifers in the Clayton Valley. Brines are pumped to the surface and stored in a series of connected ponds where the lithium concentration is gradually increased through evaporation, and lime is used to remove magnesium. Strong lithium brines are then processed in an on-site plant to produce lithium carbonate, and subsequently lithium hydroxide, if desired.

Chemetall may also construct a geothermal power plant in the western portion of its Silver Peak unpatented mining claims. However, this activity will be evaluated separate EAs prepared by the BLM and is not part of this EA.

The proposed expansion of brine evaporation ponds would occur entirely on the site of old evaporation ponds within Chemetall's patented mining claims. There are several ponds currently filled by significant (up to 20 feet) deposits of salt and "muds" (sand mixed with sodium and potassium salt sludges) that could be dredged (to increase storage depth) and used to further strengthen and increase the earthen berms that surround the ponds. Additional brine production wells would be activated in this area. Some formerly used but closed wells would be put into service again, and some new wells may be drilled. These activities are consistent with the facility's established mining claims and water appropriations. No additional land disturbance or acquisition of new land is required for this action.

2.4 Alternatives

DOE's alternatives to these projects consist of the 45 technically acceptable applications received in response to the Funding Opportunity Announcement, Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative. Prior to selection, DOE made preliminary determinations regarding the level of review required by NEPA based on potentially significant impacts identified in reviews of acceptable applications. A variance to certain requirements in 10 CFR 1021.216 was granted by DOE's General Counsel. These preliminary NEPA determinations and reviews were provided to the selecting official, who considered them during the selection process.

Because DOE's proposed action is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's decision is limited to either accepting or rejecting each project as proposed by the proponent, including its proposed technology and selected site(s). DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and a no-action alternative for each selected project.

2.5 No Action Alternative

Under the No Action Alternative, DOE would not provide funds to these proposed projects. As a result, these projects would be delayed while the applicant seeks other funding sources. Alternatively, the applicant would abandon these projects if other funding sources are not obtained. Furthermore, acceleration of the development and production of various EDV systems would not occur or be delayed. DOE's ability to achieve its objectives under the VT program and the Recovery Act would be reduced.

Although these and other selected projects might proceed if DOE decided not to provide financial assistance, DOE assumes for purposes of this environmental analysis that these projects would not proceed without DOE assistance. If these projects did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative (i.e., providing financial assistance that allows these projects to proceed). In order to allow a comparison between the potential impacts of these projects as implemented and the impacts of not proceeding with these projects, DOE assumes that if it were to decide to withhold assistance from these projects, the projects would not proceed.

2.6 Alternatives Considered by Chemetall

The proposed project alternatives discussed in Section 2.1 involving Kings Mountain and Silver Peak were the only alternatives identified, no other alternatives were considered.

2.7 Summary of Environmental Consequences

Table 2.6-1 provides a summary of the environmental, cultural, and socioeconomic impacts of the No Action Alternative and the proposed projects.

Table 2.6-1. Summary of Environmental, Cultural, and Socioeconomic Impacts

Impact Area	No Action Alternative		Proposed Projects			
	Construction	Operations	Construction		Operations	
	Kings Mountain/ Silver Peak	Kings Mountain/ Silver Peak	Kings Mountain	Silver Peak	Kings Mountain	Silver Peak
Land Use	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Noise	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Geology and Soils	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Socioeconomics (Population and Housing)	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Socioeconomics (Taxes, Revenue, Economy, Employment)	Negligible	Negligible	Minor Beneficial	Negligible	Minor Beneficial	Minor Beneficial
Environmental Justice	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Visual Resources	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Meteorology	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Surface Water	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Groundwater	Negligible	Negligible	Negligible	Negligible	Negligible	*Moderate** ~~Negligible~~
Wetlands and Floodplains	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Vegetation and Wildlife	Negligible	Negligible	Negligible	Negligible	Negligible	Minor
Cultural Resources	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Utilities and Energy Use	Negligible	Negligible	Negligible	Negligible	Negligible /Minor	Negligible
Transportation and Traffic	Negligible	Negligible	Negligible	Negligible	Minor	*Moderate* ~~Negligible~~
Air Quality	Negligible	Negligible	Minor	Minor	Minor	Minor
Greenhouse Gases	Negligible	Moderate	Minor	Minor	Beneficial	Beneficial
Solid and Hazardous Waste	Negligible	Negligible	Minor	Negligible	Minor	Negligible
Human Health and Safety	Negligible	Negligible	Negligible	Negligible	Minor	Minor

Explanation: "" = based on mitigations that will be required by DOE.*

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 provides a description of the affected environment (existing conditions) at each project site and a discussion of the environmental consequences of the No Action Alternative and each proposed project. Additionally, cumulative impacts and mitigation measures are discussed where appropriate. The methodology used to identify existing conditions and to evaluate potential impacts on the physical and human environment involved the following: review of the Environmental Questionnaires and the Project Narrative prepared by Chemetall for DOE, review of documentation provided by Chemetall, various environmental database searches, agency consultations, and site visits conducted at the Silver Peak and Kings Mountain sites on October 29, and November 5, 2009, respectively.

Comments on the Draft EA received by the close of the comment period were considered in preparing this Final EA for the proposed DOE action. Therefore, the EA was revised were appropriate to address agency and public comments, and thus additions and revisions to the text are presented in italics and underlined, while deleted text is presented as strike-through.

3.1 Resource Areas Dismissed from Further Consideration

DOE has determined that various resources would either not be affected or would sustain negligible impacts from Chemetall's proposed projects and do not require further evaluation. For both the Kings Mountain and Silver Peak facilities: land use, noise, geology and soils, socioeconomics, environmental justice, visual resources, meteorology, surface water~~ and groundwater~~, wetlands and floodplains, vegetation and wildlife, cultural resources, utilities and energy use,~~and transportation and traffic,~~ have been dismissed. Therefore, these resource areas are briefly discussed in this section of the EA and will not be carried through for further consideration. *However, due to comments received on the Draft EA providing additional information and requesting additional information for Silver Peak regarding groundwater, transportation, and traffic, these resource sections have been revised and the impacts have changed from negligible to moderate. Groundwater, transportation, and traffic for Kings Mountain, however, remain negligible.*

3.1.1 Kings Mountain

Land Use: At the Kings Mountain site, the proposed project would not likely result in direct impacts to land use and zoning. According to the Cleveland County, North Carolina GIS Department, the site is zoned as heavy industrial (Cleveland County, 2009). No change in zoning would be required under the proposed project, and therefore there would be a negligible direct impact to land use.

However, there is a chance for indirect and cumulative impacts. With a growing demand for lithium products, with lithium supplies still available at the Kings Mountain quarry (and probably at some nearby prospects), and with a lithium hydroxide processing plant to be established, this area would be more attractive for lithium mining, lithium battery manufacturers, and battery component manufacturers. Therefore, the proposed project could indirectly promote cumulative development of these particular industries in the Carolinas. If lithium mining resumes at or near Kings Mountain, given the potential for future local development (commercial, industrial, residential) in the Kings Mountain area, this project could promote local cumulative impacts of industrial, commercial and residential growth, thus affecting land use in Cleveland County.

Noise: The site is located in an industrial area south of the town of Kings Mountain. The site is bordered by I-85 to the southeast, and Highway 216 and a railroad to the northwest. The adjacent areas to the south and north are predominantly open space with quarry-type activities. The nearest sensitive noise receptors to the site are residences located approximately 0.4 mile to the west and approximately 0.6 mile to the northwest, which are screened from the facility by a hill and vegetation. The closest churches are located approximately 0.5 mile northwest and 0.8 mile southeast of the site. The property is located within the vicinity of various existing noise

sources that contribute to the baseline noise level. There is a railroad located approximately 0.5 mile away and an active quarry approximately 0.3 mile to the north that uses explosives.

The construction phase would involve possible demolition and reconfiguration of the interior features of an existing building, in addition to adding two floors (30 feet) to increase the height from 58 feet to 88 feet, as well as construction of an 8,200 square foot addition that would be connected to the existing building. Some existing equipment would be used, along with the installation of new equipment, to accommodate the expanded manufacturing processes. Six new ASTs would be erected near the proposed plant. During the construction phase, noise levels would be localized, intermittent, and temporary. Construction is expected to last for a duration of approximately 12 to 18 months. Increases in noise levels during construction would mainly result from the use of heavy construction equipment and delivery trucks. Typical noise levels at construction sites would be expected to be within the range of 75 to 90 dBA in the immediate vicinity. Because there is currently industrial truck traffic in the vicinity, there would be a negligible impact to noise affecting the surrounding the community.

The existing facility operates 24 hours per day, five to seven days a week, and would continue to do so under the proposed project. To date, the facility has never received noise complaints from the surrounding community.

The main sources of noise during operations would be from the new mechanical equipment, which would be located indoors, and from any increase in truck or employee-vehicle traffic. Currently, truck traffic consists of approximately 10 trucks per day. The proposed project expects to increase the truck traffic by two additional trucks per day, totaling 12 trucks per day. Because this is an addition to an existing industrial facility that currently operates production equipment and has truck and personal-vehicle traffic, any increase in ambient noise levels resulting from operations of the proposed project would be negligible from the perspective of any sensitive receptors in the surrounding community. Furthermore, there are other existing comparable and much louder noise sources in the vicinity (e.g., operating quarry, highways, railroad, and industries), and the sensitive receptors are screened by hills and vegetation.

Geology and Soils: The predominant geological landform within the study area is hillslopes on ridges. The Cleveland County Soil Survey (NRCS, 2007) indicates two soil types within proximity to the study area. These include pits, quarry (Pw); and udorthents, loamy (UdC). Table 3.1.1-1 contains the properties of each soil unit and their respective geological landform.

Table 3.1.1-1. Study Area Soils at Kings Mountain

Soil Unit	Geologic Landform	Slope (percent)	Flooding Frequency	Hydric Rating	Commercial Building Construction
Pw	Not rated	Not rated	Not rated	Not hydric	Not Rated
UdC	Hillslopes on Ridges	0-15	None	Not hydric	Very Limited

As shown in Table 3.1.1-1, soils within the study area are not prone to flooding. A “none” frequency rating means that flooding is not probable; the chance of flooding is nearly 0 percent in any year and flooding occurs less than once in 500 years. In addition, none of the soils is recognized as hydric.

UdC soils within the study area are very limited (primarily due to sloping conditions) for commercial building construction (e.g., structures typically less than three stories high and lacking basements). The construction ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs (i.e., depth to a water table, ponding, flooding, subsidence, shrink-swell potential, and compressibility). “Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major

soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

During the November 5th, 2009, site visit and interviews conducted on site, Chemetall staff revealed the study area has been heavily disturbed since the 1970s. The study area for soils includes the existing facility and existing and compacted soils directly adjacent to the facility. No natural/undisturbed soils occur within the study area.

Under Chemetall's proposed project, establishment of the proposed facility would occur within an existing building on site or on previously disturbed land; therefore, negligible adverse impacts would occur to geology or soils. Potential staging areas directly outside of the facility for construction equipment and materials would not likely cause adverse impacts to soils as the entire site is characterized by urban/previously disturbed soils. In addition, placement of ASTs and containment adjacent to the facility would not likely impact soils, as the ASTs would be sited in an area of previously disturbed soils. Operations of the site would have no impacts to either geology or soil resources. Manufacturing would occur within the facility and the product would be transferred off site using existing road infrastructure.

Socioeconomics: Approximately *19* ~~25~~ permanent employees are expected to be hired at Kings Mountain because of the proposed project. It is assumed that the majority of the workforce would be drawn from local candidates; therefore, no increase in population or need for housing is anticipated.

Under Chemetall's proposed project, taxes would continue to be paid on the property and no adverse impacts would occur. Construction workers employed for the construction period are assumed to be currently employed, and residing and paying taxes in the Cleveland County area. Increased sales transactions for the purchase of materials and supplies would generate some additional revenues for local and State governments, which would have a minor beneficial impact on taxes and revenue.

Secondary jobs related to the increased economic activity stimulated by the proposed project may be created. Additional retail services and business employment may result from the proposed project through a multiplier effect, yielding additional sales and income tax revenues for local and State governments, thus having a minor beneficial impact.

Construction or operation of the project would not result in direct impacts to community facilities and services, school systems or emergency services of Cleveland County because significant numbers of employees are not anticipated to relocate as a result of the proposed project.

Additionally, there is a substantial ongoing development (industrial, commercial and residential) in the Kings Mountain area and in the nearby Charlotte area. The proposed project would be one small part of that ongoing development. More importantly, DOE received proposals for several Electric Drive Vehicle Battery and Component Manufacturing Initiative projects that would be located in the Carolinas. It is clear that this high-tech region aims to be a key player in the U.S. EDV industry. With lithium supplies still available at the Kings Mountain quarry (and probably at some nearby prospects) and with a lithium hydroxide processing plant proposed to be created, this area would be more attractive to lithium battery manufacturers and battery component manufacturers. Therefore, this project could indirectly promote cumulative development of these particular industries in the Carolinas.

Environmental Justice: The proposed project was evaluated in accordance with EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. While there are minority and low-income populations in the study area, the proposed project would not have a disproportionately adverse impact on these groups; the impact would be negligible.

Visual Resources: Renovations would occur inside an existing structure and a new addition to the existing building would be constructed. A new concrete walled tank farm containing six new ASTs would be erected adjacent to the proposed plant building. Four ASTs would be 21 feet in height; a fifth tank would be 39 feet in height; and the sixth tank would be 18.5 feet in height. Because the height of the ASTs would not exceed the height of the existing structure (58 feet) and due to the industrial setting of the facility, negligible impacts to visual resources would occur.

Meteorology: Cleveland County is characterized by a mild temperate climate. Average annual temperature ranges from lows of about 47 degrees Fahrenheit (°F) to highs of approximately 71°F. Winter months (December through February) are the coolest with average monthly low temperatures ranging from 29° to 31°F and high temperatures ranging from 52° to 55°F. The warmest months are the summer months of June through August. During those months average monthly low temperatures range from 63° to 66°F and high temperatures range from 87° to 89°F. Average annual precipitation is approximately 48 inches. November is typically the driest month with average rainfall of 3.3 inches. July is typically the wettest month with an average of 4.7 inches of precipitation (SERCC, 2009).

Cleveland County has a high incidence of tornadoes, which is 2.1 times greater than the national average (City-Data.com, 2009). Since 1958, there have been 106 high winds events in Cleveland County, ranging from 86 to 120 miles per hour (NCSU, 2009). In the Atlantic Ocean, hurricane season storms rarely form outside the June 1st to November 30th season. However, North Carolina's proximity to the Gulf Stream and its protruding coastline make it a likely location to receive an early season (May) spike in tropical activity. There have been two severe tropical storms reported in North Carolina; however, historical record shows that there has never been a hurricane in Cleveland County. Because Cleveland County is over 300 miles west of the North Carolina coast, it is unlikely to experience a direct hit from a hurricane. South Atlantic hurricanes usually travel north and they are extremely unlikely to travel west (NCSU, 2009). The proposed project would have a negligible impact on climate; and climate would have a negligible impact on the proposed project.

Surface Water and Groundwater: The Kings Mountain facility is located in the Buffalo Creek subbasin (03-08-05) of the Broad River Basin. The receiving stream for stormwater runoff from the property is Kings Creek. The facility is subject to stormwater permit NCS000096 issued by the North Carolina Department of Environment and Natural Resources (NCDENR) (NCDENR, 2009a) under the National Pollutant Discharge Elimination System and effective from November 1, 2009 through October 31, 2014. The facility ~~does not discharge process or sanitary wastewater to surface waters~~ *discharges condensate, non-contact cooling water and boiler blowdown to Kings Creek in accordance with National Pollutant Discharge Elimination System Permit NC0033570 issued by the NCDENR.*

The proposed project would include the addition of a lithium hydroxide process within an existing plant building. Renovation of the existing building would involve adding two new floors. Additionally, six new ASTs would be erected near the existing plant building the on previously distributed land. Potential impacts on surface water during construction would be temporary and minor. As stated in the November 18, 2009, letter from the USFWS regarding the proposed project, the treatment of stormwater leaving the project area, creation of impervious surfaces, and impacts to stream buffers would be of concern to surface waters (see Appendix A); however, construction of the proposed project would involve negligible ground disturbance and would not involve the generation of additional impervious surfaces. Due to the distance of the project site to the nearest receiving water body, impacts to receiving waters resulting from stormwater runoff during construction would not be anticipated. The facility would remain subject to stormwater permit NCS000096 issued by the NCDENR. *Process water would not be discharged to Kings Creek (see "Utilities and Energy Use"); however, an additional 5,000 gallons per day of non-contact cooling water would be discharged, in addition to the existing discharges, under a modification to permit NC0033570. Continued compliance with the effluent water quality specifications of the permit would reduce the impacts to the physical and chemical characteristics of Kings Creek.* Furthermore, the project would not affect any stream buffers as the proposed facility is sited in an existing developed area, away

from water resources. Overall, the proposed project would have a negligible impact to surface waters during both construction and operations.

The Kings Mountain facility does not use groundwater for any process.

Wetlands and Floodplains: No wetlands were observed within proximity to the study area during the November 5th, 2009, site visit. In addition, National Wetland Inventory mapping does not indicate the presence of vegetated wetlands within the study area (EPA, 2009a).

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map Number 3710257200J does not indicate the presence of floodplains within the study area (FEMA, 2009). Therefore, negligible impacts would occur to wetlands and floodplains.

Vegetation and Wildlife: During the November 5th, 2009, site visit, it was determined that no vegetation resources and little wildlife habitat existed within or directly adjacent to the study area; the study area is already developed. Informal coordination letters were sent to both the USFWS and the North Carolina Natural Heritage Program to verify the project would have no impact on any Federally- or State-listed threatened, endangered, or candidate species or critical habitat within the vicinity of the proposed project (see Appendix A). In a letter dated November 18th, 2009, the USFWS stated that, no Federally-listed species or their habitats occur on the subject site. In addition, the North Carolina Natural Heritage Program has no records of protected species or critical habitat within the study area (see letter dated November 16, 2009, Appendix A). The North Carolina Natural Heritage Program letter also states that the use of their data should not be substituted for actual field surveys, particularly if the project area contains suitable habitat. As the proposed project involves upgrades to an existing facility, construction of a new addition to the existing building, and construction of a contained tank farm on previously disturbed land in an existing industrial area, no suitable habitat exists; therefore, surveys for rare, threatened, or endangered species are not warranted. The proposed project would have a negligible impact on vegetation and wildlife during both construction and operation.

Cultural Resources: The Area of Potential Effect (APE) for archaeological resources is defined as the construction impact area. It is unlikely that archaeological resources are present within the APE since the area has been previously disturbed. The APE for architectural resources is also defined as the construction impact area since no changes are being made outside the walls of the existing building. The facility was built in 1986. Because the building is not more than 50 years old and is being retrofitted, no adverse effect to historic resources would take place. The North Carolina Department of Cultural Resources agreed with DOE's findings in a December 10, 2009 letter (Appendix A).

Utilities and Energy Use: The Kings Mountain facility receives potable water from the Kings Mountain municipal water system for process use and general consumption. The potable water demand for 2008 ranged from 110,000 to 417,000 gallons per month for an annual use of 2.8 million gallons and a daily average of 7,600 gallons. The facility was recently connected to the municipal sewer system for treatment of sanitary wastewater. The facility disposes of process wastewater by contract with two private companies that collect the process wastewater in 5,000-gallon tank trucks for off-site treatment and disposal. Approximately 215,000 gallons of process wastewater were disposed in 2008. Chemetall plans to discuss the prospect of disposing of process wastewater to the municipal sewage treatment plant, provided that the processes could meet pretreatment requirements (Chemetall, 2009a). The facility receives electric power from Duke Energy. During 2008, the facility recorded an average demand of 1 megawatt. The total annual energy usage was 8,830 megawatt-hours (Chemetall, 2009a).

The increase in potable water demand by workers during construction would have a negligible short-term impact on the municipal supply. Sanitary wastes during construction would be disposed in portable or existing on-site toilets with negligible temporary effects.

The addition of a lithium hydroxide process at the Kings Mountain facility would result in a small increase in operational staff, which would have a negligible impact on potable water demand and sanitary wastewater disposal. The additional process would cause a negligible to minor relative increase in process water demand, process wastewater, and energy demand.

Transportation and Traffic: Construction traffic would primarily be limited to the immediate vicinity of the project site that would last for a duration of approximately 12 to 18 months. During construction, the additional traffic from truck and construction worker trips to the site would be short term and easily accommodated within existing roadway and intersection capacity, such that negligible impacts would occur.

The existing facility operates 24 hours per day, five to seven days per week, and would continue to do so under the proposed project. The site currently experiences a low volume of truck traffic related to deliveries and shipments (estimated at ten trucks per day) and the local roadway network can easily accommodate this volume. The proposed project would be expected to result in additional deliveries of approximately two truck visits per day that would use established truck routes currently in place by Chemetall. The additional truck trips to the site would be easily accommodated within existing roadway and intersection capacity, and negligible impacts would occur. The proposed project would generate a minor long-term increase in personal vehicle traffic due to the hiring of approximately *19* ~~25~~ permanent employees. However, the number of personal vehicles accessing the site during any one period would be reduced, as these employees would likely be employed on shift rotations. Because this proposed project is an addition to an existing industrial facility that currently operates production equipment and has existing truck and personal-vehicle traffic, this small increase in vehicle traffic would have only a minor impact to the surrounding community.

3.1.2 Silver Peak

Land Use: There is no land use plan or zoning in Silver Peak or Esmeralda County. Therefore, no change in zoning or land use would be required. Over 98 percent of the land area in Esmeralda County is administered by the Federal government. Chemetall already holds established mining claims (both patented and unpatented) for its brine production activities. In addition, land use associated with the proposed project would be consistent with current land uses as the project site is already used for these same purposes. *No new structures would be built in connection with the expansion program. The majority of all activities associated with the refurbishment and expansion (e.g., drilling, dike work, improvement of processing plant) would take place within areas of existing ponds, roads, pipelines, power transmission lines, processing plant and other industrial features of Chemetall's existing Silver Peak operations.* Therefore, there would be a negligible impact to land use.

Noise: The existing plant site is adjacent to Silver Peak, which contains the nearest sensitive receptors including residences between an eighth and one mile away, *a church,* and the Silver Peak Elementary School, which currently has eight students enrolled. There are no other schools, churches, or hospitals for over 20 miles. The town has a population of less than 300 people and experiences very little traffic. The surrounding area is sparsely populated with between 0 to 40 people per square mile, within at least an 80-mile radius*, excluding the few small towns.* Chemetall's operations are the only major industrial presence near Silver Peak. Current noise sources that contribute to the area's baseline noise level include the Chemetall's industrial plant and outdoor pond equipment operations, minimal truck and car traffic (including ~~a maximum~~ *an average* of two daily truck trips for the Chemetall plant), and infrequent noise bursts from the propane-powered air canon used to deter birds from landing in the brine ponds.

The construction phase would involve the repairing of the existing lithium brine ponds, routine maintenance of dikes, drilling new wells, and refurbishing parts of the existing carbonate plant. The rehabilitation of the existing ponds would involve dredging or plowing out deposits to increase depth, shoring up the earthen berm walls, and activating additional brine pumping wells. During the construction phase, noise levels would be localized, intermittent, and temporary. Increases in noise levels during construction would mainly result from the use of heavy construction equipment and trucks. The typical noise levels on site would be expected to remain within the

range of 75 to 90 dBA. Construction noise levels on site would be short term and primarily would be limited to the immediate vicinity of the project site. Construction would have a negligible impact on noise to sensitive receptors since the pond expansion area is over 2 miles from the residences and town, and the work on the carbonate plant would be predominantly indoors.

During operations, the main sources and levels of noise would be similar to existing sources and levels of noise at the plant, well field, and evaporation ponds. There would be ~~no change~~ *an increase to 3.5 truck trips per day* from the current ~~maximum~~ *average* of two truck trips per day off site. Any long-term increases in ambient noise levels during operations would be minimal.

Geology and Soils: *Chemetall's proposed project would occur within Clayton Valley, an irregular shaped valley between hills and mountains formed in a geologically complex setting of fault-bound blocks of the Earth's crust that have moved up or down relative to the adjacent blocks over the course of geologic time. The mountains surrounding Clayton Valley expose igneous, metamorphic and volcanic rocks that vary greatly in age and composition. Some of the more recent volcanic rocks and volcanic ash beds contain significant concentrations of lithium. The valley bottoms have been partially filled with fine-grained sediments eroded from the surrounding hills and mountains and deposited in valley bottom lake beds during geologic periods of time when wetter climatic conditions prevailed. Over geologic time in this region of Nevada, there was insufficient rainfall runoff to carve and maintain stream valleys flowing to the sea; water accumulated in valley bottom lakes, where the water evaporated and salts became concentrated. Lithium-rich volcanic ash beds were deposited interspersed within the other lake bed sediments to form sources of lithium that is now in the aquifers tapped by Chemetall's brine production wells. The lower slopes of the hills and mountains have alluvial fans of sediments (like steep stream deltas, composed of cobbles, gravel, sand and silt) that spread laterally down-slope and merge into the salty lake bed sediments that occupy the valley bottom. Relatively fresh water may be found by drilling into the middle and lower alluvial fans, while highly saline water (with salinities up to three times greater than sea water) exist within the sedimentary layers of the flat valley bottoms. The land surface of the flat valley bottoms are now usually dry and are known as "playas." Since the time of deposition of sediments in playa lake beds and alluvial fans, continued slight movement on faults in the underlying bedrock and seismicity-induced compaction of the sediments has caused fault planes to extend into or develop within the valley bottom sediments and alluvium. These fault planes in some places are more permeable than the rock or sediment on either side, and these fault planes are preferred routes of ground water flow. In other places, fault planes have low permeability and form boundaries to groundwater flow. It is this complex setting of topography, climate, rocks, lake sediments, and alluvium that controls the locations of brines, lithium-enriched brines, and fresh water within Clayton Valley.*

The predominant geological landform within the *area of the brine ponds* ~~study area~~ is a playa, characterized by a generally dry, *salty* and nearly level lake plain that occupies the lowest parts of *the valley floor*~~closed depressions on the floor of this intermontane basin~~. Temporary flooding within playas occurs primarily in response to desert precipitation and runoff events. Playa deposits are fine grained, and may or may not have a high water table and saline conditions (NRCS, 2007). The Esmeralda County Soil Survey (NRCS, 2007) indicates two soil types within proximity to the study area. These include playas (900) and miscellaneous water (1220). Table 3.1.2-1 contains the properties of each soil unit and their respective geological landform.

As shown in Table 3.1.2-1, soils within the study area are frequently prone to flooding. A "frequent" rating means that ponding occurs, on the average, more than once in 2 years and the chance of ponding is more than 50 percent in any year. Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part, and under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. Hydric soils can pose limitations to construction; however, they can also be indicative of wetlands.

Table 3.1.2-1. Study Area Soils at Silver Peak

Soil Unit	Geologic Landform	Slope (percent)	Ponding Frequency	Hydric Rating	Commercial Building Construction
900	Playas	0-1	Frequent	All hydric	Very limited
1220	Not rated	Not rated	Not rated	Not hydric	Not rated

Source: NRCS, 2007

Soil Unit 900 soils are very limited (primarily due to shrink-swell potential and ponding) for commercial building construction (e.g., structures typically less than three stories high and lacking basements). The construction ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs (i.e., depth to a water table, ponding, flooding, subsidence, shrink-swell potential, and compressibility). "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The 1220 unit soil overlaps with the existing industrial ponds, which are manmade features. Information within the soil survey regarding the soil properties of this unit is therefore limited as the natural soil properties within these areas have been disturbed/altered from the previous establishment of industrial ponds.

The October 29th, 2009, site visit of the study area identified the area as heavily disturbed. Interviews with on-site Chemetall staff revealed the majority of the project site has been heavily disturbed since the late 1960s. Most of the Chemetall property on the valley floor within the natural playa areas is currently or has been used for brine ponds for existing industrial processes. In some areas, ponds have accumulated over 15 feet of salt and "muds," ~~(sand mixed with magnesium and calcium salts),~~ which are periodically removed. In addition, large (over 20 feet tall) salt and mud mounds are present on the valley floor, the results of years of moving and stockpiling.

Under Chemetall's proposed project, modifications to the existing Chemetall operations would result in negligible impacts to geology or soils. Upgrades to the outdoor facilities would include the re-deployment of some older wells; and at least one new pond is under consideration. Depending upon the rate of brine withdrawal, minor land surface subsidence could occur around the new or re-deployed wells. The overall extent of subsidence would be greatest where the brine wells are most productive, which would occur in the location of the brine ponds. Increased subsidence in this area would not result in a significant impact to geology, as the predominant landform is playa, which is characterized by a closed depression. Additionally, drainage into these areas would not be anticipated to be affected by the proposed project, and the overall system would remain a closed depression. A portion of the potential subsidence would furthermore be offset by the aggrading or filling with sludge, and therefore, *land* ~~water~~ *surface* elevations would likely remain the same. Chemetall would monitor the aquifers to minimize depletion as brine withdrawal may result in some compaction of aquifer strata.

Additional minor amounts of earth-moving activities (i.e., compaction, leveling, installation of foundation drainage) may be necessary to restore and improve dikes of existing brine ponds ~~using dried sludge~~. Potential staging areas would be located directly outside of the existing facility and ponds, causing minor adverse impacts to soils through soil compaction and disturbance of the upper soil horizons. Manufacturing would occur within the facility and the product would be transferred off site using existing road infrastructure. Overall, impacts to soils would be negligible, as the site has been previously disturbed.

Socioeconomics: Approximately *14* ~~10~~ permanent employees are expected to be hired as a result of the proposed project. It is assumed that the majority of the workforce would be drawn from local candidates in *either* Esmeralda *or Nye Counties. It is anticipated that any person from outside these counties would establish a*

temporary second home in the area and export a majority of their income outside the area. ~~therefore, no increase in population or need for housing is anticipated~~.

Thirty one of the 54 employees working for Chemetall or indirectly through contractors reside in Esmeralda County. Recruiting employees from the Tonopah area has become necessary due to the limited labor resources available in Esmeralda County. Most of the Tonopah locals are established and prefer commuting to work daily.

Under Chemetall's proposed project, taxes would continue to be paid on the property and no adverse impacts would occur. Construction workers employed for the construction period are assumed to be currently employed, and residing and paying taxes in the Esmeralda County area. Increased sales transactions for the purchase of materials and supplies would generate some additional revenues for local and State governments, which would have a minor beneficial impact on taxes and revenue.

Chemetall pays property tax for all staff housing and the Chemetall mobile home park. These properties in Silver Peak would be available to employees. All other potential properties for rent are privately owned by other Silver Peak residents. Additionally during 1999, Chemetall converted its company-owned mobile home park from a company-supplied water system to a Silver Peak municipal water system in an effort to support and reduce costs paid ~~out~~ by each resident.

Construction of the project would not result in direct impacts to community facilities and services, school systems, or emergency services of Esmeralda County because significant numbers of employees are not anticipated to relocate as a result of the proposed project.

Environmental Justice: The proposed project was evaluated in accordance with EO 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. While there are minority and low-income populations in the study area, the proposed project would not have a disproportionately adverse impact on these groups.

Visual Resources: The Silver Peak site is located in a rural area of an arid valley historically covered with dry lake beds (playas). Silver Peak is located west of the site, is comprised of private residences, a small school, a Post Office, a Fire/EMS Station, a small church, a park, and a tavern. In addition, many abandoned and partially destroyed structures, dating back to the peak of silver mining from approximately 1866 to 1913, are located in town. Further to the west, past the town of Silver Peak, is a rugged, undeveloped, mountainous area.

The proposed expansion of brine ponds would occur entirely on the site of old ponds within Chemetall's patented mining claims. There are several ponds currently overlaid by significant (up to 20 feet) deposits of salt and "muds" ~~(sand mixed with magnesium and calcium salts)~~. When mining is terminated then reclamation would be conducted. The muds would be recontoured to match the contour of the land as required by the State of Nevada. Chemetall maintains a reclamation plan, as required by the State of Nevada, which would specify the remediation of impacts on the site.

Impacts to identified views and vistas were determined based on an analysis of the existing quality of the landscape views, the sensitivity of the view, and the anticipated relationship of the proposed action to the existing visual environment. The new brine wells, solar evaporation system expansion and changes to the existing lithium carbonate plant would be consistent with the existing landscape. Any potential removal of salts and muds or regrading and recontouring performed as a result of the project would have a negligible impact on visual resources.

Meteorology: Nevada has great climatic diversity, ranging from scorching lowland desert in the south to cool mountain forests in the north. Esmeralda County is characterized by a mild temperate climate. Average annual temperature ranges from lows of about 39°F to highs of approximately 72°F. Winter months (December through

February) are the coolest with average monthly low temperatures ranging from 17° to 25°F and high temperatures range from 46° to 54°F. The warmest months are the summer months of June through August. During those months, average monthly low temperatures range from 57° to 60°F and high temperatures range from 90° to 95°F. Average annual precipitation is approximately 4.3 inches. December is typically the driest month with average rainfall of 0.2 inch. February is typically the wettest month with an average of 1.3 inches of precipitation (WRCC, 2009).

In Nevada, thunderstorms in most areas are infrequent. Tornadoes are rare, but have occurred in all months from April through September. Winds are generally light. Storms with high winds rarely occur and seldom cause appreciable damage, except locally along the east slope of the Sierras. The prevailing wind direction is west; at a few stations, it is south or southwest because of local topography. In the valleys, winds are light in the morning and stronger in the afternoon. Dust or sand storms occur occasionally, particularly in the south during the spring, when storms move through the region more frequently than at other seasons. The proposed project would have a negligible impact on climate, and climate would have a negligible impact on the project.

Surface Water: The Nevada Division of Environmental Protection stated in a stormwater permit waiver letter (NDCNR, 1992) that the Silver Peak facility discharges to a dry playa in a closed hydrologic basin. Therefore, no regulated waters of the United States are associated with the facility.

Chemetall possesses an Industrial Artificial Pond Permit from the Nevada Department of Wildlife (NDW, 2007) to operate an impoundment within the State of Nevada containing materials or chemicals that cause or would cause the death of wildlife (refer to Biological Resources). The permit was issued April 2, 2007, and is valid until December 14, 2010.

The Nevada Department of Conservation and Natural Resources (NDCNR) (NDCNR, 2007) renewed Chemetall's Water Pollution Control Permit NEV0070005 effective March 23, 2007, which remains in effect until March 23, 2012. The permit authorizes the corporation to construct, operate, and close the Silver Peak Lithium Project in accordance with limitations and requirements, including the authorization to process up to 6,000 tons of ore (contained in pumped groundwater) annually. The permit requires Chemetall to contain all process fluids, including runoff from a 25-year, 24-hour storm event within the fluid management system and not release or discharge any process or non-process contaminants from the fluid management system. The permit specifies monitoring requirements for wells, process influents, and waste streams. The expansion of the evaporative pond system, which is part of Chemetall's fluid management system, would be conducted in compliance with the permit, which would not require modification, and would have a negligible impact on surface water resources.

Groundwater: The Silver Peak facility is located within the Clayton Valley Hydrographic Area (#143) of the Central Region Hydrographic Basin (#10) in Esmeralda County. The Clayton Valley Hydrographic Area covers 555 square miles and is underlain by a complex of interbedded alluvial sand and gravel, and playa clay and silt deposits containing fresh to highly brackish water. The NDCNR, Division of Water Resources has not designated the hydrographic area as one in which permitted water rights approach or exceed the estimated annual recharge (NDCNR, 2009).

Chemetall possesses 25 water appropriation permits from the Division of Water Resources that collectively allow more than 21,000 acre-feet annually of groundwater use at a combined rate of 32 cubic feet per second (NDCNR, 1999). In 2008, production from brine-producing wells averaged 71,000 parts per million total dissolved solids (Chemetall, 2009b). Water withdrawals between 1999 and 2008 ranged from 8,905 to 11,116 acre-feet annually, including approximately 373 to 643 acre-feet annually of fresh water from alluvial deposits that are recharged from the nearby mountain areas.

As part of the proposed project, Chemetall would develop additional production wells for lithium brine extraction and expand the evaporative pond system ~~The Nevada Division of Environmental Protection renewed Chemetall's Water Pollution Control Permit NEV0070005 after determining that the groundwater quality would not be degraded by operation of the facility, and that public safety and health would be protected (NDCNR, 2007). The~~ proposed project by *dredging material out of the existing ponds, not by increasing their overall surface area. Additional brine water demand for the project is estimated to be 4,000 acre-feet annually over historical averages. Fresh water consumption would increase by approximately 160 acre-feet annually over historical usage. Despite the anticipated increase in water usage both fresh water and brine usage would remain below the determined recharge rates to the basin.*

Providing a supply of fresh water to support the needs of Silver Peak residents, as well as Chemetall's business, is of the utmost importance. Chemetall's Silver Peak operation has extracted fresh water and brines from the Clayton Valley for the past 45 years. Decades of collecting and analyzing water samples have documented a gradual decline in water levels as the rate of withdrawal, on average, has exceeded the rate of recharge to the local ground water aquifer; however, the monitoring has shown no appreciable degradation of fresh water quality. Chemetall would continue monitoring and testing fresh water and brine supplies as stipulated by their Water Pollution Control permit. The continual monitoring and data collection would be used to better define and modify, as required, Chemtall's expansion process. Furthermore, it would support decisions on when and which mitigations would be used, if mitigation becomes necessary.

During 2009, Chemetall reduced pumping rates in response to the economic climate. Fresh water pumping was reduced by several hundred acre-feet per year resulting in noticeable increases in the fresh water levels seen in the municipal water well. The rising levels appear to be a result of reduced pumping of fresh water and not a result of fresh water to brine aquifer communication.

During 1998, Cyprus Foote Minerals, Inc. (predecessor to Chemetall Foote Corporation) prepared a groundwater assessment (Cyprus, 1998) to address a concern Cyprus had regarding a request to the State authorities for additional water usage by Mineral Ridge, Inc. If Mineral Ridge's project had been permitted, the potential usage of the fresh water supply would have risen by 724 acre-feet annually over permitted usage quantities, with the potential for drastically reducing the life of Silver Peak's and Cyprus's fresh water supply wells and aquifer.

Chemetall's proposed expansion would increase fresh water usage by 160 acre-feet annually over historical usage rates but would not exceed any permitted usage. Chemetall would continue monitoring and analyzing water samples and would remain in accordance with Chemetall's Water Pollution Control Permit NEV0070005, which includes a variety of conditions to protect human health and the environment (NDCNR, 2007). The proposed project would be conducted in compliance with the permit.

In the 1998 assessment, Cyprus used two simple methods to estimate the life span of the local fresh water aquifers that supply both Silver Peak residents and the brine processing plant. The two estimates were 14 and 27 years of remaining aquifer life at then observed linear decline rates. It was further postulated in the assessment that the rate of water level decline and aquifer depletion might accelerate through time. Twelve years later with continued use of these water wells by the town of Silver Peak and by Chemetall, the static water levels have declined approximately an additional six feet in Chemetall's well number 2; three feet in Silver Peak's well number 1; and two feet in a nearby down-gradient monitoring well (See Figure 2 in Chemetall's response letter, Appendix B). Overall, water levels have continued to decline but at a slower rate, rather than at an accelerating rate as predicted in the 1998 assessment. Available data and information supplied by Chemetall to DOE (Figures 1, 4 and 6 in Chemetall's response letter, Appendix B) indicate that the two Chemetall fresh water supply wells and the three municipal fresh water supply wells plus the nearby down-gradient monitoring well are in hydraulic communication, that permeability of the alluvium between the wells is moderate to high, and that groundwater flow directions are generally aligned with the down slope direction of the overlying topography. Large quantities

of deeper "brine" water are not being drawn up into these wells at the present time, but deeper wells do draw water that is more saline (i.e., higher in total dissolved solids). While the sustainability or impact of a 160 acre-feet per year increase in potable water consumption by Chemetall has not been determined by DOE, available information (see, e.g., Cyprus, 1998) suggest that, at least in the near term, water levels would decline more rapidly than currently is occurring if the proposed project increases the consumption of fresh water by 160 acre-feet annually. Likewise, the sustainability or impact of an increase in municipal water demand caused by a substantial increase in the number of Silver Peak residents has not been determined by DOE, but a similar impact would occur.

In 2008, an EA was prepared by the County Commission and submitted to the U.S. Environmental Protection Agency (EPA, 2008) to support a Federal decision on funding of a county proposal to construct a third municipal water supply well. This EA discusses the issues with the municipal water supply and contains the results of groundwater studies of the aquifers serving both the municipal and Chemetall fresh water supply wells. This EA notes that the fresh water aquifers in the alluvial fan and the brine aquifers beneath the playa have geologic separation and that depletion of the fresh water aquifers is dependent on pumping rates that exceed natural recharge from the mountains. It further acknowledges that the Cyprus (1998) groundwater assessment, which predicted aquifer depletion in 14 to 27 years, was based on pumping rates of 300 gallons per minute from the municipal water wells and that, subsequent to partial replacement of the distribution pipeline network (with more than a 30 percent reduction in pipeline leaks) and conservation efforts by town residents, recent pumping rates have been only 225 gallons per minute. The EA includes modeling results of the local groundwater flow paths to the municipal and Chemetall wells and the predicted 2-, 5- and 10-year water travel distances (for purposes of mapping well-head protection areas) (See Figures 3-1 and 3-2). The groundwater flow modeling results strongly suggests that there is a large area of the alluvial fans not being tapped by the existing wells, and it supports the concept that future fresh water supplies could be found in the alluvial aquifers further to the southwest.

At this time, it is not clear whether an additional fresh water supply well or other mitigations would be required in the future as a result of Chemetall's proposed activities at Silver Peak, but Chemetall would have the burden of meeting its needs for milling water without burdening the town of Silver Peak or the county government. Based on available geologic and topographic information reviewed by DOE, it appears that suitable water for Chemetall's milling (approximately 100 gallons per minute additional pumping) does exist within alluvial fans along the southwestern margin of the Clayton Valley playa; and there are various opportunities to avoid further impairment of the municipal water supply well yields and quality. If needed, there are several actions that could be taken, either by Chemetall or the local government, as appropriate, to continue to meet the needs of both Chemetall and the local residents: (1) Chemetall could use reject water from their water treatment facility (reverse osmosis) for some of their milling water needs and thereby reduce their fresh water needs; (2) Chemetall could transport supplemental water to the milling plant from other sources; (3) the County Commission could upgrade the remaining old portions of the town of Silver Peak water distribution pipeline network to further reduce its leakage rate; or (4) Chemetall could install another fresh water supply well in the alluvial fan, but further to the southwest of the existing wells so that interference with the existing wells would not occur (i.e., by tapping a different local alluvial aquifer or tapping an undrained area of the same aquifer). The nature of the alluvial fan deposits around Clayton Valley make it very likely that additional potable water supplies could be found in other locations on this alluvial fan or on other nearby alluvial fans.

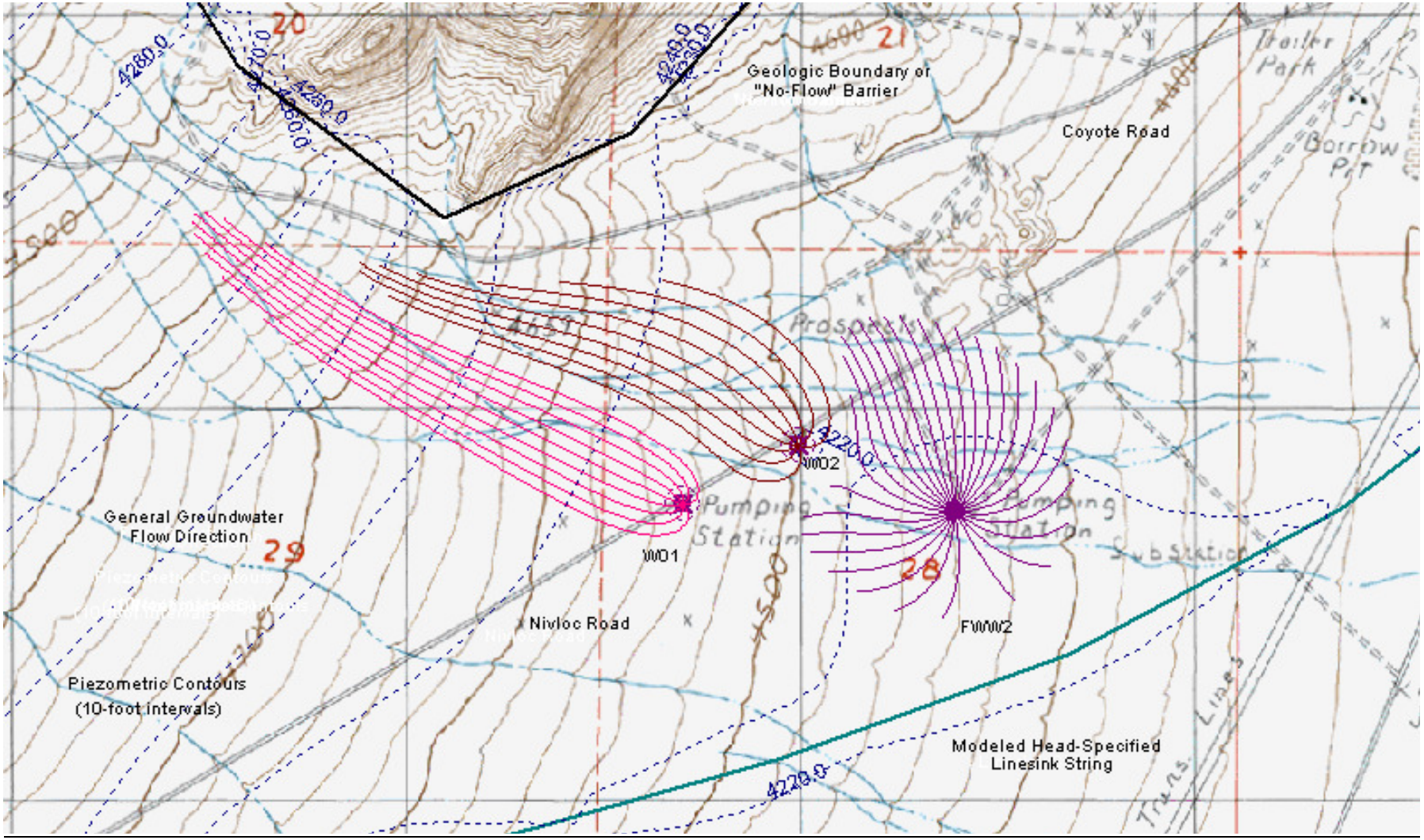

Figure 3-1. Flow Path Lines that Start at a Time-of-Travel Distance of Ten Years away from the Well Heads for Silver Peak Wells, W01, W02 plus Chemetall Foote Well FWW#2

Source: EPA 2008

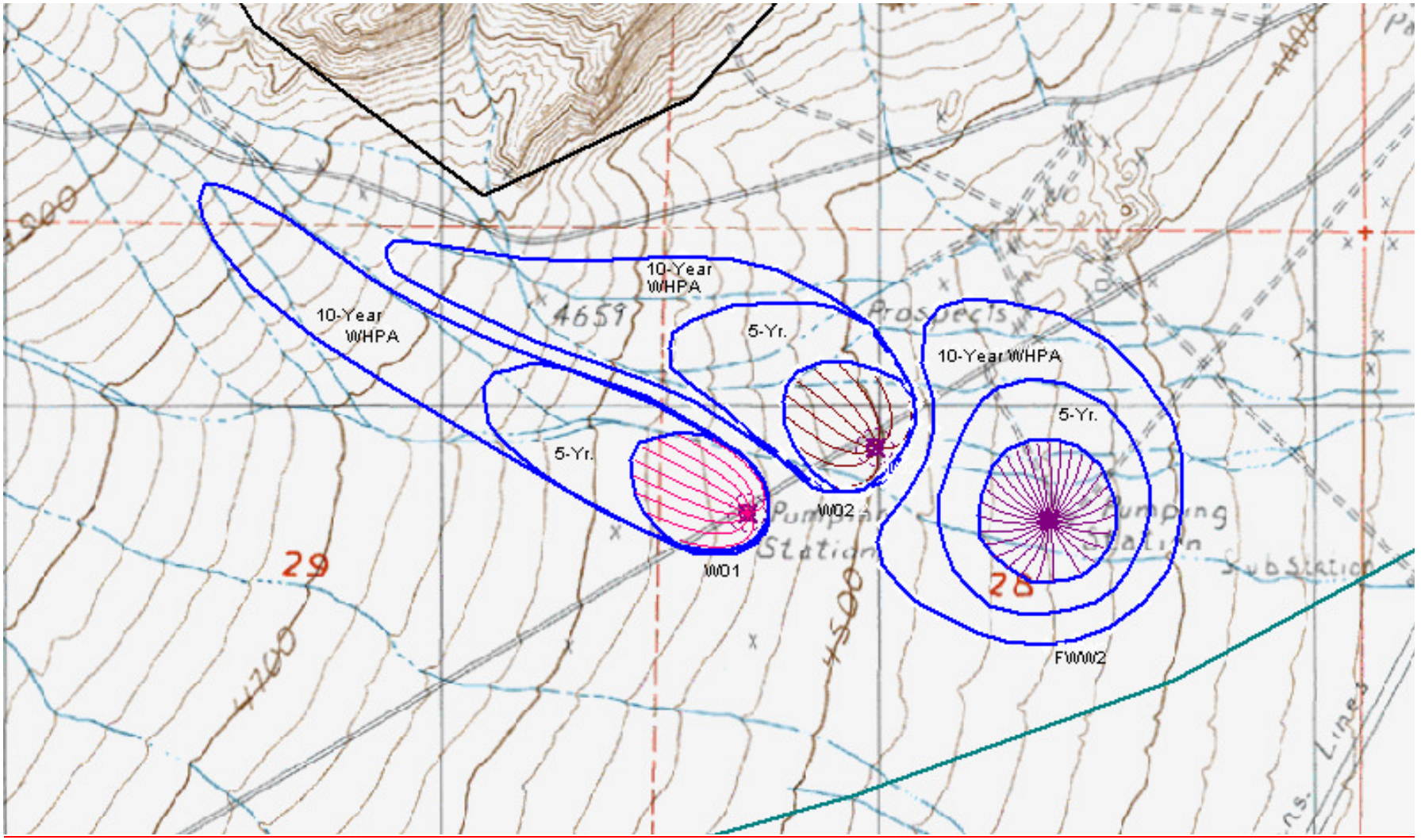

Figure 3-2. Delineated *2-, 5- and 10-Year Wellhead Protection Areas

**Two Year Wellhead Protection Areas show modeled groundwater flow path lines*
Source: EPA 2008

Wetlands and Floodplains: National Wetlands Inventory maps indicate the presence of a lake (littoral environment with unconsolidated shoreline [L2US] according to the Cowardin wetland classification) within the study area. The overall feature of the lake extends beyond the study area and overall size of the feature is approximately 4,300 acres (USFWS, 2009). This feature is part of the natural playa landform within the study area and surrounding region, which has been since modified into a series of brine ponds utilized by Chemetall for industrial processes. During previous permitting activity, the United States Army Corps of Engineers (USACE) in 1992 determined that the Silver Peak facility discharges industrial stormwater into a dry playa, which is a closed hydrological basin and is not regulated waters of the U.S. (NDCNR, 1992). Although the USACE determination is over 17 years old, no changes have occurred that would alter either the applicable law or the closed nature of the dry playa's hydrological basins, and therefore, these ponds would remain non-jurisdictional.

During the proposed project, the existing playa would be minimally impacted from improvements to and restoration of the existing industrial brine ponds to accommodate additional proposed brine processing. The modifications to the existing ponds, however, would not change the existing industrial use of the playa and would occur in areas that have been previously disturbed. Because the existing playa within the study area is considered non-jurisdictional and the study area is located within a closed drainage basin, no impacts would occur to wetland resources protected under Section 404 of the Clean Water Act.

According to the FIRM, FEMA classifies the study area as unmapped (FEMA, 2009). No river floodplains exist on the site; therefore, no adverse impacts would occur to river floodplains.

Vegetation and Wildlife: The study area is located within an arid desert environment, which predominantly lacks vegetative cover. During the October 29, 2009 site visit, it was verified that most of the valley floor (especially old and current pond areas) are largely devoid of vegetation and there was little to no habitat for terrestrial animals. In addition, a majority of the study area is heavily disturbed by roadways, graded lay-down yards, berm systems, active ponds, and old ponds overlaid with considerable deposits (up to 20 feet) of muds and salt.

On-site staff indicated that primary ponds (where brine is first pumped into) can support populations of brine shrimp and brine flies, which can present an attractive food source for migratory waterfowl and other birds. Ducks, teals, grebes, geese, herons, loons, gulls and other birds are attracted to the ponds; however, many of the ponds with stronger brine concentrations pose a mortality risk to birds, primarily due to salt encrustation on their feathers. Chemetall has been issued a permit by the Nevada Department of Wildlife (to operate artificial ponds) that requires active hazing of ponds to deter use by these bird species and requires quarterly reports of bird mortality. One of the prominent hazing methods used is a propane-powered air cannon to generate loud noises. As the proposed action involves rehabilitation of some existing ponds (dredging or plowing out deposits to increase depth and shore up earthen berm walls), and activation of additional brine pumping wells (some new, some previously closed), the potential exists for increasing attraction of migratory waterfowl species and subsequent mortality. These impacts, however, would be minimized through continued adherence to the Nevada Department of Wildlife permit. *Chemetall would continue to work with the Nevada Department of Wildlife for identifying and implementing effective measures to prevent avian mortality; this would include enhancing the current bird monitoring and rescue efforts to prevent increased avian mortalities due to the increase in lithium brine production. During each seasonal migration, Chemetall would employ a dedicated avian technician to take responsibility for hazing, rescue and bird monitoring activities.*

The study area provides little to no terrestrial habitat; therefore, negligible impacts would be anticipated to terrestrial species from either construction or operations. The USFWS expressed concern regarding the potential for project construction activities to impact migratory birds, which are protected under the Migratory Bird Treaty Act (MBTA) (see USFWS letter, Appendix A). Based on the characteristics of the study area, including the hazing activities currently conducted at the existing ponds, it is unlikely that construction activities would disrupt migratory bird nests. *The Nevada Department of Wildlife, however, has documented bird-nesting activity on several of the existing ponds. In order to avoid impacts to these species protected under the MBTA, bird-*

disturbing activities in areas of potential breeding habitat would be avoided during the breeding and nesting season (March 1 through July 31). If this seasonal avoidance is not practicable, a qualified biologist would survey the project site prior to any bird-disturbing activities to determine if nesting is underway, and buffer areas would be established as needed to protect eggs and young birds until they fledge.

Informal coordination letters were sent to both the USFWS and the Nevada Natural Heritage Program to verify the project would have no impact on any Federally- or State-listed threatened, endangered, or candidate species or critical habitat within the vicinity of the proposed project (see Appendix A). In a letter dated November 19, 2009, the USFWS stated that to the best of their knowledge, no listed, proposed, or candidate species occur in the study area (see Appendix A). The USFWS also stated that they are adopting the Natural Heritage Program's sensitive species list and collaborating with them to provide distribution data and information on the conservation needs for sensitive species to agencies or project proponents. In a letter dated February 22, 2010, the Nevada Natural Heritage Program stated there are no Federally- or State-listed threatened, endangered, or candidate species, or critical habitat within the vicinity of the proposed project. In addition, the Nevada Natural Heritage Program stated that all cacti, yuccas, and Christmas trees are protected by Nevada State Law (NRS 527.060-.120). The October 29, 2009, site visit confirmed, however, the site location for the proposed project is heavily disturbed (mostly overlain by silt and sludge deposits) and is generally devoid of all vegetation, with the exception of a few tumbleweeds and other small weeds. No cacti or Joshua Trees were observed, and their presence within the project site is highly unlikely.

Cultural Resources: The majority of the project site has been heavily disturbed since the late 1960s. Most of the property on the valley floor is or has been used for brine ponds since that time. In some areas, ponds have accumulated over 15 feet of metals sludges and salt deposits (periodically removed). Large (over 20 feet tall) salt and sludge mounds are present on the valley floor, the results of years of moving and stockpiling. The uphill areas near the plants and administrative office have been developed for decades. When mining is terminated, then reclamation would be conducted. The sludge would be spread, graded and recontoured to match the original contour of the land (which was flat) as required by the State of Nevada. The lithium plants were converted from a 19th century silver mill.

The APE for archaeological resources is defined as the construction impact area. It is unlikely archaeological resources are present within the APE since the area has been previously disturbed.

The character of the project area is industrial. The APE for architectural resources is defined as being approximately a 0.25-mile perimeter beyond the project limits. Although the majority of the proposed project is limited to re-use of existing ponds and installation of unobtrusive pumps, this APE takes into account the sight distances in parts of the project area that are relatively unobstructed due to the flat terrain. The total area of the APE is expected to decrease, as the project plans are refined. Project plans are not yet available for this undertaking.

In the general vicinity of the project area, the only structure over 50 years of age with National Register potential is the old Silver Peak Post Office. This building is not within the APE for architectural resources. It sits between 0.5 and 1-mile west of the APE for architectural resources. This is a long side-gabled building constructed of un-coursed stone. It currently abuts a steep bank on its rear façade (northwest). The production plant for the present facility is also located to the northwest of this resource.

The front façade, which faces southeast, has three door openings and no windows. Each door opening is topped with a rough timber lintel. The roof is of frame construction with wide clapboard covered gables. The gables have a single opening covered by a vertical boarded door. The roof is clad with corrugated terne roofing.

Since there are no historic resources within the APE for either archeological or architectural resources, DOE has made a finding of No Historic Properties Affected for this undertaking. The State of Nevada Department of

Cultural Affairs concurred with this finding in a letter dated December 10, 2009 (Appendix A). The proposed project would have a negligible adverse impact on cultural resources.

Utilities and Energy Use: The Silver Peak facility receives potable water from the Esmeralda County water system serving the community of Silver Peak. The potable water demand is primarily for consumption by operational staff. Non-potable freshwater is drawn from wells on site for process uses. All process wastewater is recycled within the fluid management system of the Silver Peak facility. Sanitary wastewater from the facility is disposed in on-site septic systems under Large Capacity Septic System Permit GNEV9201-40018 from the Nevada Division of Environmental Protection (Chemetall, 2009a).

The facility receives electric power from Nevada Energy. During 2008, the facility recorded a maximum demand of 2.54 megawatts and an average demand of 1.89 megawatts. The total annual energy usage was 16,640 megawatt-hours (NV Energy, 2009).

The increase in potable water demand by workers during construction of additional facilities would have a negligible short-term impact on the municipal supply. Sanitary wastes during construction would be disposed in portable toilets or on-site septic systems with negligible temporary effects. The expansion of operations at the Silver Peak facility would result in a small increase in operational staff~~, which would have a negligible impact on~~ *and an increase in* potable water demand and sanitary wastewater disposal. *Chemetall estimates approximately a 160 acre-feet annual increase in fresh water use over historical usage rates. While the exact nature of the impact of an 160 acre-feet increase has not been determined by DOE, information available to DOE suggest that the current gradual depletion of the fresh water supply wells and local aquifer would increase. In the future, mitigative actions may be needed by either Chemetall or the local government, as appropriate; therefore, Chemetall and the County Commission would continue to monitor water levels and quality in the local ground water aquifer serving the fresh water supply wells.*

Transportation and Traffic: The main arterials near the Silver Peak site are US Highways 95 and 6 to the east and north, and Nevada State Routes 264 and 266 to the west and south, respectively. Silver Peak is approximately 20 miles away from each. Nevada State Route 265 connects Silver Peak to US Highways 95 and 6*, and Esmeralda County Road #196 (Silver Peak Road) extends east from Silver Peak to intersect US Highway 95 north of Goldfield, Nevada. According to Esmeralda County Officials, commuters from Goldfield use this 20-mile stretch of Silver Peak Road, which is partially paved and partially dirt road. Commuters from Dyer often use the County dirt road called Coyote Road to access the facility.* The town of Silver Peak has a population of less than 300 people, and experiences little traffic. The surrounding area is ~~very~~ sparsely populated~~ with between 0 to 40 people per square mile, within at least an 80-mile radius~~. The Chemetall plant is the only major industrial presence near the town of Silver Peak.

Traffic impacts from the construction trucks and worker vehicles would be short term and easily accommodated within existing *State and US* roadway and intersection capacity*; however, Esmeralda County officials indicate that County Road #196 (Silver Peak Road) was engineered to support neither heavy vehicles nor the existing load of traffic; and it is currently in a state of deterioration, such that it needs significant road-surface improvements.* ~~Construction would have a negligible adverse impact on transportation and traffic.~~

The proposed project *would increase truck traffic across County Road #196 by an average of one load per day for a total of 2.5 trucks per day on average. Out bound truck traffic, chiefly uses Highway 265 and this traffic would increase on average by 0.5 trucks per day for a total of one truck per day.*~~is not expected to require any change from the current maximum of two truck trips per day off site.~~ The proposed project would generate a minor long-term increase in personal vehicle traffic due to the hiring of approximately ~~10~~ *14* permanent employees. The additional vehicle trips to the site would ~~be easily accommodated within existing roadway and intersection capacity, and have a negligible impact on transportation and traffic~~ *increase the traffic on the existing roadways and intersections. This increase could be easily accommodated within existing State and US roadway and*

intersection capacities; however, according to Esmeralda County officials, increased traffic from both construction and operations could have a moderate impact on the county roads, particularly County Road #196 due to its current condition of disrepair and unpaved conditions.

Chemetall has historically and currently maintains 25 percent of County Road #196 where it passes through the Chemetall operations. Monies paid out by Chemetall in net proceeds tax, property tax and use tax help fund Esmeralda County. The expansion project would result in higher taxes paid by Chemetall resulting in higher revenues for Esmeralda County.

In an effort to reduce traffic by employees, Chemetall provides staff housing and a rent-free mobile home park to encourage employees to live in Silver Peak. Given Silver Peak's limited population and lack of services, such as stores, gas stations, restaurants, etc., many employees choose to reside in Tonopah or Goldfield and commute to work each day.

3.2 Resource Areas Considered Further

Environmental resource areas carried through for further consideration of the potential impact of Chemetall's proposed project include air quality and GHG, solid and hazardous wastes, and human health and safety.

3.2.1 Air Quality and Greenhouse Gas

Air Quality Management

The purpose of the air quality analysis is to determine whether emissions from a proposed new or modified source of air pollution, in conjunction with emissions from existing sources, would cause or contribute to the deterioration of the air quality in the area. The Clean Air Act (CAA) requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards (40 CFR 50.1(e)). Primary standards protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. EPA has established NAAQS for six principal pollutants, which are called "criteria pollutants": ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM), particulate matter 10 microns or less (PM_{10}), particulate matter 2.5 microns or less ($PM_{2.5}$), sulfur dioxide (SO_2) and lead. A state's air quality regulations may further regulate concentrations of the criteria pollutants. Table 3.2.1-1 lists the NAAQS and North Carolina and Nevada AAQS.

To determine compliance with the NAAQS, emissions of criteria pollutants from a new or modified source(s) are modeled to determine their air dispersion concentrations. In addition to the six criteria pollutants outlined in the CAA, several other substances raise concerns with regard to air quality and are regulated through the CAA Amendments of 1990. These substances include hazardous air pollutants (HAPs), and toxic air pollutants such as metals, nitrogen oxides (NO_X), and volatile organic compounds (VOCs). NO_X and VOCs are precursors for O_3.

Areas that meet the air quality standard for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standard for one or more of the criteria pollutants are designated as being in nonattainment for that standard. The CAA requires nonattainment states to submit to the EPA a State Implementation Plan (SIP) for attainment of the NAAQS (40 CFR 51.166,40 CFR 93). Maintenance areas are those that at one point had not met the NAAQS but are currently maintaining the standards through the requirements in the SIP.

The 1990 Amendments to the CAA require Federal actions to show conformance with the SIP. Federal actions are those projects that are funded by Federal agencies and include the review and approval of a proposed action through the NEPA process. Conformance with the SIP means conformity to the approved SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS, and achieving expeditious

attainment of such standards (40 CFR, 51 and 93). The need to demonstrate conformity is applicable only to nonattainment and maintenance areas.

Table 3.2.1-1. National, North Carolina, and Nevada Ambient Air Quality Standards

Pollutant	Standard	Averaging Time	Standard Type
Carbon Monoxide	35 ppm (40 mg/m^3)	1-hour	Primary
	9 ppm (10 mg/m^3)	8-hour(1a)	
	6 ppm (7 mg/m^3)	8-hour(1b)	
Lead	0.15 µg/m^3	Rolling 3-Month Average(2)	Primary and Secondary
	1.5 µg/m^3	Quarterly Average	
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Primary and Secondary
PM_{10}	150 µg/m^3	24-hour	Primary and Secondary
	50 µg/m^3	Annual (Arithmetic Mean)(3)	
$PM_{2.5}$(4)	35 µg/m^3	24-hour	Primary and Secondary
	15.0 µg/m^3	Annual (Arithmetic Mean)	
Ozone(4)	0.10 ppm	1-hour(5)	None
	0.12 ppm	1-hour(6)	Primary and Secondary
	0.075 ppm (2008 std)	8-hour	
	0.08 ppm (1997 std)	8-hour(7)	
Sulfur Dioxide	0.5 ppm (1300 µg/m^3)	3-hour	Secondary
	0.14 ppm	24-hour	Primary
	0.03 ppm	Annual (Arithmetic Mean)	
Total Suspended Particulates(8)	75 µg/m^3	Annual (Arithmetic Mean)	Primary and Secondary
	150 µg/m^3	24-hour	
Hydrogen Sulfide(9)	0.08 ppm (112 µg/m^3)	1-hr	None

(1) In Nevada: (a) 8-hr CO standard at less than 5,000 ft above mean sea level; (b) 8-hr CO standard at or greater than 5,000 ft above mean sea level.
(2) Final rule signed October 15, 2008. Nevada regulations does not have a Rolling 3-Month Average Lead standard
(3) This is a Nevada standard.
(4) The Nevada air regulations do not have AAQS for PM2.5 and 8-hr O_3.
(5) In Nevada, 1-hour O_3 standard for Lake Tahoe Basin, #90.
(6) As of June 15, 2005. 1-hour O_3 was revoked in all areas except 14 8-hr O_3 nonattainment early action compact areas. Cleveland County, North Carolina and Esmeralda County, Nevada are not early action compact areas.
(7) The 1997 standard and its implementation rules would remain in place as EPA undertakes rulemaking to address the transition to the 2008 standard.
(8) North Carolina AAQS
(9) Nevada AAQS
µg – microgram; m – meters; mg – milligrams; ppm – parts per million
Source: EPA, 2009b; NCDENR, 2009b; and NDEP, 2009

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Class I Areas and Sensitive Receptors

For areas that are already in compliance with the NAAQS, the Prevention of Significant Deterioration (PSD) requirements provide maximum allowable increases in concentrations of pollutants, which are expressed as increments (40 CFR 52.21). Allowable PSD increments currently exist for three pollutants: SO_2, NO_2, and PM_{10} (Table 3.2.1-2).

Table 3.2.1-2. Allowable PSD Increments (µg/m^3)

Pollutant--Averaging Period	Class I Area	Class II Area
SO_2--3-Hour	25	512
--24-Hour	5	91
--Annual	2	20
NO_2--Annual	2.5	25
PM_{10}--24-Hour	8	30
--Annual	4	17

Source: 40 CFR 52.21(c)

One set of allowable increments exists for Class II areas, which covers most of the United States and another set of more stringent allowable increments exists for Class I areas. Because of their pristine environment, Class I areas require more rigorous safeguards to prevent deterioration of their air quality. For the purposes of PSD review, the Federal government has identified mandatory Class I areas, which as defined in the CAA, are the following that were in existence as of August 7, 1977: national parks over 6,000 acres, national wilderness areas and national memorial parks over 5,000 acres, and international parks (NPS, 2009a). In general, proposed projects that are within 62 miles (100 kilometers) of Class I areas must evaluate impacts of the project on air quality related values (AQRVs) such as visibility, flora/fauna, water quality, soils, odor, and any other resources specified by the Federal Land Manager (NPS, 2009b).

Overall, for the purposes of air quality analysis, any area to which the general public has access is considered a sensitive receptor site, and includes residences, day care centers, educational and health facilities, places of worship, parks, and playgrounds. Health and safety risks associated with the proposed project are discussed in Section 3.2.3 (Human Health and Safety).

Greenhouse Gases

Greenhouse gases (GHGs) are pollutants of concern for air quality and climate change. GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), NO_X, O_3, and several chlorofluorocarbons. Water vapor is a naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, CO_2 is the second-most abundant GHG and is typically produced from human-related activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. Additionally, a number of specialized industrial production processes and product uses such as mineral production, metal production and the use of petroleum-based products can also lead to CO_2 emissions. The manufacturing of lithium carbonate (Li_2CO_3) and lithium hydroxide (LiOH) could produce CO_2 emissions.

Although regulatory agencies are taking actions to address GHG effects, there are currently no State or Federal standards or regulations limiting CO_2 emissions and concentrations in the ambient air. In response to the *FY2008 Consolidated Appropriations Act* (H.R. 2764; Public Law 110–161), EPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule (*GHG Reporting Rule), which became effective on December 29, 2009. The GHG Reporting Rule requires annual reporting of GHG emissions to EPA from large sources and suppliers in the United States, including suppliers of fossil fuels or industrial GHG; manufacturers of vehicles and engines; and facilities that emit greater than 25,000 metric tons per year (mtpy) (27,558 tons per year [tpy]) each of CO_2 and other GHGs. The intent of the rule is to collect accurate and timely emissions data to inform future policy decisions and programs to reduce emissions, as well as fight against the effects of climate change.

Additionally, on September 30, 2009, EPA proposed, under the CAA New Source Review and Title V operating permit programs, new GHG thresholds that would trigger review and permitting. This proposed requirement

would cover nearly 70 percent of the nation's largest stationary source GHG emitters (including power plants, refineries, and cement production facilities), while shielding small businesses and farms from permitting requirements. The proposed thresholds and requirements are currently being reviewed by Congress.

3.2.1.1 Affected Environment

3.2.1.1.1 Kings Mountain

Air Quality

The NCDENR, Division of Air Quality (DAQ), which is responsible for monitoring air quality for each of the criteria pollutants and assessing compliance, has also promulgated rules governing ambient air quality in the State of North Carolina. These rules are codified in North Carolina Air Quality Rules, 15A NCAC 2D.0400. Cleveland County is in attainment for all criteria air pollutants, including the new 8-hour ozone standard (EPA, 2009c); therefore, DOE does not need to demonstrate conformity with the State's SIP for this project.

There are eight Federal mandatory Class I areas within North Carolina and surrounding states for which the NCDENR requires a PSD review to determine potential impact; however, none of these areas are within 62 miles (100 kilometers) of the proposed project site. Therefore, a PSD increment and AQRV analysis for Class I area would not be required. All other areas within North Carolina's border are designated as Class II. Sensitive receptors within one mile of the Kings Mountain facility include a school and several churches.

Current and Projected Emissions

Currently, the Kings Mountain site produces lithium salts. The Kings Mountain facility operates via a Title V Major Source Permit issued by the NCDENR DAQ: Permit No. 2894T28. This permit applies to most of the equipment used and material handling process activities in the facilities manufacturing process. A Title V Major Source Permit is granted to a facility that has the potential to emit more than 100 tpy of any of the six criteria pollutants, or more than 10 tpy of any single HAP or more than 25 tpy of any combination of HAPs. The Kings Mountain facility is a Title V facility because of its potential emissions of hexane, a HAP. The facility has conducted an air toxics modeling demonstration for hexane and has determined that it could potentially emit up to 36.5 tpy of hexane without causing deterioration to the air quality; therefore, this emissions rate was set as the facility-wide limit of hexane emissions in the Title V permit. Criteria air pollutants from the facility are well below major source emissions rates. Table 3.2.1-3 below provides the actual and potential air emissions from the current operations of the lithium salt manufacturing plant. Additionally, the potential emissions from the operation of the proposed project are also provided. *The NCDENR has informed Chemetall that, in accordance with 15 A NCAC (2Q.O100 thru 2Q.0300, and 2Q.0113), the Kings Mountain facility would require a permit to construct and a modification of its Title V permit to operate prior to installation and operation of any air pollution sources at the facility.*

The Kings Mountain facility currently and historically has been in full compliance with its air quality operating permits and has had no reported violations. The current site permit for the plant is valid through September 30, 2012.

In 2008, Kings Mountain facility produced 892 mtpy (982 tpy) of CO_2 from energy use and processes. Energy use accounted for 88 percent. The process of manufacturing lithium salt only produced 101 mtpy (112 tpy) CO_2. Chemetall conservatively projected that an additional 17,061 tpy of CO_2 would be emitted from the Kings Mountain facility as a result of the proposed project (Chemetall, 2009a). Exact emissions are not known at this time as the final technologies to be used for the process have not been finalized. Further discussions of impacts from the emissions of pollutants from the proposed project are in Section 3.2.1.2.

Table 3.2.1-3. Actual and Potential Emissions (tpy) from Kings Mountain

Pollutant	Actual Emissions Rate	Current Operations Potential Emissions Rate	Proposed Operations Potential Emissions Rate
CO	0.412	7.59	11.94
NO_X	0.491	9.03	4.55
SO_2	0.0029	0.054	NR(2)
VOC	4.36	54.35	0.78
PM2.5	0.084	0.65	NR(2)
PM10	0.084	17.38(1)	21.21
TSP	0.084	17.38	NR(2)
TSP as Li_2CO_3	0.046	12.37	NR(2)
Hexane	4.33	36.50	NR(2)
Total HAPs	8.83	41.07	NR(2)
Total Organic Carbon	--	--	1.56

(1) PM rates for current operations are actual and potential controlled rates. Potential uncontrolled rate for PM for current operations is 60 tpy
(2) Projected TSP, hexane, and Total HAPs are not reported in the Environmental Questionnaire. Exact emissions are not known at this time as the final technologies to be used for the process have not been finalized. The estimates for other pollutants are controlled emissions, after the scrubbers have been installed.
NR – Not Reported
Source: NCDENR, 2007b; ERM, 2009; Chemetall, 2009a; and Chemetall, 2009c.

3.2.1.1.2 Silver Peak

Air Quality

The NDEP Bureau of Air Quality Planning (BAQP), which is responsible for monitoring air quality for each of the criteria pollutants and assessing compliance, has also promulgated rules governing ambient air quality in the State of Nevada. These rules are codified in Nevada Administrative Code, Chapters 445B.001 to 445B.395. Esmeralda County is in attainment for all criteria air pollutants, including the new 8-hour ozone standard (EPA, 2009c); therefore, DOE is not required to demonstrate conformity with the State's SIP for this project.

There is one Federally-mandated Class I area in Nevada: Abridge Wilderness Area. The Class I area is located within the Humboldt National Forest in the northeastern portion of Nevada (NPS 2009a). This Class I area and the Class I areas in California are more than 62 miles (100 km) away from the proposed project site; therefore, a PSD increment and AQRV analysis would not be required. All other areas to which the PSD provisions apply are designated as Class II. Immediately bordering the Silver Peak facility to the north and west is the town of Silver Peak, which contains private residences, a small school (8 enrolled students), a Post Office, a Fire/EMS Station, a small church, a park, and a tavern. The closest occupied structures to the Silver Peak site (measured from the Administrative Office) are approximately 1,000 feet away.

Current and Projected Emissions

Currently, the Silver Peak site produces Li_2CO_3 and LiOH. The Silver Peak facility operates via a Class II Air Quality Operating Permit issued by the NDEP Bureau of Air Pollution Control: Permit No. AP1479-0050.~~02~~*01.* This permit applies to most of the equipment used and materials handling activities in the facilities manufacturing process. *This permit would not require modification.* In Nevada, a Class II operating permit is typically required for facilities that have the potential to emit less than 100 tpy of any one regulated pollutant, and less than 25 tpy total HAPs, and less than 10 tpy of any one HAP. *If the improved facility were to exceed any one of these thresholds, Chemetall would be required to obtain a Class I operation permit, which is for major sources.* ~~Therefore, the Silver Peak facility is a minor source of air pollution.~~ For its operating permit, the facility requested and demonstrated that it could meet the Federally-enforceable emissions cap, thereby ensuring that the

facility would comply with all applicable requirements and not cause *significant* deterioration to the area's air quality.

The Silver Peak facility currently and historically has been in full compliance with their air quality operating permits and has had no reported violations. The current site permit for the plant is valid through November 13, 2011. Table 3.2.1-4 provides the actual emissions and the Federally-enforceable emissions caps from the current operations at the Silver Peak manufacturing plant. Additionally, the potential emissions from the proposed project are also provided.

Table 3.2.1-4. Actual and Potential Emissions (tpy) from Silver Peak

Pollutant	Actual Emissions Rate	Class II Permit Emissions Caps	Proposed Operations Potential Emissions Rate
CO	2.53	5.41	NR(3)
NO_X	27.41	59.50	NR(3)
SO_2	38.39	84.93	NR(3)
VOC	0.79	1.74	NR(3)
$PM_{2.5}$(1)	NA	NA	10
PM_{10}	6.24	10.82	10
PM	6.27	10.82	NR(3)
HAPs (Li_2CO_3)(2)	0.42	10	NR(3)

(1) PM2.5 rates are not available.
(2) Based on Toxic Release Inventory for 2008, Li_2CO_3 is the only HAP released at the site. There is no emissions cap for HAPs in the Class II operating permit. Number presented is the threshold for major source of HAPs.
(3) These emissions are not projected but are not expected to exceed the facility's emissions caps.
NR – Not Reported
Source: NDEP, 2008a; EPA, 2009d; and Chemetall, 2009a

The CO_2 emissions data is not available from the Silver Peak facility. However, based on the processes currently ongoing, it is likely that CO_2 emissions are generated from energy usage and not from the manufacturing process.

3.2.1.2 Environmental Consequences

3.2.1.2.1 No Action Alternative

The No-Action Alternative is treated in this EA as the "No-Build" Alternative. That is, under the No-Action Alternative, Chemetall would neither expand its lithium carbonate production capabilities in Silver Peak nor expand its lithium hydroxide production in Kings Mountain, because of the absence of DOE funding assistance. However, the facilities at Silver Peak and Kings Mountain would continue to emit air pollutants as described in the Section 3.2.1.1.

With the No Action Alternative, DOE would not fully meet its goal for supporting United States based manufacturing to produce advanced EDV batteries and components. With reduced DOE funding, industries may be less willing to invest in the advanced technology that would help increase production of these batteries, especially the lithium ion batteries and their components. Because of the greater energy density and lighter weight than other batteries, lithium batteries are proving to be the most promising for the commercial viability of electric vehicles (DOE, 2001). Without alternative fuel sources for automobiles, the United States will continue its dependence on and consumption of petroleum and other fossil fuels, consequentially, the current trends of increased CO_2 concentrations in the Earth's atmosphere will continue; therefore, the No Action Alternative would have a moderate adverse cumulative impact on climate change.

3.2.1.2.2 Proposed Project

Construction

At the Kings Mountain facility, only 20 acres of the existing facility's 720 acres are currently being used. The new LiOH plant would be located within an existing building, within the present acreage of the Kings Mountain facility. Construction activities would be limited to the addition of two floors onto the proposed plant building, and the addition of an 8,200 square feet packaging room to the existing building at grade level, a 15 feet wide by 60 feet long covered aisle way between the new packaging room and the existing warehouse, minor demolition activities, and the installation of a concrete walled tank farm containing six ASTs. There would be no other disturbance of land.

The Silver Peak facility site is approximately 15,000 acres in size, with the manufacturing operations located on approximately 20 acres. No new building facilities would be needed to expand production of Li_2CO_3 at the Silver Peak facility.

During the actual construction process at either facility, the equipment used to construct the proposed projects would intermittently emit quantities of five criteria air pollutants: CO, NO_X, SO_2, PM_{10}, and VOCs. In addition to tailpipe emissions from heavy equipment, ground surface disturbances during excavation and grading activities could potentially generate fugitive dust. Fugitive dust, such as dirt stirred up from construction sites, can affect both environmental quality and public health. The type and severity of the effects depend in large part on the size and nature of the dust particles. The types of effects that can occur to humans include inhalation of fine particles that can then accumulate in the respiratory system causing various respiratory problems including persistent coughs, wheezing, eye irritations, and physical discomfort. DOE expects the overall impacts from fugitive dust emissions would be temporary in duration and of minor intensity.

Exhaust emissions from equipment used in construction, coupled with likely fugitive dust emissions, could cause minor, short-term degradation of local air quality. DOE expects the construction of the proposed facilities at Kings Mountain, North Carolina, and Silver Peak, Nevada, would have overall short-term and minor affects to air quality.

Operations

The Kings Mountain facility proposes to produce LiOH by using Li_2CO_3 from Chemetall's facility in La Negra, Chile or from Chemetall's facility in Silver Peak, Nevada. The Li_2CO_3 would be reacted with lime to produce LiOH. The recycled streams from the Kings Mountain operation would be concentrated and recycled internally or sent to the Silver Peak facility or other Chemetall operations to minimize waste. Current actual and projected emissions of criteria pollutants and HAPs from both facilities are well below their permitted limits. Emissions from the Kings Mountain facility would be minimized through implementation of state-of-the-art technology. Both facilities have always complied with their air operating permits, and there are no barriers to impede future compliance.

In accordance with their air operating permits, both facilities meet all ambient air quality standards. There are no Class I areas nearby either facility and because the facilities would emit less than 100 tpy of PSD-regulated pollutants (i.e., the threshold for a major source [40 CFR Part 52.21]), they would have a negligible impact to Class I and II areas. Although there are sensitive receptors nearby both facilities, the manufacturing process at both facilities is enclosed. Chemetall has demonstrated through its applications for air operating permits that dispersion of air pollutants would be limited and would not appreciably deteriorate surrounding air quality. Overall, only minor adverse impacts to air quality are expected to occur at either of the Chemetall facilities as a result of the proposed projects.

3.2.1.2.3 Cumulative Impacts

Other than the proposed projects at Kings Mountain and Silver Peak, no other projects are planned. Therefore, no reasonably foreseeable actions have been identified that would interact with the proposed projects to generate cumulative adverse impacts.

3.2.1.2.4 Proposed Mitigation Measures

Kings Mountain

During construction, typical mitigation measures to minimize air quality issues caused by fugitive dust and tailpipe emissions would include the following:

- Require all construction crews and contractors to comply with the State regulations for fugitive dust control during construction.
- Maintain the engines of construction equipment according to manufacturers' specifications.
- Minimize the idling of equipment while the equipment is not in use.
- Implement reasonable measures, such as applying water to exposed surfaces or stockpiles of dirt, when windy or dry conditions promote problematic fugitive dust emissions. Adhering to these best management practices (BMPs) would minimize any fugitive dust emissions. Adhering to mitigation measures and BMPs would reduce the adverse impacts from fugitive dust emissions.

During operations at the Chemetall facility, actions would be taken to ensure that the facility meets the requirements of its Title V permit. Because of the control devices used on the equipment and BMPs employed at the facility, the Kings Mountain facility currently and historically has been in full compliance with its air quality operating permits.

Silver Peak

During construction, typical mitigation measures to minimize air quality issues caused by fugitive dust and tailpipe emissions would include the following:

- Require all construction crews and contractors to comply with the State regulations for fugitive dust control during construction.
- Maintain the engines of construction equipment according to manufacturers' specifications.
- Minimize the idling of equipment while the equipment is not in use.
- Implement reasonable measures, such as applying water to exposed surfaces or stockpiles of dirt, when windy or dry conditions promote problematic fugitive dust emissions. Adhering to these BMPs would minimize any fugitive dust emissions. Adhering to mitigation measures and BMPs would reduce the adverse impacts from fugitive dust emissions.

During operations at the Chemetall facility, actions would be taken to ensure that the facility meets the requirements of its air operating permit. Because of the control devices used on the equipment and BMPs employed at the facility, historical data show actual emissions are below permitted limits. For its operating permit, the facility requested and demonstrated that it could meet the Federally-enforceable emissions cap, thereby ensuring that the facility would comply with all applicable requirements and not cause deterioration to the area's air quality.

Carbon Footprint

Both North Carolina and Nevada continue to experience increases in GHG emissions at a rate faster than the nation as a whole. In 2000, on a gross emissions consumption basis (i.e., excluding carbon sinks), North Carolina accounted for approximately 180 million metric tons (MMt) of CO_2 emissions, an amount equal to 2.5 percent of total United States GHG emissions. From 1990 to 2000, North Carolina's gross GHG emissions were up 33 percent, while national gross emissions rose by 17 percent, during this period. While North Carolina forests are a

net carbon sink, the principal sources of North Carolina's GHG emissions are electricity use (including electricity imports) and transportation, accounting for 42 percent and 29 percent of North Carolina's gross GHG emissions in 2000, respectively (CCS, 2007).

Analysis of Nevada's GHG emissions indicates that for 2005 Nevada's statewide emissions totaled approximately 56.3 million metric tons of carbon-dioxide equivalents ($MMtCO_2e$), an amount approximately equal to 0.8 percent of total U.S. GHG emissions in that year. CO_2 represented approximately 91 percent of Nevada's GHG emissions, with the rest of the GHGs representing approximately 9 percent (NDEP, 2008b). Together, the combustion of fossil fuels for electricity and transportation accounted for approximately 78 percent of Nevada's gross GHG emissions. Emissions in the residential, commercial, and industrial sectors, most of which are associated with space and process heating, constituted approximately 12 percent of total emissions. Industrial process emissions (derived from non-combustion based emissions) comprised another 5 percent of emissions, and the emissions associated with agriculture, landfills and wastewater management facilities along with emissions from the fossil fuel industry together accounted for the remaining 6 percent (NDEP, 2008b). Between 1990-2005, Nevada's emissions grew from 34.1 MMtCO2e to 56.3 MMtCO2e, for an increase of approximately 65 percent, as compared to 16.3 percent growth in U.S. GHG emissions during the same period.

During construction, both Chemetall facilities would generate a minor contribution to GHGs due to the CO_2 emissions from construction equipment. During operations, the Kings Mountain facility estimates an increase of CO_2 emissions over current rates as a result of combustion of natural gas for the generation of steam for the usage in the new LiOH facility. Steam is the main heating medium for the production of the LiOH. The new *Final Mandatory Reporting of Greenhouse Gases Rule*, which became effective in December 2009, would not be applicable to either of the Chemetall facilities because neither facility would emit 25,000 mtpy or greater.

The transportation sector's primary carbon footprint continues to increase. The manufacture of EDV batteries and components would potentially increase production of electric vehicles in the United States. Electric vehicles emit no tailpipe pollutants; therefore, they can provide significant air-quality benefits to targeted regions (DOE, 1999). Overall, there would be beneficial cumulative impacts on climate change as the proposed projects would help the viability of the commercial market for electric vehicles; thereby reducing the carbon footprint of the transportation sector.

3.2.2 Solid and Hazardous Wastes

3.2.2.1 Affected Environment

3.2.2.1.1 Kings Mountain

The major materials used at the site include sand tailings, lithium carbonate, various salts, and acids (Table 3.2.2-1).

Onsite, there is a fueling station that has two, 1,000-gallon ASTs that store diesel and gasoline. There is also a 550-gallon AST that stores used oil (Chemetall, 2007a). These tanks are covered with a roof. The facility has three acid bulk ASTs. The tanks contain hydrochloric acid (35 percent), hydrobromic acid (63 percent), and sulfuric acid (93 percent); in addition, there is a 500-gallon propane tank and a 1,000-gallon propane tank. The acid tanks have secondary containment that can hold the entire contents of the tanks (Chemetall, 2007a). Other materials are stored in ASTs, 55-gallon drums, gas cylinders, or other containers inside the facility. The facility has a Spill Prevention Countermeasures and Control (SPCC) Plan that was approved in September 2008 (Chemetall, 2007a). Due to the quantity of argon stored at the facility, the facility must comply with Emergency Planning and Community Right-to-Know Act (EPCRA) requirements and submit an Emergency and Hazardous Chemical Inventory Form (Tier II form) to the Local Emergency Planning Committee (LEPC), the State Emergency Response Commission (SERC) and the local fire department annually. The facility's most recent Tier II form for reporting year 2009 was submitted to LEPC, SERC and local fire departments on February 10, 2010.

Table 3.2.2-1. Quantities of Materials Stored on Site – Kings Mountain Facility

Chemical	Maximum Quantity [1,2] On site (pounds)
Tailings Sand	1 billion – >1billion
Lithium carbonate	1,000,000 – 9,999,999
Lithium chloride, lithium hydroxide monohydrate, lithium bromide, hydrobromic acid, hydrochloric acid solution	100,000 – 999,999
Argon, carbon dioxide, tetrahydrofuran, lithium, lithium molybdate, manganese t-butoxide, sabalith, tetrohydrofuran &methyl magnesium chloride	10,000 – 99,999
n-Hexane, sulfuric acid	1,000 – 9,999

1. EPA, 2009e
2. Chemetall, 2009d. SARA Title II report. (Note: Submission of Tier II forms is required by Title III of the 1986, Section 312. The purpose of the Tier II form is to provide State and local officials and the public with specific information on hazardous chemicals present at the facility during the past year.)

The NCDENR, Division of Waste Management, implements North Carolina's hazardous waste and solid waste management programs and enforces the hazardous and non-hazardous waste management rules. Hazardous waste must be handled in accordance with North Carolina Administrative Code (NCAC) Chapter 13 – Solid Waste Management Subchapter 13A – Hazardous Waste Management Section 0.1000, as well as all applicable Federal regulations under 40 CFR 260-268, 273, and 279 and 29 CFR 1910.

The facility is located in EPA Region 4 and is regulated as a small quantity generator of hazardous waste (which means the facility generates more than 220 pounds, but less than 2205 pounds, of hazardous waste per month) (EPA Identification number NCD003915741) under Resource Conservation and Recovery Act (RCRA) regulations. Table 3.2.2-2 lists wastes currently generated at the site. Wastes are collected and hauled off site by licensed contractors for off-site treatment, disposal, or recycling. The primary solid waste generated is calcium carbonate (5,685.5 tpy). The facility is researching alternatives for commercial use of calcium carbonate rather than disposal. Approximately 24 tpy of solid waste generated is not recycled.

Table 3.2.2-2. Wastes Generated at Kings Mountain Facility [1,2]

Waste	Disposal Method
Various solvents (not otherwise specified)	Off-site disposal
Used Oil	Recycled off site
Scrap lithium	Recycled off site
Copper	Recycled off site; sold as scrap metal
Hexane	Recycled within process
Misc. trash /solid waste (not otherwise defined)	Off-site landfill or sold to cement factory

1. Chemetall, 2007b
2. Chemetall, 2009a

An asbestos survey performed in 1993, identified asbestos containing material (ACM) in floor tile in the Main Office and Battery Building, as well as in the transite table tops (laboratory benches) in the organic laboratories. One transite hood and a bench top were removed in 2001. Piping between the Stokes Rotary Dryer and the Vacuum Jets on the roof are assumed by the facility to contain asbestos due to the age of the piping (installed originally pre-1970). According to facility records, the ACM is in good condition and is nonfriable (Chemetall, 2007a).

No known site investigations have been performed at the property. The site is not listed on the EPA's National Priority List (NPL), which designates high-priority cleanup sites under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), more commonly known as the Superfund Program. There are no known areas of contamination or Superfund sites within the immediate vicinity of the facility (EPA, 2009f,g,h).

3.2.2.1.2 Silver Peak

The major materials used at the site include lithium carbonate, various salts, and acids in quantities listed in Table 3.2.2-3. Materials are primarily stored in process tanks that contain lithium compounds in various strengths. There is a diesel fueling station onsite, as well as several water tanks and a hydrochloric acid tank system. The facility has a Hazardous Material Storage Permit (Permit no. 1144-2278) issued by the Nevada Fire Marshall. The facility also holds a Class 5 license (No. 5-4371-0) from the Nevada Board for the Regulation of Liquefied Petroleum Gas for its storage of liquefied petroleum gas (propane).

The site is located in EPA Region 9 and operates as a conditionally exempt small quantity generator (generates 22 pounds or less per month of hazardous waste, or 2 pounds or less per month of acutely hazardous waste) under RCRA regulations. The facility's EPA Identification Number is NVD045989902. The NDEP implements Nevada's hazardous waste and solid waste management programs and enforces the hazardous and non-hazardous waste management rules. Hazardous waste must be handled in accordance with NRS 459, as well as all applicable Federal regulations under 40 CFR 260-268, 273, and 279 and 29 CFR 1910.

The facility typically generates little or no hazardous waste. According to facility personnel the only recent generation of hazardous waste was for three mercury-contaminated charcoal filters. In the late 1990s, the facility purchased mercury laden government surplus lithium hydroxide monohydrate product to reprocess at the plant. In order to remove the mercury, the facility purchased charcoal filter canisters and installed them on several processing tank inlets. The surplus material was dissolved and passed through the liquor system, with the charcoal collecting the mercury as the fluid was processed (Chemetall, 2009e).

Table 3.2.2-3. Quantities of Materials Stored on Site – Silver Peak Facility

Chemical	Quantity (average daily amount onsite unless otherwise noted) (pounds) [1,2]
Lithium carbonate	25,000 (per year)
Lithium hydroxide solution	3,898,440
Lithium metal	140,000
Propane	59,999
Hydrochloric acid	51,460
Gasoline	23,324
Diesel fuel	10,500
Solvent (140-66/Safety Solvent)	800
Various paints and thinners	800
Mineral spirits	706
Acetylene	300
Ethylene glycol (used antifreeze)	300
Oxygen	275
Acetone	66

1. EPA, 2009e
2. Chemetall, 2008

The management of some hazardous waste at the facility is exempt from full regulation as hazardous waste if it is managed in accordance with 40 CFR Part 273, Standards for Universal Waste Management. Universal wastes generated at the facility include used oil, batteries, and fluorescent light bulbs.

All non-hazardous solid waste generated at the plant is disposed of in an on-site landfill. The landfill is permitted by the NDEP as a Solid Waste Mining Class 3 Waiver (Permit No. SWMI-06-05) that permits the facility to landfill 25,000 cubic feet per year (approximately 50,000 pounds). The facility currently has one active landfill cell that is 30 feet by 8 feet. Hazardous wastes and universal wastes are collected and transported off site for disposal or recycling in accordance with Federal, State, and local regulations.

No Phase I/II Environment Site Assessments have been performed at the facility; however, the facility is conducting on-site remediation for petroleum contaminated soil. Petroleum contaminated soil at the site resulted from spills, leaks, and drips of various petroleum hydrocarbon products used at the site. The facility prepared a Petroleum Contaminated Soil (PCS) Management Plan (June 2009) that documents spills at the site from 1997 to 2006. The largest spill was in 1997 for 2,400 gallons of No. 4 fuel oil that resulted from a valve failure. The spill occurred in January and due to weather conditions, fortunately, 1,600 gallons were recovered and reused at the facility and 800 gallons were recycled off site by a recycler. A 200-gallon spill of diesel fuel occurred in 2001. Seven other spills at the site were documented to be less than 20 gallons of gasoline, oil, or diesel fuel (Chemetall, 2009b).

The facility currently operates two bioremediation cells for the treatment of hydrocarbon contaminated soil under General Permit No. GNV041995, HGP20, issued in 1995. The facility conducts bi-annual sampling of its bio-remediation facility. The most recent soil samples were collected from two individual cells in December 2008. Composite soil samples were analyzed for total petroleum hydrocarbons (TPH). The sampling results indicate concentrations of 494 ppm in C10-C22 and 500 ppm in C22-C36 in the sample from the SR Biopad. The second analysis indicates concentrations of 1,920 ppm in C10-C22 and 5,380 ppm in C22-C36 in the sample from the CFC Biopad (Chemetall, 2009d). Sampling results since 1997, show a trend of decreasing concentrations of diesel and oil in the CFC Biopad until December 2007 (257 ppm (diesel) and 279 ppm (oil)) but then increasing in samples collected in June 2008 (3,270 ppm (diesel) and 2,600 ppm (oil)) and in December 2008 (composite total TPHs ranging from 1,920 ppm to 5,380 ppm). In the SR Biopad, concentrations of diesel showed a decreasing trend since 1997. Oil concentrations in the SR Biopad generally decreased until 2004, but showed an upward trend from 2005 to 2007, with concentrations ranging from 1,050 ppm to 3,560 ppm during this time (Chemetall, 2009f).

In correspondence with the NDEP in June 2009, Chemetall Corporation submitted its PCS Management Plan to replace their existing permit (No. GNV041995). The facility has been in correspondence with the NDEP since June 2009, regarding their PCS Management Plan and permit renewal.

The site is not listed on the EPA's NPL, which designates high-priority cleanup sites under CERCLA, more commonly known as the Superfund Program. There are no known off-site properties with areas of contamination or Superfund sites within the immediate vicinity of the facility (EPA, 2009i,j,k)

3.2.2.2 Environmental Consequences

3.2.2.2.1 No Action Alternative

Kings Mountain

Under the No Action Alternative, the facility would continue its current operations and would generate the same types and quantities of hazardous and non-hazardous wastes. Wastes would continue to be collected and transported for off-site disposal or recycling in accordance with Federal, State, and local regulations.

Silver Peak

Under the No Action Alternative, the facility would continue its current operations and would generate the same types and quantities of hazardous and non-hazardous wastes. Hazardous waste and universal wastes would continue to be collected and transported for off-site disposal or recycling in accordance with Federal, State, and local regulations. Non-hazardous waste would continue to be placed in the on-site landfill. The facility would continue to conduct bi-annual sampling of its bio-remediation facility and coordinate with the NDEP regarding its PCS Management Plan and permit renewal.

3.2.2.2.2 Proposed Project

Kings Mountain

Construction

Under Chemetall's proposed project, the existing facility would be renovated and extended two floors in height. New construction would include an 8,200 square foot addition that would be connected to the existing building at grade level for a packaging room, and a 15 feet wide by 60 feet long covered aisle-way that would be constructed between the new packaging room and the existing warehouse. There would be minor demolition activities to prepare for the new construction. All new construction would occur on previously disturbed land. If renovation is required of areas where ACM is present, the renovation would be completed in accordance with Federal and State regulations by a contractor certified to handle ACM. Minor amounts of solid waste and sanitary waste would be generated from the renovations and would be common construction-related waste streams. In-state or out-of-state landfills or recycling facilities would have the capability and capacity to accept these wastes. Proposed operations at the new facility would require additional materials from what the facility is currently using. A concrete walled tank farm containing six new ASTs would be erected adjacent to the proposed plant on previously disturbed land. Two ASTs would have a capacity of 13,700 gallons and would store weak lithium hydroxide solution. An additional two 18,900-gallon ASTs would store process condensate water and weak lithium hydroxide solution (weak liquor solution). The fifth AST (36,200 gallons) would serve as a strong liquor tank storing strong lithium hydroxide solution. The sixth AST (11,600 gallons) would store a neutralized waste water stream prior to disposal or recycling. The six ASTs would be sited adjacent to the existing building where the lithium hydroxide plant would be established within the processing plant boundaries. Tanks that are external to the building would be located in a contained (110 percent of largest volume) diked area. Any potential overfills would be conducted to a drain and sump via an overflow line sized for potential overfill rate. These systems would be monitored and an alarm sounded and equipment shut down in order to mitigate these potentials hazards as well as to alert operations to non-normal situations. The addition of the six ASTs would require the facility to update its SPCC Plan to include the capacity and location of each AST, the potential for a release from one of the ASTs, and measures to be taken to avoid a release to the environment and to respond if a release should occur. If any of these materials would be stored in excess of 10,000 pounds, the facility would be required to submit a Tier II form to the LEPC, SERC and local fire departments in accordance with EPCRA regulations. Underground storage tanks would not be constructed for the proposed project. Construction of the proposed project would have a minor impact on solid and hazardous waste.

Operations

Once operational, the quantity of hazardous and non-hazardous waste generated at Chemetall's Kings Mountain facilities would increase, but the types of wastes would be similar to the waste streams currently generated there. Lithium carbonate feed stock would be imported from Chemetall's facility in La Negra, Chile and from Chemetall's facility in Silver Peak, Nevada. Lithium waste streams from the Kings Mountain operation would be concentrated and recycled internally, or it would be recycled at Silver Peak or another Chemetall facility. Potentially acidic streams of process wastewater would be neutralized in the 11,600 gallon AST prior to release to the sewer or prior to transport off site to an approved liquid waste disposal facility. Other wastes generated would be common industrial wastes that would be accepted by treatment, storage, and disposal (TSD) facilities. Although specific TSD facilities have not been identified, it is likely that Chemetall would use TSD vendors currently accepting waste from the facility. RCRA waste would not be treated or disposed of onsite. The facility

currently operates as a small quantity generator of hazardous waste regulated by Federal and State regulations. An increase of hazardous waste generated could be managed with adequate accumulation area(s) and collection for off-site transport, storage, and disposal. If new operations cause the facility to generate more than 2,200 pounds (1,000 kilograms) of hazardous waste or more than 2.2 pounds (1 kilogram) of acute hazardous waste per calendar month, the facility would be regulated as a large quantity generator of hazardous waste and must comply with applicable Federal and State regulations.

Non-hazardous waste would be generated in quantities above those currently generated. Chemetall estimates that 50 tpy of non-hazardous waste would be generated. The handling and storage of non-hazardous waste would be similar to current operations, namely, the waste would be collected in containers, dumpsters, or large cloth bags for off-site disposal or for recycling. Operations of the proposed project would have a minor impact on non-hazardous and hazardous wastes generation rates and management.

Silver Peak

Construction

Under Chemetall's proposed project, existing lithium brine ponds would be expanded through recovering old ponds and rebuilding the dikes (earth work). The expansion and recovering of the ponds would require the dredging of deposits of salt and "muds" ~~(sand mixed with magnesium and calcium sludges)~~. The dredged material would be placed onsite in the Lime Solids Pond. Construction of new brine production wells would require soil placement for drill pads. Dikes would be built from on-site materials; therefore, no additional land disturbance or acquisition of new land is required for this action (Chemetall, 2009a). Modifications to the existing carbonate plant would generate non-hazardous waste that would be placed in the on-site landfill. Construction of the proposed project would have a negligible impact on non-hazardous and hazardous wastes.

Operations

Once operational, the quantities of hazardous and non-hazardous wastes generated could increase, but these waste streams would be similar to those currently generated. Wastes that would be generated would be common industrial wastes. The facility has a permit to operate an on-site landfill for the non-hazardous wastes. Chemetall estimates that 5 tpy of additional non-hazardous waste would be generated (Chemetall, 2009a), and the on-site landfill has the capacity to accept this waste. The quantity and type of any additional hazardous waste that would be generated during operations of the proposed project would be acceptable to TSD facilities. Although specific TSD facilities have not been identified, it is likely that Chemetall would use TSD vendors currently accepting waste from the facility. RCRA waste would not be treated or disposed of onsite. The plant currently operates as a Conditionally Exempt Small Quantity Generator of hazardous waste regulated by Federal and State regulations; therefore, an increase of hazardous waste generated could be managed with adequate accumulation area(s) and collection for off-site TSDs. If new operations cause the facility to significantly increase the amount of hazardous waste generated, the facility's regulatory status could change to either a Small Quantity Generator or a Large Quantity Generator of hazardous waste. If their generator status changes, the facility would have to comply with applicable Federal and State regulations.

3.2.2.3 Cumulative Impacts

Other than the proposed projects at the Chemetall facilities in Kings Mountain and Silver Peak, no other projects are planned. Therefore, no reasonably foreseeable actions have been identified that would interact with the proposed project to generate cumulative adverse impacts.

3.2.2.4 Proposed Mitigation Measures

Kings Mountain

Construction

During construction, preventative measures such as fencing around the construction site, establishing contained storage areas, and controlling the flow of construction equipment and personnel would reduce the potential for a release of a hazardous substance. In the event that a release occurs, immediate action would be taken to contain and clean up the released material in accordance with Federal, state, and local regulations.

Measures would be taken to ensure worker safety concerning exposure to ACM during renovations. If renovation occurs in areas where ACM is present, the facility would ensure that ACM removal or repair is conducted by a contractor certified in the handling of ACM.

Operations

Hazardous waste materials would be sent off site for recycling, or treated and disposed of at a hazardous waste disposal facility or landfill. As a Small Quantity Generator of hazardous waste, the facility must adhere to Federal and State regulations for the safe handling and disposal of hazardous and non-hazardous waste generated at the facility. An updated SPCC Plan would address the potential for a release from one of the five new ASTs proposed and would include appropriate procedures to follow in the event of a release to the environment.

Silver Peak

Construction

During construction, preventative measures such as fencing around the construction site, establishing contained storage areas, and controlling the flow of construction equipment and personnel would reduce the potential for a release of a hazardous substance. In the event that a release occurs, immediate action would be taken to contain and clean up the released material in accordance with Federal, State, and local regulations.

Operations

Any hazardous waste generated at the facility would be sent off site for recycling, or treated and disposed of at a hazardous waste disposal facility or landfill. As a Conditionally Exempt Small Quantity Generator of hazardous waste, the facility must adhere to Federal and State regulations for the safe handling and disposal of hazardous and non-hazardous waste generated at the facility. All non-hazardous solid waste generated at the plant would be disposed of in an on-site permitted landfill.

Site remediation for petroleum contaminated soil is ongoing at the facility. Chemetall has a PCS Management Plan (June 2009) and operates two bioremediation cells for the treatment of hydrocarbon contaminated soil.

3.2.3 Human Health and Safety

3.2.3.1 Affected Environment

3.2.3.1.1 Kings Mountain

The principal hazards associated with Chemetall's existing plant operations are contained within buildings and secure areas of the property. The Casting Facility Hazard Assessment was updated September 22, 2008 and outlines potential hazards associated with the melt area, dry rooms, and other areas of the facility, as well as safety procedures and personal protective equipment to be used. The greatest sources of hazard associated with the facility include the high temperatures (482 °F) required to maintain lithium in a molten state, as well as the potential for chemical burns from sulfamic acid and lithium hydroxide. The Hazard Assessment also notes that lithium presents a potential fire, thermal (when heated), and chemical hazard when not contained within the drums, tanks, and lines of the system. Furthermore, the reactive nature of lithium mandates that no water be permitted in the work areas other than under controlled conditions. Some additional hazards associated with the

current production of lithium chloride and lithium bromide, include chemical burns from hydrochloric and hydrobromic acids. Emergency Control Plans are in place, and all employees are trained to respond appropriately in the event accidental spills of either acid were to occur.

Chemetall maintains a Safety Plan for the Kings Mountain facility (Chemetall, 2009a).

3.2.3.1.2 Silver Peak

Chemetall prepared a Safety Manual that includes an Emergency Response Plan for the Silver Peak facility in June 1999, which was last revised in August 2007 (Chemetall, 2007b). The plan provides a risk and vulnerability assessment that rates hazards from low to high for probability and severity. The greatest hazards would be associated with a propane tank failure or a boiler explosion, which were both rated high for severity but low for probability. Hazards rated as having both moderate probability and moderate severity include the potential for a propane line failure, a hydrochloric acid spill, and a hydroxide spill (either solution or powder). The area has a low probability for earthquake hazards. The plan outlines safety procedures, communications, and response procedures, including evacuation procedures, to protect workers from hazardous conditions. The facility's Safety Manual addresses the safe handling of materials, including hydrochloric acid, lithium carbonate, lithium hydroxide monohydrate, and lithium hydroxide anhydrous. The Safety Manual describes potential hazards associated with handling these and other materials as well as the personal protective equipment necessary when handling the materials, emergency response actions to be followed in the event of a release, and spill containment and control if a spill of a liquid material should occur. The Safety Manual also includes a Site Security Plan that outlines procedures to follow to prevent unauthorized access to the property.

The facility is located in an unoccupied area separated from residential communities. ~~Evaporation ponds and~~ *The* process facilities *and some of the ponds* are surrounded by security fencing to restrict public access ~~to pond materials~~. The facility is below regulatory thresholds for an Air Risk Management Plan.

3.2.3.2 Environmental Consequences

3.2.3.2.1 No Action Alternative

Under the No Action Alternative, plant construction and operations would not occur; therefore, there would be no change to the potential for impacts on human health and safety at the Kings Mountain or Silver Peak sites.

3.2.3.2.2 Proposed Project

Kings Mountain

The proposed project would add a process to convert lithium carbonate to lithium hydroxide comparable to processes already existing at the Kings Mountain facility and addressed in the Safety Plan. Any new safety issues would be addressed in the Safety Plan and in a Hazard Assessment to ensure that appropriate procedures and equipment would be provided to protect workers. In comparison to the risks associated with existing processes as described in Section 3.2.3.1.1 above and already addressed in the Safety Plan, the additional processes and facilities would cause a minor relative increase in risks to human health and safety, primarily affecting plant employees.

Lithium hydroxide monohydrate is caustic and can cause severe irritation and corrosive damage to the skin, eyes, and tissues of the respiratory system. Care must be taken to avoid contact with skin, eyes, and the body in general. Hazards include chemical burns in the solid form and both chemical and thermal burns in the solution phase (processing is mostly done at temperatures above 140 °F). Inhalation of airborne lithium hydroxide monohydrate dust may severely irritate or damage the tissues of the eyes, nose, and respiratory system. Symptoms of such overexposure can include excessive coughing (potentially to the point of vomiting), sneezing, and a sore throat. Inhalation of relatively large quantities of lithium hydroxide monohydrate may damage the tissues of the respiratory system, which can lead to the development of breathing difficulty, chemical pneumonia, and pulmonary edema (a potentially life-threatening accumulation of fluid in the lungs). Severe inhalation

overexposure may be fatal. In comparison, lithium carbonate is a minor irritant to mucus membranes for some individuals. Repeated exposure to the skin can also lead to drying of the skin and contact dermatitis. Prior to start-up of the facility, Chemetall would perform a Hazard Assessment that would identify the appropriate personal protective equipment (PPE) to protect employees in the work environment. Chemetall would acquire the PPE and train employees in its proper use, care, and limitations.

The packaging of the lithium hydroxide monohydrate product would be highly automated and utilize good manufacturing practices with respect to dust collection and handling. Material bins and hoppers would have their own dust collection systems to mitigate fugitive dust exposure. Additionally, definition of required PPE would be based on current experience at the existing Chemetall operation in Silver Peak. In addition to the required PPE for general and specific tasks, the plant is being designed to minimize the potential operator contact with hazardous materials (i.e., automatic sampling of materials and on-line analysis of solutions). Additionally, a collection system for vapors from the hotter processing vessels would be installed to remove potentially irritating vapors from the building. Some operators on each shift would be additionally trained so that they can respond safely to any releases of the chemicals in the process, using preplanned procedures and the appropriate PPE. Personnel on each shift also would be trained in first aid, including cardio-pulmonary resuscitation.

Based on experiences at other facilities producing lithium hydroxide monohydrate, potential accidents include the following:

- Overfilling of vessels - Addressed in this facility by degree of automation, system interlocks, and alarms.
- Thermal and Chemical burns - Addressed via automated system design, operator training, required PPE and pre-startup Hazard Assessment and review.
- Lifting injuries (especially back strain) - Addressed via automated material handling systems and installation of assisted lifting equipment for maintenance requirements (i.e. monorails with hoists over heavy equipment, fork truck accessibility for moving materials and finished product, etc.).

Materials (lithium carbonate and slaked lime) are supplied in super sacks (also called maxisacks). Slaked lime is also supplied via pneumatic tanker trucks. The finished product is a dry powder stored in bags. Based on experience with existing lithium hydroxide monohydrate facilities, the most likely transport hazard is the puncture of a bag or several bags in a fork truck accident. Operator training and experience would help to minimize the potential for accidents. The facility has an existing forklift operator training and qualification program, providing qualified trainers for forklift operations. Additionally, the planned stretch-wrapping of the bagged materials would help to contain the potentially leaking material. Planned inspection of product prior to loading on trucks for shipment to customers would help avoid general public exposure to the product. Finished product would be shipped via truck in the following containers:

- 20-kilogram (kg) heat sealed, stretch-wrapped paper sacks; 1,000 kg per wooden pallet.
- 25-kg heat sealed, stretch-wrapped paper sacks; 1,000 kg per wooden pallet.
- 50-lb heat sealed, stretch-wrapped paper sacks; 2,000 lbs per wooden pallet.
- 100-kg plastic-lined fiber drums with sealed top.
- Various sized super sacks (340-kg to 1,000-kg) on wooden pallets

Because critical hourly or daily functions of strategic importance to the national economy are not reliant on plant operations, the King's Mountain facility is not considered a potential target for intentional destructive acts. Although the supply of lithium (hydroxide) compounds could be interrupted temporarily by a destructive act, the interruption would be relatively brief and would not be expected to have lasting effects on the economy. The plant is secured against public access and buffered by distance from residential areas. The potential for impacts of an intentional destructive act on human health and safety would be reduced through implementation of procedures in the Safety Plan.

Silver Peak

The proposed project would expand processes and facilities comparable to those existing at the Silver Peak location that are addressed in the Emergency Response Plan. The facility's Safety Plan addresses the safe handling of on-site materials and the appropriate procedures to follow in the event of an accidental release. Lithium carbonate, a material that would be used as part of the proposed project, is a slightly caustic material that can cause irritation to the skin and eyes. ~~The Silver Peak facility would incorporate lithium carbonate in to its Safety Plan~~*The Silver Peak facility's Safety Plan includes procedures for the safe handling, storage, and transport of lithium carbonate*. The potential for impacts would be limited to on-site employees who are trained in the proper handling and response procedures to follow; further, exposure would be avoided by the use of the personal protective equipment (e.g., gloves and goggles). Therefore, there would only be a low potential for impacts from exposure to materials handled at the Silver Peak facility would be expected.

Because of its remote location isolated from centers of population and because critical hourly or daily functions of strategic importance to the national economy are not reliant on plant operations, the Silver Peak facility is not considered a potential target for intentional destructive acts. Although the supply of lithium carbonate could be interrupted temporarily by a destructive act, the interruption would be relatively brief and would not be expected to have lasting effects on the economy. The potential for impacts of an intentional destructive act on human health and safety would be reduced through implementation of procedures in the Emergency Response Plan.

3.2.3.3 Cumulative Impacts

Other than the proposed projects at the Chemetall facilities in Kings Mountain and Silver Peak, no other projects are planned. Therefore, no reasonably foreseeable actions have been identified that would interact with the proposed project to generate cumulative adverse impacts.

3.2.3.4 Proposed Mitigation Measures

During construction at both the Kings Mountain and Silver Peak facilities, safety measures such as fencing around the construction site, establishing contained storage areas, and controlling the movement of construction equipment and personnel would reduce the potential for an accident to occur.

Both facilities would incorporate new operations into their Emergency and Safety Response Plan that would be implemented in the event of an emergency, including an unintentional release of materials to the environment.

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Office of the Governor
20301 Mail Service Center
Raleigh, NC 27699-0301

Mr. Allen Ratzlaff
U.S. Fish and Wildlife Service
Asheville Ecological Services Field Office
160 Zillicoa Street
Asheville, NC 28801-1082

Ms. Sharon Stack
Library Director
Kings Mountain Mauney Library
100 S Piedmont Avenue
Kings Mountain, NC 28086

Ms. Coleen Sullins
Director
Division of Water Quality, NCDENR
1641 Mail Service Center
Raleigh, NC 27699-1641

Dr. Donald van der Vaart
Chief, Air Permits Section
Division of Air Quality, NCDENR
1641 Mail Service Center
Raleigh, NC 27699-1641

Silver Peak

Ms. Nancy Boland
Chair
Esmeralda County Commissioners
P.O. Box 517
Goldfield, NV 89013

Mr. Alan Buehler
US Department of the Interior
Bureau of Land Management -- Tonopah
Supervisory Geologist
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1553 South Main Street
Tonopah, NV 89049

Mr. Skip Canfield
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State Land Use Planning Agency
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Tonopah, NV 89049 US Department of the Interior
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Permitting Supervisor
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Mr. D. Bradford Hardenbrook
Supervisory Habitat Biologist
State of Nevada
Department of Wildlife
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Head Librarian
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PO Box 430
Goldfield, NV 89013-0430

Head Librarian
Silver Peak Public Library
PO Box 128
Silver Peak, NV 89047-0128

Honorable Jim Gibbons
Governor of Nevada
State Capitol
101 N. Carson Street
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Honorable Dean Heller
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Mr. Alex Lanza
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Ms. Ann McPherson
Department of Energy Reviewers
Environmental Review Office, EPA
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San Francisco, CA 94105

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Nevada Natural Heritage Program
Richard H. Bryan Building
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Southern Region Mining Biologist
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Mr. Francisco Vega
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Mr. Robert D. Williams
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Nevada Fish & Wildlife Office
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Reno, NV 89502

Chief James Wright
State Fire Marshal
Nevada State Fire Marshal's Office
107 Jacobsen Way
Carson City, NV 89711

Mr. Andres Yaksic
(Address Unknown)
(DOE sent FONSI/EA via email)

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Appendix A

Agency Consultation

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

November 18, 2009

Ms. Pierina N. Fayish
DOE Project Manager
National Energy Technology Laboratory
P.O. Box 10940
MailstopB922/M218
Pittsburg, PA 15236

Dear Ms. Fayish:

Subject: Proposed Electric Drive Vehicle Battery and Component Manufacturing Facility, Kings Mountain, Cleveland County, North Carolina

In your letter of November 3, 2009, you requested our comments about the subject project. The following comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C.§4321 et seq.) and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

According to your letter, the Department of Energy's National Energy Technology Laboratory is proposing to fund the subject project under the American Reinvestment and Recovery Act. The proposed project is located in Cleveland County, North Carolina, south of Kings Mountain within the existing Chemtall Foote Corporation industrial park. The proposed project involves the construction of a manufacturing facility on about 20 acres within an existing manufacturing area. A draft environmental assessment is being prepared.

Endangered Species. According to our records and a review of the information you provided, no federally listed species or their habitats occur on the subject site. Therefore, we believe the requirements under section 7 of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of these identified actions that may affect listed species or critical habitat in a manner not previously considered, (2) these actions are subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified actions.

Erosion Control and Wetland/Stream Protection. The treatment of stormwater leaving the project area is a concern. We recommend installing and maintaining stringent measures to control erosion and sediment in order to prevent unnecessary impacts to aquatic resources downstream of the project site. Perimeter erosion-control devices should be installed prior to any on-the-ground activities. Frequent maintenance of these devices is critical to their proper function in order to minimize sediment discharge from the project site.

Impervious Surfaces/Low-Impact-Development (LID) Techniques. The expansion of urban/suburban/industrial areas creates impervious surfaces (such as roofs, roads, and parking lots) that collect pathogens, metals, sediment, and chemical pollutants and quickly transmit them (via stormwater runoff) to receiving waters. According to the Environmental Protection Agency, this nonpoint-source pollution is one of the major threats to water quality in the United States, posing one of the greatest threats to aquatic life, and is linked to chronic and acute illnesses in human populations from exposure through drinking water and contact recreation. Increased stormwater runoff also directly damages aquatic and riparian habitat, causing stream-bank and stream-channel scouring. In addition, impervious surfaces reduce groundwater recharge, resulting in even lower than expected stream flows during drought periods that can induce potentially catastrophic effects for fish, mussels, and other aquatic life. Accordingly, we recommend that all new developments, regardless of the percentage of impervious surface area they will create, implement stormwater retention and treatment measures designed to replicate and maintain the hydrograph at the preconstruction condition in order to avoid any additional impacts to habitat quality within the watershed.

We recommend the use of LID techniques, such as reduced road widths, grassed swales in place of curb and gutter, rain gardens, and wetland retention areas, for retaining and treating stormwater runoff rather than the more traditional measures, such as large retention ponds, etc. These designs often cost less to install and significantly reduce environmental impacts from residential development.

Where detention ponds are used, stormwater outlets should drain through a vegetated area prior to reaching any natural stream or wetland area. Detention structures should be designed to allow for the slow discharge of stormwater, attenuating the potential adverse effects of stormwater surges; thermal spikes; and sediment, nutrient, and chemical discharges. Also, because the purpose of stormwater control measures is to protect streams and wetlands, no stormwater control measures or best management practices should be installed within any stream (perennial or intermittent), wetland, or (when practicable) riparian area.

We also recommend that consideration be given to the use of pervious materials (i.e., pervious concrete, interlocking/open paving blocks, etc.) for the construction of roads, driveways, sidewalks, etc. Pervious surfaces minimize changes to the hydrology of the watershed and can be used to facilitate groundwater recharge. Pervious materials are also less likely to absorb and store heat and allow the cooler soil below to cool the pavement (thus preventing heated water from entering adjacent waterways). Additionally, pervious concrete requires less maintenance and is less susceptible to freeze/thaw cracking due to large voids within the concrete.

Stream Buffers

Natural, forested riparian buffers are critical to the health of aquatic ecosystems. They accomplish the following:

1. catch and filter runoff, thereby preventing nonpoint-source pollutants from reaching streams;
2. enhance the in-stream processing of both point- and nonpoint-source pollutants;
3. act as "sponges" by absorbing runoff (which reduces the severity of floods) and by allowing runoff to infiltrate and recharge groundwater levels (which maintains stream flows during dry periods);
4. catch and help prevent excess woody debris from entering the stream and creating logjams;
5. stabilize stream banks and maintain natural channel morphology;
6. provide coarse woody debris for habitat structure and most of the dissolved organic carbon and other nutrients necessary for the aquatic food web; and
7. maintain air and water temperatures around the stream.

Forested riparian buffers (a minimum 50 feet wide along intermittent streams and wetlands and 100 feet wide along perennial streams [or the full extent of the 100-year floodplain, whichever is greater]) should be created and/or maintained along all aquatic areas. Impervious surfaces, ditches, pipes, roads, utility lines (sewer, water, gas, transmission, etc.), and other infrastructures that require maintained, cleared rights-of-way and/or compromise the functions and values of the forested buffers should not, if at all possible, occur within these riparian areas.

Thank you for allowing us to comment on this project. Please contact Mr. Allen Ratzlaff of our staff at 828/258-3939, Ext. 229, if you have any questions. In any future correspondence concerning this project, please reference our Log Number 4-2-10-022.

cc:
Mr. Ron Linville, Western Piedmont Region Reviewer, North Carolina Wildlife Resources Commission, 3855 Idlewild Road, Kernersville, NC 27284-9180
Ms. Robin Griffin, Potomac-Hudson Engineering, 7830 Old Georgetown Road, Suite 200, Bethesda, MD, 20814

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NCDENR

North Carolina Department of Environment and Natural Resources
Division of Natural Resources Planning and Conservation

Beverly Eaves Perdue
Governor

Linda Pearsall
Director

Dee Freeman
Secretary

November 16, 2009

Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Road, Suite 220
Bethesda, MD 20814

Subject: Request for Informal Consultation under Section 7 of the Endangered Species Act

Dear Robin Griffin:

The only NC Natural Heritage Program records of rare species, significant natural communities, significant natural heritage areas, or managed areas within two miles of the project area are associated with Crowders Mountain State Park. The record of Bear Oak (Quercus ilicifolia) referenced in your letter of 3 November 2009 is based on observations of this species at Crowders Mountain State Park, which is approximately 2 miles to the east of the American Reinvestment and Recovery Act Electric Drive Vehicle Battery and Component Manufacturing Facility project area.

Although no rare species have been reported from the immediate project area, the use of Natural Heritage Program data should not be substituted for actual field surveys, particularly if the project area contains suitable habitat for rare species, significant natural communities, or priority natural areas.

We appreciate your interest in Natural Heritage Program data. If you have any questions or need additional information, please contact me at (919) 715-8700.

Sincerely,

Misty Buchanan

Misty Buchanan, Botanist
Natural Heritage Program

cc: Pierina Fayish, DOE Project Manager

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-715-8700 \ FAX: 919-715-3060 Internet: www.ncnhp.org

JIM GIBBONS
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER
Director

RICHARD L. HASKINS II
Deputy Director

SOUTHERN REGION OFFICE
4747 Vegas Drive
Las Vegas, Nevada 89108
(702) 486-5127 · Fax (702) 486-5133

March 17, 2010

NDOW-SR #: 10-270
LVO-10-055

Robert Naumann, Project Manager
Potomac-Hudson Engineering, Inc.
7830 Old Georgetown Road, Suite 220
Bethesda, MD 20814

Re: Request for Sensitive Species Information for a Department of Energy Project near Silver Peak, Nevada Located in All Sections of Township 2 South, Range 39 East

Dear Mr. Naumann:

The Nevada Department of Wildlife (Department) did not identify any wildlife occurring in the project area which are protected under the federal Endangered Species Act of 1973 (ESA), as amended, or classified by the State of Nevada as protected and further classified as sensitive, threatened, or endangered. Of note, our records search for birds protected under the Migratory Bird Treaty Act was limited to raptors, but a variety of other species (e.g. passerines) are expected to occur in the project area. The nearest raptor nests occur outside of the project area in Sections 25 and 34 of T2S, R38E. Further, the project overlaps with the distributional range of mule deer and desert bighorn sheep in Sections 3-10, 15-22 and 28-31 of T2S, R39E.

Because the federal Endangered Species Act includes species beyond the mandate of the Department, the U.S. Fish and Wildlife Service should be contacted for a complete list of animal and plant species which potentially occur in the project area. The nearest office can be contacted at:

U.S. Fish and Wildlife Service
Nevada Ecological services
4701 N. Torrey Pines Drive
Las Vegas, NV 89130
(702) 515-5230

Thank you again for this input opportunity. Should there be any question please contact Biologist Tracy Kipke at (702) 486-5127 x3612 or by e-mail at tkipke@ndow.org.

Sincerely,

D. Bradford Hardenbrook
Supervisory Habitat Biologist

TK/DBH
Cc: NDOW, Files

ALLEN BIAGGI
Director

Department of Conservation
and Natural Resources

JENNIFER E. NEWMARK
Administrator

JIM GIBBONS
Governor

Nevada Natural Heritage Program
Richard H. Bryan Building
901 S. Stewart Street, Suite 5002
Carson City, Nevada 89701-5245
U.S.A.

tel: (775) 684-2900
fax: (775) 684-2909

Nevada Natural Heritage Program

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Nevada Natural Heritage Program

http://heritage.nv.gov

22 February 2010

Pierina N. Fayish
U.S. Department of Energy
National Energy Technology Laboratory
PO Box 10940
Mailstop B922/M218
Pittsburgh, PA 15236

RE: Data request received 22 February 2010

Dear Mr. Fayish:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or at risk plant and animal taxa recorded within or near the Chemetall Foot, Silver Peak Project. We searched our database and maps for the following, a five kilometer radius around:

Township 02S Range 39E Sections All

There are no at risk taxa recorded within the given area. However, habitat may be available for: the Eastwood milkweed, *Asclepias eastwoodiana*, a Nevada Bureau of Land Management Sensitive Species; the squalid milkvetch, *Astragalus serenoi* var. *sordescens*, a Taxon determined to be Imperiled by the Nevada Natural Heritage Program (NNHP); and the Candelaria blazingstar, *Mentzelia candelariae*, a Taxon determined to be Vulnerable by the NNHP. We do not have complete data on various raptors that may also occur in the area; for more information contact Chet VanDellen, Nevada Department of Wildlife at (775) 688-1565. Please note that all cacti, yuccas, and Christmas trees are protected by Nevada state law (NRS 527.060-.120), including species not tracked by this office.

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist/Data Manager

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

December 10, 2009

Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Road
Suite 220
Bethesda, MC 20814

Re: Advanced Battery Supplier Manufacturing Facilities Environmental Assessment, Chemetall Foote, Kings Mountain, Cleveland County, ER 09-2792

Dear Ms. Griffin:

We have received notification of the above project from National Energy Technology Laboratory.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,

Renee Gledhill-Earley

Peter Sandbeck

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS
State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701
(775) 684-3448 • Fax (775) 684-3442
www.nvshpo.org

JIM GIBBONS
Governor

MICHAEL E. FISCHER
Department Director

RONALD M. JAMES
State Historic Preservation Officer

December 10, 2009

Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Road Suite 220
Bethesda MD 20814

RE: Expansion of the Silver Peak Lithium Carbonate Manufacturing Facility, Esmeralda County. Undertaking #2010-081.

Dear Robin Griffin:

The Nevada State Historic Preservation Office (SHPO) reviewed the subject undertaking. In order to determine the archaeological sensitivity of the project area, the SHPO consulted the online statewide archaeological inventory (NVCRIS). According to these records, the project area has not been inventoried for cultural resources and no sites have been previously recorded in the vicinity of the project area. Given the disturbances visible in the aerial photos included with your submission, it is unlikely that an intact historic property would be present in the project area.

The SHPO concurs with the U.S. Department of Energy determination that no historic properties will be affected by the subject undertaking.

If buried and previously unidentified resources are located during project activities, the SHPO recommends that all work in the vicinity cease and this office be contacted for additional consultation per 36 CFR 800.13.b.3. and NRS 383.150-383.190.

If you have any questions concerning this correspondence, please contact me by phone at (775) 684-3443 or by e-mail at Rebecca.Palmer@nevadaculture.org.

Sincerely,

Rebecca L Palmer

Rebecca Lynn Palmer
Review and Compliance Officer, Archaeologist

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Appendix B

Public Comments on the Draft Environmental Assessment and Responses from the Department of Energy and Chemetall Foote Corporation

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Email from Ms. Nancy Boland, Chair of the Esmeralda County Commissioners, providing comments on the Draft Environmental Assessment for Chemetall Foote Corporation Electric Drive Vehicle Battery Component Manufacturing Initiative for the Silver Peak, Nevada site, dated June 8, 2010

Dear Mr Gwilliam;

Our official comments on this draft EA are attached as PDF files.

Nancy Boland

Esmeralda County, Nevada Comments: DOE/EA-1715D " Draft Environmental Assessment for Chemetall Foote Corporation Electric Drive Vehicle Battery and Component Manufacturing Initiative Kings Mountain, NC and Silver Peak, NV"

Section 2.2 "Lithium waste streams from Kings Mtn would be concentrated and recycled internally at Kings Mtn., Silver Peak, or other Chemetall Facilities."

Comment: What are these waste streams?

Section 2.3.2 " During the site visit conducted on October 29, 2009, Chemetall's personnel indicated that several geothermal exploration firms may be seeking future claims seeking future claims in this valley, but this was not verified."

Comment: Even at this time, Sierra Geothermal Power, Inc and RAM Power, Inc. had existing geothermal leases with the BLM in the Clayton Valley. This could have easily been verified by consultation with BLM.

Section 3.1.2

- Noise "There would be no change from the current maximum of two truck trips per day."

-Traffic and Transportation

- "The main arterials near the Silver Peak Site are US Hwy 95 and 6 to the east and north and Nevada State Routes 265 and 266 to the west and south, respectively. Silver Peak is approximately 20 miles from each. Nevada State Route 265 connects Silver Peak to US Highways 95 and 6."
- "Traffic impacts from construction trucks and worker vehicles would be short term and easily accommodated within existing roadway and intersection capacity."
- "The project is not expected to require any change from the current maximum of two truck trips per day off site"

Comments:

1. Much of the truck traffic to and from the Silver Peak facility uses Esmeralda County Road #196(Silver Peak Road) which intersects US 95 north of Goldfield Nevada. Maintaining this 20 mile road which is partially paved and part dirt is a major expense to Esmeralda County, costing $59,800 annually just to patch and grade. This road is not engineered to accommodate heavy vehicles. The road which is at the point of crumbling from the heavy trucks and high volume of traffic it is exposed to needs to be entirely overlaid which would cost Esmeralda County an

estimated 4.5 million dollars. Chemetall Foote should assist the county in the cost to maintain the Silver Peak road in a condition that would make it safe. We recommend a contribution of $60,000 annually.

2. The Silver Peak facility employs a considerable number of "non town of Silver Peak residents" on a regular basis who commute from Tonopah, Goldfield and Dyer, Nevada. Commuters from Goldfield use County Road #196 described above. Commuters from Dyer often use a County dirt road "Coyote Road". If the company does not draw new staff from the residents of Silver Peak, or encourage new hires to reside in the town there will be an impact on transportation and traffic.
3. This plant when in full operation generates way more total heavy truck traffic than two trips per day. The document should correctly state both incoming and outgoing traffic.

-Socioeconomics:

- "Approximately 10 permanent employees are expected to be hired" It is assumed that the majority of the workforce would be drawn from local candidates in Esmeralda County; therefore no increase in population or need for housing is anticipated"
- Construction workers employed for the construction period are assumed to be currently employed and residing and paying taxes in the Esmeralda County area.

Comment:

1. Chemetall Foote has been drawing employees from Tonopah, in Nye County (which is in the "area" and persons from outside of the Central Nevada Region. Employees from outside the area generally establish a temporary "second" home in this area and export the majority of their income outside the area. Those that live outside Esmeralda County do not pay property tax in this county.
2. Esmeralda County would welcome small increases to population and desires that Chemetall Foote fully utilize their available land and employee housing in the town of Silver Peak. This would have a beneficial impact on the county share of sales/use tax, gas tax, and the county owned municipal water system. This would also decrease the impact on county roads due to commuting.

-Groundwater

Comments:

1. What will be the anticipated annual use after the project is complete?
2. The NEV0070005 referred to was renewed in 2007. It exempts "not potable" brine waters from consideration. The background given for the permit also eludes that there is not interrelation between brine and fresh water in the basin.
3. The whole discussion of effect on groundwater is dismissed with the statement that the company has sufficient permitted use and that the Nevada State Engineer has not designated the basin. Basin 143 has a total estimated annual yield of 20,000 acre feet. The annual yield in the basin was last calculated by USGS in 1970. Chemetall alone holds

permits in excess of this recharge. In the period during which the company ceased their ground water pumping water levels in the municipal wells increased by several inches. When the Silver Peak facility was known as Cyprus Foote Mineral Company they prepared a report titled " Groundwater Supply Assessment of the Fresh Water Aquifer—Clayton Valley, Nevada Esmeralda County", dated September 2, 1998. When the report was prepared the company was withdrawing approximately 12,000 acre feet of brine water and 500 feet of fresh water annually. This report has the following findings and is included in total as an exhibit:

IV. Results and Conclusions

1) The present supply of groundwater from the three wells in the alluvial aquifer is being depleted at a rate, which exceeds recharge. Any additional pumping from the aquifer will only increase the depletion rate. The quality of the groundwater below the 4200-foot contour is suspected of being brine water or water of very poor quality. The concern is the intrusion of brine water into the fresh water aquifer which result would render both Esmeralda County's and CFM's fresh water wells useless.

2) Historic data used in conjunction with recent aquifer testing shows the aquifer to decline at a rate of .38 to 1.25 feet per year. The aquifer life is between 14 and 27 years depending on the method of analysis. Monitoring the future changing rate of decline is strongly recommended.

3) The aquifer properties associated with the regional bounding faults are unknown at this time, but are suspected of acting as leaky barriers and partially separating the brine and fresh water aquifers. The bounding faults have wells that are completed to the brine aquifer, the fresh water aquifer, and in the areas where the two are mixing. The water quality concentration of the brine aquifer is approximately 3 times that of sea water. The water quality of the fresh water varies seasonally from 650 to 1000 TDS (mg/l Total Dissolved Solids) which is relatively poor by EPA standards.

4) Aquifer characteristics used in this analysis pertain to the area where the three existing water supply wells are presently used. In order to determine the aquifer characteristics of the alluvial aquifer throughout the western extent of the Clayton Valley, much hydrogeologic data would have to be collected and analyzed. It is suspected that the aquifer properties change quite dramatically throughout the valley and are directly related to the structural features and major bounding faults.

5) Any additional pumping within the area of the CFM wells and the County well will stress the aquifer further causing an accelerated water level decline and possibly, rupture of the semi-leaky bounding faults.

The proposed project calls for an expansion of the pond system which would mean an increase in annual use and place additional stress on the basin. We want the points made in the above mentioned report addressed and total annual use of water after completion of the project included in the EA. Water levels in both the alluvium and playa areas of the Clayton Valley have been declining. Loss of the town municipal supply due to a drop in the water level or a decline in water quality caused by intrusion of brine water would be a disaster the county would not have the financial ability to fix

and the users of the water system would be unable to pay for. Mitigation should include a monitoring program that makes information public and provision of an alternative drinking water source for the community.

3.2.3.1.2

Comments:

1. There is no mention of the handling or inclusion of Lithium Metal in this section or for that matter any specific discussion of this substance anywhere in the EA even though it appears on the list of hazardous materials stored at the site. Storage and use of this substance is of concern to the community as it is "A Flammable solid, Corrosive, Causes eye and skin burns. Water-reactive. Reacts violently and or explosively with water, steam or moisture. May ignite or explode on contact with moist air. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. May cause central nervous system effects. May cause lung damage. Light sensitivity. May cause kidney damage. May cause pulmonary edema." (MSDS http://avogadro.chem.iastate.edu/MSDS/Li.htm) and has a number of potential health effects.
2. Does the plan include notification of the community in the event of an incident?
3. Not all ponds are fenced.
4. The process plant is within 1,000 ft of residences.

3.2.3.2.2

- "The Silver Peak facility would incorporate lithium carbonate in its safety plan."

Comment: Earlier in the document it is stated that this is already a component.

GROUNDWATER SUPPLY ASSESSMENT
of the FRESH WATER AQUIFER --
CLAYTON VALLEY, NEVADA
ESMERALDA COUNTY
CYPRUS FOOTE MINERAL COMPANY

September 2, 1998

CONTENTS

I. Introduction and Purpose for Investigation

During the past few months, Cyprus Foote Mineral Company (CFM) has been conducting a groundwater investigation of its fresh water aquifer due to a growing concern over declining water levels and potential impacts from the brine production. Lithium production from the brine aquifer within the Clayton Valley has been occurring since 1968. During this period, fresh groundwater has been produced from the western extent of the Clayton Valley which has been (and is) being used for milling water for the processing plant, domestic supply, and fire protection.

Hydrogeologic data collected during the last few months has been used to determine the relationship between the brine aquifer and the fresh water aquifer. The characteristics of each aquifer are quite different in terms of production capability, water quality, aquifer parameters, and aquifer life. CFM has a growing concern that any additional pumping in the fresh water aquifer may adversely affect the water-storing properties of the fault barrier. The fault barrier is believed to behave as a semi-leaky hydrogeologic barrier to the two aquifer systems.

Additional pumping on the fresh water side of the barrier would create a steeper gradient to the brine water aquifer which may eventually cause the fault barrier to rupture. The would contaminant the entire fresh water supply for both CFM and for the town of Silver Peak, as brine water will intrude into the fresh water aquifer.

Presently, there are three water supply wells that are being used for municipal and milling purposes. CFM has a primary well that is used everyday and a backup well that can be put into operation if the primary well fails. The other well is the Esmeralda County well, which is used everyday for use in the town of Silver Peak, Nevada.

The pumping water levels collected over the past 10 to 30 years for the three wells suggest that we are presently in a dewatering or mining situation. The water level has dropped at an average rate of approximately 1.25 feet per year (since 1986) in the CFM wells and approximately .38 foot per year (since 1975) in the county well. The principle concern at this time is not so much in the average rate of decline over time, but **rather in the increase of the rate of decline** over time.

Map 1 (Figure 1) is a General Location Map of the Clayton Valley and surrounding area. The map consists of two USGS 15' quad maps (Silver Peak & Lida Wash) and shows the topographic features of the area.
On the map, the locations of CFM's fresh water wells, the production wellfield, the county well, and Mineral Ridge's water rights applications are shown. The applications for diversion are approximately six miles south of the original locations to where the Esmeralda County well is located. The County well is located approximately ½ mile west of the CFM wells and about 2 miles west of the town of Silver Peak.

Map 2 (Figure 2) is a Water Table Map of the area showing the Clayton Valley drainage area, water table contours, the location of the brine aquifer, regional faults, spring locations, and well locations that were used to construct the map. The map is a 100,000 scale USGS topographic map (Goldfield) and is scaled out to match the satellite imagery.

II. Discussion of Groundwater Flow

Groundwater recharge to the Clayton Valley occurs by four different means:

1) Groundwater flow from the Big Smoky Valley located about 30 miles to the north;
2) Groundwater flow from the bedrock aquifer located to the west of Clayton Valley;
3) Underflow from both of the above-mentioned aquifers; and
4) Precipitation in the form of snow and rain during the winter and early spring months.

As groundwater migrates to the Clayton Valley, the water moves under a constant pressure gradient over a given distance. This pressure gradient is the driving force in maintaining the static and pumping water levels in both the brine and fresh water aquifer systems. As increased pumping occurs in both aquifers, the gradients increase accordingly and pumping water levels decline. The water table gradients vary considerably within the valley and are determined to be as follows:

1) 32 feet per mile -- in the area several miles north of the brine aquifer;
2) 52 feet per mile -- in the area recharging the fresh water aquifer; and
3) 82 feet per mile -- in the brine aquifer

These changing gradients suggest that the aquifer does not currently exist under steady state conditions, but rather under "mining" or dewatering conditions and is

therefore being over appropriated. In other words, the amount of discharge is exceeding the amount of recharge and the result is an overall decline in the pumping water levels in both the fresh water and brine aquifers. Presently, CFM is withdrawing approximately 12,000 acre feet of brine groundwater and approximately 500 acre feet of fresh groundwater annually.

Map 3 (Figure 3) is a satellite image of the Clayton Valley and surrounding area. The image, dated June 1988, is a Geovue Landsat 5 Thematic Mapper (TM) scene and was processed by Earth Satellite Corporation. The colors represent combinations of spectral bands that are indicative of surface mineralization and weathering which basically indicates rock type or surface geology and structural features.

The application of satellite imagery was incorporated into the analysis in order to determine the affect of regional structural conditions on the movement of groundwater within the Clayton Valley as a whole. The analysis of the imagery suggests that a series of northwest-southeast trending faults are acting as the predominant "leaky" barrier between the two aquifer systems. The "faults" are in the subsurface within the alluvial part of the valley and appear to have a great effect on the direction and movement of groundwater. The composition of the faults is unknown at this time, but are believed to be a combination of clay, sand. salt, and gravel. This combination of material is common in larger fault systems and would also possess leaky aquifer characteristics.

III. Existing Water Supply Wells

Because of the growing concern over potential intrusion of brine water, calculations have been made regarding the availability of the fresh water supply and the life of the aquifer in the area of the three wells. Two analyses have been conducted: 1) a volumetric analysis using data obtained from the aquifer area in and around the wells, and 2) a static/pumping water-level-decline analysis over time.

On Map 2, the area colored in blue is where good, historic hydrogeologic data exists. A volumetric analysis was conducted using two bounding NW-SE trending faults, the existing static water levels, and the 4200-foot contour. The 4200-foot contour is believed to be the base of the fresh water aquifer and the top of the brine aquifer. The dimensions of the alluvial aquifer are approximately 2 miles long and 1½-miles wide. The other two dimensions used in the volumetric analysis were the 4200-foot contour and the static water level. This "saturated-alluvial-aquifer-block" calculates to have a volume of approximately 96,000 acre feet of saturated geologic material. A

specific yield value of 12% was then used to calculate the total recoverable amount of groundwater in storage to be 11,500 acre feet.

CFM's historic water use from its two permitted wells is in excess of 500 acre feet per year. The Esmeralda County well develops approximately 300 gpm, which converts to approximately 300 acre feet per year. The total withdrawal from the aquifer is therefore in excess of 800 acre feet per year from the three wells. The aquifer will last for approximately 14 years, assuming constant climatological and hydrologic conditions.

The Mineral Ridge application, being 63613, seeks 724 acre feet per year. The CFM rights total 765.6 acre feet per year, which brings the total volume sought from the three wells to **1790 acre feet annually** (**300** acre feet from Esmeralda County under permits 29728; **765** acre feet from CFM under permits 49805, 52917, and 24382; and 724 acre feet sought by the applicant under Application 63613).

The aquifer life is therefore now approximately 6.4 years (11,500 af / 1790 afa). The anticipated life of applicant's mine is 15 years; while that of CFM is more than 15 years.

The assumptions used in these calculations only apply to the assumed characteristics of the "known" aquifer. The exact configuration of the fresh water aquifer is not known. The lateral extent, the depth, the aquifer properties, the impacts of regional faults, and the amounts of recoverable groundwater can only be verified by obtaining and analyzing hydrogeologic data in other parts of the alluvial **formation.** Even if we assume that groundwater does exist in other parts of the alluvial formation, there is a good chance that the aquifer exists under a wide range of aquifer properties. The controlling forces, which determine these properties, are directly related to the structural features, which are readily identified on the satellite imagery.

Figures 5, 6, and 7 are well diagrams of the two CFM wells and the County well. The diagrams show the construction of the well, the pump settings, and the static and pumping water levels that have changed over time. Figure 5 is CFM's main water supply well. The well is pumped at 500 gpm for approximately 100 hours each week. The static water level in 1986 (the year it was drilled) was 169 feet; the static water is now 184 feet. The static water level has dropped 15 feet in 12 years (1.25 ft/year). The present pumping water level in the well is 196 feet which is only 34 feet above the 4200 elevation contour in the valley. With 34 feet of available

drawdown and a present decline rate of 1.25 feet per year, the supply will last for 27 years.

If brine water does exist at the 4200-foot mark, then CFM has a reserve supply of 27 years assuming constant hydrologic and climatological conditions. The first analysis calculates a fresh aquifer life of 14 years and the second analysis, 27 years. The primary difference is the method of analysis as it relates to the rate of decline. The water level analysis assumes the aquifer drops at a constant rate of 1.25 feet per year. The greatest unknown in this dewatering calculation is the rate at which the aquifer drops over time. The aquifer is presently dropping at a rate of 1.25 feet per year; next year, 1.5 feet per year; third year, 1.75 feet per year, and so forth. The increasing rate of decline is the greatest unknown. With additional pumping in the area, the rate of decline will certainly increase.

The water level declines in the other two wells are as follows:

1) CFM's Backup water well (Fig 6): swl (1985) -162' swl (1998) 167'= **5'/13 years**
pwl (1998) - 184' -- **38 feet to the 4200-foot contour (or .38 ft/yr)**
This backup water well was not used during this 13 year period except for aquifer testing during the last two months. The well is now used as a backup water supply.

2) Esmeralda County Well (Fig 7): swl (1990) - 278' swl (1998) - 281'= **3'/8 years**
pwl (1998) - 284' -- **46 feet to the 4200-foot contour (or .38 ft/yr)**
The County well is pumped at about 300 gpm daily since 1975 when the well was drilled. The relative pumping costs are greater for this well than the CFM's wells due to the additional 100 feet of lift.

IV. Results and Conclusions

1) The present supply of groundwater from the three wells in the alluvial aquifer is being depleted at a rate, which exceeds recharge. Any additional pumping from the aquifer will only increase the depletion rate. The quality of the groundwater below the 4200-foot contour is suspected of being brine water or water of very poor quality. The concern is the intrusion of brine water into the fresh water aquifer which result would render both Esmeralda County's and CFM's fresh water wells useless.

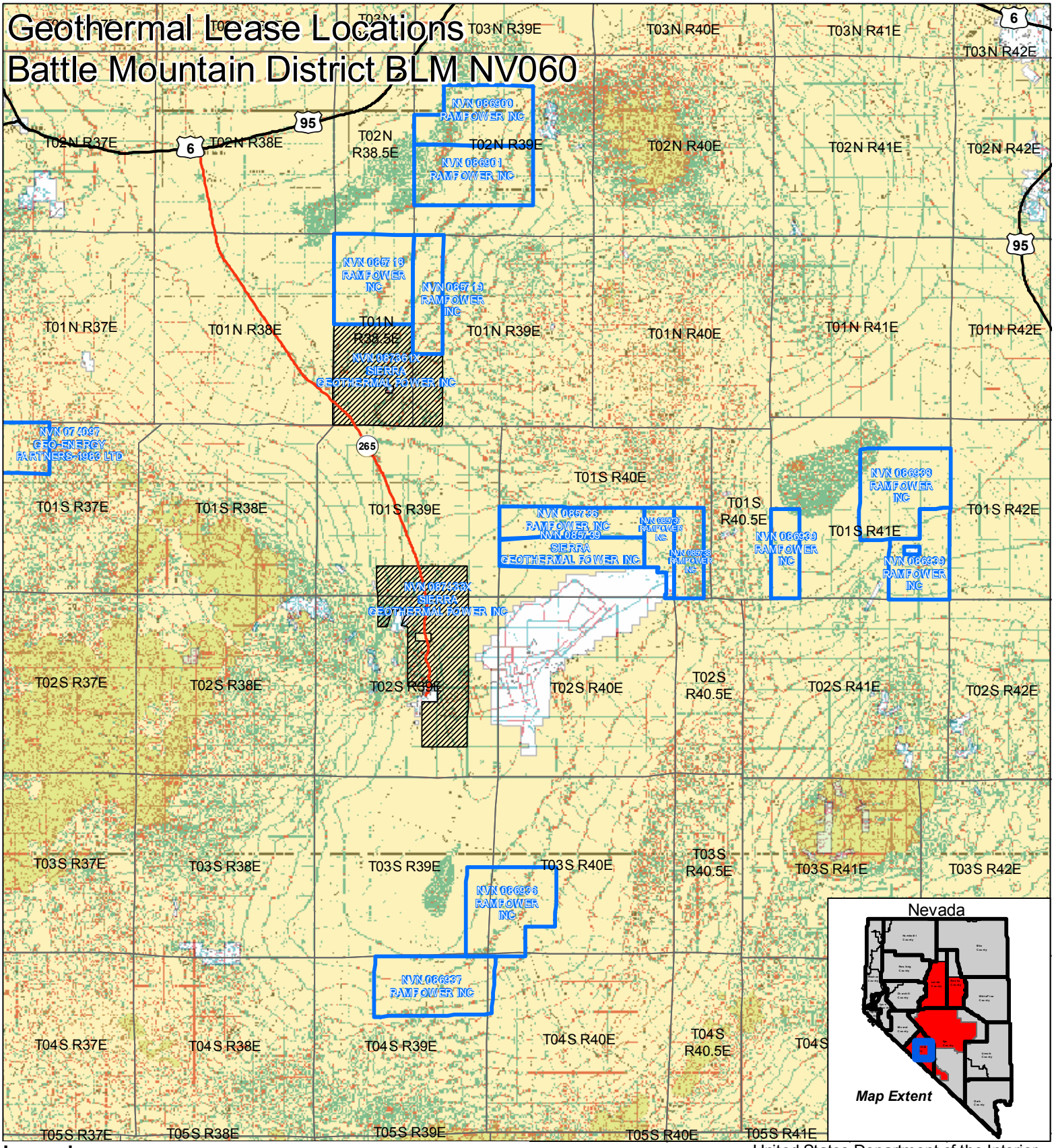
2) Historic data used in conjunction with recent aquifer testing shows the aquifer to decline at a rate of .38 to 1.25 feet per year. The aquifer life is between 14 and 27 years depending on the method of analysis. Monitoring the future changing rate of decline is strongly recommended.

3) The aquifer properties associated with the regional bounding faults are unknown at this time, but are suspected of acting as leaky barriers and partially separating the brine and fresh water aquifers. The bounding faults have wells that are completed to the brine aquifer, the fresh water aquifer, and in the areas where the two are mixing. The water quality concentration of the brine aquifer is approximately 3 times that of sea water. The water quality of the fresh water varies seasonally from 650 to 1000 TDS (mg/l Total Dissolved Solids) which is relatively poor by EPA standards.

4) Aquifer characteristics used in this analysis pertain to the area where the three existing water supply wells are presently used. In order to determine the aquifer characteristics of the alluvial aquifer throughout the western extent of the Clayton Valley, much hydrogeologic data would have to be collected and analyzed. It is suspected that the aquifer properties change quite dramatically throughout the valley and are directly related to the structural features and major bounding faults.

5) Any additional pumping within the area of the CFM wells and the County well will stress the aquifer further causing an accelerated water level decline and possibly, rupture of the semi-leaky bounding faults.

Geothermal Lease Locations
Battle Mountain District BLM NV060



Legend

- Cities
- Interstate Freeway
- State Route
- US Highway
- Geothermal Authorized Lease Areas
- Geothermal Projects in Exploration
- Township Lines

Landowner

- Bureau of Land Management
- Private

N
W E
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0 2.5 5 10 Miles

United States Department of the Interior

Bureau of Land Management
Tonopah Field Office
1553 S. Main Street/P.O. Box 911
Tonopah, NV 89049-0911

Projection: UTM NAD 83, Zone 11N
Map Date: May 12, 2010

JIM GIBBONS
Governor

STATE OF NEVADA

ANDREW K. CLINGER
Director

DEPARTMENT OF ADMINISTRATION
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June 9, 2010

William Gwilliam
DOE National Energy Technology
Laboratory
3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507

Re: SAI NV # **E2010-197** Reference: **DOE/EA-1715D**

Project: **Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County**

Dear William Gwilliam:

Enclosed are additonal comments from the following agencies regarding the above referenced document:

Department of Wildlife, Las Vegas

These comments were received after our previous letter to you. Please incorporate these comments into your decision making process. If you have questions, please contact me at (775) 684-0213.

Sincerely,

R. Tietje
Nevada State Clearinghouse

Enclosure

JIM GIBBONS
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER
Director

RICHARD L. HASKINS II
Deputy Director

SOUTHERN REGION OFFICE
4747 Vegas Drive
Las Vegas, Nevada 89108
(702) 486-5127 · Fax (702) 486-5133

June 7, 2010

NDOW-SR #: 10-315
LVO-10-072
SAI#: E2010-197

Mr. William Gwilliam
DOE NEPA Document Manager
DOE National Energy Technology Laboratory
3610 Collins Ferry Road
Morgantown, WV 26507

Re: Draft Environmental Assessment (DEA) for Chemetall Foote Corporation, Electric Drive Vehicle Battery and Component Manufacturing Initiative Project in Kings Mountain, NC and Silver Peak, NV.

Dear Mr. Gwilliam:

The Nevada Department of Wildlife (Department) appreciates notice and the opportunity to provide comment. We understand the Department of Energy (DOE) proposes, through a cooperative agreement with Chemetall Foote Corporation (Chemetall), to partially fund two projects that would produce or increase production of battery-grade lithium salts to be used in lithium-ion batteries. Of note, the Silver Peak, Nevada project would essentially enhance existing operational components and would not require additional land disturbance or additional land and water acquisitions.

As stated in the DEA, Chemetall presently holds a current Industrial Artificial Pond Permit (IAPP) from the Department which requires mortality reporting, monitoring, hazing and rescue of avian species on hypersaline ponds. Alternative mortality prevention strategies (hazing and wildlife rescue) are necessary for IAPP compliance because: 1) Existing hypersaline ponds are too large to feasibly cover with netting material or equivalent; and 2) The mining process itself, solar concentration of lithium reserves, is counter to containment, chemical neutralization and dilution methodologies.

The basis for these conservation actions is supported through the federal Migratory Bird Treaty Act of 1918 (MBTA), as amended which does not allow for take or harm of migratory birds nor can active nests (nests with eggs or young) of migratory birds be harmed. Birds protected under the MBTA including eagles and hawks, are also State protected (NAC 503.050). The Federal list of migratory birds (50 CFR 10; April 15, 1985) includes nearly every bird species found in the State of Nevada.

Attracting thousands of migratory birds each year, bird use is considered high at Chemetall's Silver Peak pond system, especially during seasonal migrations. Alkali or brackish ponds can and have supported brine shrimp and alkali flies providing a stopover forage or resting area for birds in an otherwise arid

environment. Conversely, exposure of waterfowl to hypersaline ponds (waters with a salt content greater than the ocean [i.e. 35 parts per thousand of sodium]) can result in salt toxicity. Salt precipitates on feathers forming an obvious layer leading to eventual and sometimes rapid encrustation. Salt encrustation changes plumage flight characteristics and wing loading preventing a bird's departure. The precipitates can even weigh more than a bird's body weight. Consequential to frequent preening of heavily encrusted feathers a lethal quantity of salt could also be ingested and consumption of hypersaline water only accentuates the sodium load. Diving birds, like grebes, which are also nocturnal migrants tend to be most susceptible to exposure of hypersaline waters.

As long as hypersaline or otherwise toxic ponds remain on the landscape, effective measures to prevent avian mortalities will need to be in place. For a cumulative impacts perspective, the Silver Peak facility has been in operation for 45 years and the proposed project funding is anticipated to add 15 years to the mine life. With increased production of lithium brines, there comes the potential for increased avian mortalities. Efforts to prevent avian mortalities need to match efforts to increase lithium brine production.

It is the Department's goal to continue working with Chemetall for its implementing effective impact minimization measures. To this end, we view the proposed project funding as an opportunity for Chemetall to also enhance its bird monitoring and rescue efforts. We believe reasonable and practical investments in training, equipment, consultation and a dedicated avian technician position are necessary components in developing a successful and effective bird monitoring and rescue program. We encourage Chemetall pursuing this opportunity and can offer specific recommendations should funding be earmarked for this purpose.

Lastly, the Department has documented bird nesting activity on several of the existing ponds. Ground disturbing activities in areas of potential breeding habitat should avoid the breeding and nesting season which roughly occurs between March 1 and July 31. If this seasonal avoidance is not practicable, then the Department recommends a qualified biologist survey the project site prior to any ground disturbing activities to determine if nesting is underway. In the event an active nest (containing eggs or young) is discovered or frequently attended by adult birds, a buffer area around the nest appropriate for the species involved must be identified and avoided until young birds have fledged. This measure would be consistent with preventive actions advocated by the U.S. Fish & Wildlife Service concerning MBTA-protected birds.

Thank you again for this opportunity to provide this review. For additional assistance, please contact Biologist Tracy Kipke at 702-486-5127 x3612, or by e-mail at tkipke@ndow.org.

Sincerely,

D. Bradford Hardenbrook
Supervisory Habitat Biologist

TK: tk

cc: NDOW, Files & John Gebhardt
Chemetall Foote Corporation, Joe Dunn

Email from Andrés Yaksic on Chemetall EA on May 28,2010.

Mr. William Gwilliam,

According my understanding and what I have read in the media, Chemetall Foote Corporation was awarded $US 28.4 million in 2009 to establish a new 5,000 metric tons per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina and to upgrade and expand an existing lithium brine production facility and an existing lithium carbonate plant in Silver Peak, Nevada. However, I have recently read in the "Environmental Assessment For Chemetall Foote Corporation" made by DOE (April 2010) that DOE's Proposed Action is to provide only $16.1 million in financial assistance in a cost-sharing arrangement with the project proponent and that the total estimated cost of the project is $35.6 million. This means, only 45% of the project will be cover by DOE. I am confused since I do not know which is the correct figure of the award to that company. It is 28.4 million or 16.1 million? If Chemetall has to cover the 55% of the project I assume that other projects within the US$ 2.4 Billion announced on August 5th, 2009 will also have to cover a percentage of their projects. After reading the original press release of the 2.4 B announcement (August 5th) I thought that DOE will award 2.4 billion and that the investment would be coupled with (around) another $2.4 billion in cost share from the award winners.

I would really appreciate if you could help me to understand this better through your comments. Any reference is also appreciated.

In advance, thanks so much.

Kind regards,

Andrés Yaksic

Email from Alan Buehler, BLM on May 27,2010 concerning comments on Draft Chemetall EA.

I don't see any need to comment on the EA. The following information and statements could be irrelevant for the purposes of the EA and could be considered suggestions.

1) On p. 18 it says that there are 0 to 40 people per square mile within an 80 mile radius. Goldfield is within about 20 miles and Tonopah is within 30. Both have more than 40 people per square mile.

2) On p. 19 it says that the ponds have accumulated up to 15 feet of sand mixed with magnesium and calcium salts. In all likelihood the salt is composed mainly of sodium and potassium (which probably should have been
stockpiled), not magnesium and calcium. You may want to check with
Chemetall Foote.

3) On p. 19 it says the berms are constructed of mud. I think a lot of the berms are constructed of + 6 inch rock called rip rap. You may want to check with Chemetall Foote.

4) Near the bottom of p. 19 it mentions that water elevations would remain the same. I didn't understand what water elevations it was referring to (groundwater, pond surface water).

5) Near the bottom of p. 21 it says that Chemetall would develop additional wells and expand the pond system. I couldn't find quantities for the number of wells or acres of pond increase.

6) At the bottom of p. 29 it says that the No Action Alternative will have a moderate adverse cumulative impact on climate change. It's a matter of opinion, but I think that may be over stated. I suspect the No Action Alternative will have an immeasurably small adverse impact on climate change.

Alan

From: Thomas_Seley@blm.gov
Sent: Wednesday, May 12, 2010 8:44 PM
To: William.Gwilliam@NETL.DOE.GOV
Cc: Alan_Buehler@blm.gov
Subject: Comments on Chemetall Foote Draft EA
Attachments: GeoProjectsAroundClayton2.pdf

Good Morning Bill,

I completed a very quick review of the Draft EA. The comment I have is based on the Second Paragraph on page 10, last sentence of the paragraph which states"several geothermal firms may be seeking future claims". This statement is inaccurate. I would suggest changing to reflect that there are 6 geothermal leases, along with 1 geothermal unit where active exploration has been conducted that will have additional exploration in the future, that are immediately adjacent to Chemetall Foote. Listed below by Company are the geothermal lease numbers and the attached map shows the locations of the leases. The map may be slightly inaccurate for location of the leases, but it is very close to actual locations. In addition, geothermal leases are for a period of ten years and may be extended for 5 additional years if the proponent starts exploration near the end of their lease and need additional time to completed exploration. If a resource is developed into a geothermal powerplant then the lease is in effect for the life of the powerplant.

Ram Power Corporation
NVN-085736
NVN-085737 We expect a Notice of Intent to conduct a geothermal exploration program in the near future for these 3 leases immediately north and northeast
NVN-085738 of Chemetall Foote's patented lands.

NVN-086936 These parcels are on the south end of Clayton Valley
NVN-086937

Sierra Geothermal Power Corporation
NVN-08433X This is a geothermal unit which is made of 3 or 4 individual leases that were unitized. Active geothermal exploration has occurred in the last year and additional exploration will be conducted in the future.
NVN-085739 This lease is located immediately north of Chemetall Foote patented land. We are currently processing a Notice of Intent for a 15 km linear seismic line which encompasses the lease as well as lands both north and south of the lease.

For mining, nearly the entire Clayton Valley area has mining claims staked, and there has been active exploration immediately adjacent to Chemetall for lithium.

For additional information on the geothermal or mining claims you can access LR2000 data base at, www.blm.gov/lr2000/

Alan Buehler may have additional comments after he reviews.

If you have any questions please feel free to call.

(See attached file: GeoProjectsAroundClayton2.pdf)

Tom Seley
Field Manager
Tonopah Field Office
Office: 775.482-7801
Fax: 775.482-7810
Cell: 775.316-6819

JIM GIBBONS
Governor

STATE OF NEVADA

ANDREW K. CLINGER
Director

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209 E. Musser Street, Room 200
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June 7, 2010

William Gwilliam
DOE National Energy Technology
Laboratory
3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507

Re: SAI NV # **E2010-197**

Reference: **DOE/EA-1715D**

Project: **Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County**

Dear William Gwilliam:

Enclosed are comments from the agencies listed below regarding the above referenced document. Please address these comments or concerns in your final decision.

Division of State Lands

Division of Water Resources

The following agencies support the above referenced document as written:

State Historic Preservation Office

This constitutes the State Clearinghouse review of this proposal as per Executive Order 12372. If you have questions, please contact me at (775) 684-0213.

Sincerely,

R. Tietje
Nevada State Clearinghouse

Nevada State Clearinghouse

From: Skip Canfield
Sent: Thursday, May 13, 2010 11:00 AM
To: Nevada State Clearinghouse
Subject: RE: E2010-197 Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County -

As part of this proposal, the Nevada Division of State Lands suggests the following mitigation measures be employed:

Utilize appropriate lighting:

- Utilize consistent lighting mitigation measures that follow "Dark Sky" lighting practices.
- Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas.
- A lighting plan shall be submitted with the site plan review and/or architectural or engineering drawings indicating the types of lighting and fixtures, the locations of fixtures, lumens of lighting, and the areas illuminated by the lighting plan.
- Any required FAA lighting is exempt from this condition.

In addition, the following mitigation measures should be employed.

Utilize building materials, colors and site placement that are compatible with the natural environment:

- Utilize consistent mitigation measures that address logical placement of improvements and use of appropriate screening and structure colors. Existing utility corridors, roads and areas of disturbed land should be utilized wherever possible. Proliferation of new roads should be avoided.
- For example, the use of compatible paint colors such as "sudan brown" for water tanks and other vertical structures reduces the visual impacts of the built environment. Using screening, careful site placement, and cognitive use of earth-tone colors/materials that match the environment improve the user experience for others who might have different values than what is fostered by built environment activities.
- Federal agencies should require these mitigation measures as conditions of approval for all permanent and temporary applications.

Skip Canfield
State Land Use Planning Agency
775-684-2723
www.lands.nv.gov

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0209 Fax (775) 684-0260
DATE: May 11, 2010

Division of Water Resources

Nevada SAI # E2010-197
Project: Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County

AGENCY COMMENTS:

A review of the area, Hydrographic Basin No. 143, Central Region, Clayton Valley Sub Basin indicates there are two active water rights appurtenant to the described lands in this proposed project, both owned by Chemetall Foote Corporation. There are several more active water rights in the general vicinity.

Please be advised that wells and/or points of diverting water on these lands, whether new or existing, shall require prior approval of the State Engineer, including changes of the point of diversion, place of use, and/or manner of use. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise.

Any water or monitor wells, or boreholes that may be located on either acquired or transferred lands are the ultimate responsibility of the owner of the property at the time of the transfer and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code. If artesian water is encountered in any well or borehole it shall be controlled as required in NRS § 534.060(3).

Any water used on the described project for construction, dust control, or maintenance should be provided by an established utility or under permit or waiver issued by the State Engineer's Office.

Any person proposing to construct a dam in this state shall, before beginning construction, obtain from the State Engineer a permit to appropriate, store and use the water to be impounded by or diverted by the dam, NRS 535.010(1). Before constructing, reconstructing or altering in any way any dam, notify the State Engineer thereof; and where the dam is or will be 20 feet or more in height, measured from the downstream toe to the crest of the dam, or is less than 20 feet in height and will impound more than 20 acre-feet of water, must submit to the State Engineer in triplicate plans and specifications thereof for his approval in accordance with Nevada Revised Statue Chapter 535 and Nevada Administrative Code Chapter 535 prior to construction is to begin, NRS 535.010(2)(a)(b).

Sincerely,

Steve Shell, Staff Engineer, Nevada Division of Water Resources

Signature: //sls// Steve Shell Date: May 11, 2010

5/28

Rebecca Palmer

From: Nevada State Clearinghouse
Sent: Monday, May 10, 2010 10:00 AM
To: Rebecca Palmer
Subject: E2010-197 Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County -

NEVADA STATE CLEARINGHOUSE
Department of Administration, Budget and Planning Division
209 East Musser Street, Room 200, Carson City, Nevada 89701-4298
(775) 684-0213 Fax (775) 684-0260

TRANSMISSION DATE: 5/10/2010

State Historic Preservation Office

Nevada SAI # E2010-197

Project: Expansion of lithium brine and lithium carbonate plant, Silver Peak, Esmeralda County

Follow the link below to download an Adobe PDF document concerning the above-mentioned project for your review and comment.
E2010-197

Please evaluate it with respect to its effect on your plans and programs; the importance of its contribution to state and/or local
areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than Friday, June 4, 2010.

Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference.

Clearinghouse project archive

Questions? Reese Tietje, (775) 684-0213 or clearinghouse@state.nv.us

____No comment on this project ✓ Proposal supported as written

AGENCY COMMENTS:

Rebecca L Palmer 5/27/10

ndep
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
protecting the future for generations

STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Jim Gibbons, Governor
Allen Biaggi, Director
Leo M. Drozdoff, P.E., Administrator

June 7, 2010

Mr. William Gwilliam
NEPA Document Manager
3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507

RE: Draft Environmental Assessment for Chemetall Foote Lithium Expansion at Silver Peak NV / May 2010

Dear Mr. Gwilliam:

In response to the referenced public notice, the Nevada Division of Environmental Protection – Bureau of Air Pollution Control (BAPC) offers the following comments:

Chemetall Foote currently operates under a Class 2 air quality operating permit (AP14790050.1). This permit will require revision in order to accommodate the proposed project and pre-construction activities. It is also possible that the facility may exceed the 100 tpy threshold for the class 2 permit and become subject to a Class 1 (major source) operating permit.

The facility must also be in full compliance with their permit before a revision can take effect.

Information and instructions for revising a permit are available at our website http://ndep.nv.gov/bapc/index.htm

Please contact me at jdenison@ndep.nv.gov or by calling (775) 687-9336 if you have any questions.

Sincerely,

Jeff Denison, P.E.
Permitting Supervisor
Bureau of Air Pollution Control

JD
Cc: Joseph Dunn, General Manager, PO Box 98, Silver Peak, NV 89047

June 8, 2010

NEPA Information: Project Information:
William Gwilliam Dr. Christopher Johnson
NEPA Document Manager Project Manager
U.S. Department of Energy U.S. Department of Energy
National Energy Technology Laboratory National Energy Technology Laboratory
3610 Collins Ferry Road, P.O. Box 880 3610 Collins Ferry Road, P.O. Box 880
Morgantown, WV 26507-0880 Morgantown, WV 26507-0880
304-285-4401; 304-285-4403 (fax) 304-285-4718; 304-285-4403 (fax)
William.gwilliam@netl.doe.gov cjohnson@nelt.doe.gov

Project Information
Dr. Christopher Johnson
Project Manager
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road, P.O. Box 880
Morgantown, WY 26507-0880
304-285-4718; 304-285-4403(fax0
cjohnson@netl.doe.gov

U.S. Certified Mail# 7007 0710 0001 5249 0690

Re: DOE/EA-1715D

Having learned of DOE/EA-1715D recently, I have studied the 71 pages (PDF) and do not understand or agree with DOE/EA-1715D. I live within 1000 ft of Chemetall's processing plant and operations.

A Silver Peak, Nevada, Resident and Parcel Owner

Paul Rupp this 8th day, June, 2010

Paul Rupp
130 Cinnabar Way
PO Box 125
Silver Peak
Nevada 89047

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 13, 2010

William Gwilliam
National Energy Technology Laboratory
PO Box 880
Morgantown, WV 26507

Re: Chemetall Foote Corporation, Electric Drive Vehicle Battery and Component Manufacturing Initiative Project, Kings Mountain, Cleveland County, ER 09-2792

Dear Mr. Gwilliam:

Thank you for your letter of May 6, 2010, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,

Renee Gledhill-Earley

Peter Sandbeck

North Carolina
Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

June 11, 2010

Mr. William Gwilliam
Department of Energy
c/o DOE National Energy Technology
P.O. Box 880
Morgantown, WV 26507

Re: SCH File # 10-E-0000-0401; EA; Construction of a 5,000 metric ton per year lithium hydroxide plant within an existing facility located within a 20 acre developed area in Kings Mountain North Carolina. View document at http://www.netl.doe.gov/publications/others/nepa/ea.html

Dear Mr. Gwilliam:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

Chrys Baggett (CSTG)

Ms. Chrys Baggett
State Environmental Review Clearinghouse

Attachments

cc: Region C

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

Location Address:
116 West Jones Street
Raleigh, North Carolina

Project # 10-0401

North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

TO: Valerie McMillan
State Clearinghouse

FROM: Melba McGee
Environmental Review Manager

The Department of Environment and Natural Resources has completed its review. Our regional office within the geographic area of the proposed project has identified permits that may be required prior to project construction. For more information, the project applicant should notify the respective regional office marked on the back of the attached permit form.

Thank you for the opportunity to review.

Attachment

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-733-4984 \ FAX: 919-715-3060 Internet: www.enr.state.nc.us

State of North Carolina
Department of Environment and Natural Resources

Reviewing Office: Mooresville

INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

Project Number: 10-0401 Due Date: 6/7/2010

After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
☐	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
☐	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
☐	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☑	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
☐	Permit to construct & operate Transportation Facility as per 15 A NCAC (2D.0800, 2Q.0601)	Application must be submitted at least 90 days prior to construction or modification of the source.	90 days
☐	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
☐	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950.		
☐	Complex Source Permit required under 15 A NCAC 2D.0800		
☑	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) At least 30 days before beginning activity. A fee of **$65** for the first acre or any part of an acre. An express review option is available with additional fees.		20 days (30 days)
☐	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.		(30 days)
☐	Mining Permit	On-site inspection usual. Surety bond filed with ENR Bond amount varies with type mine and number of acres of affected land. Any arc mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
☐	North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
☐	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual bum is planned."	1 day (N/A)
☐	Oil Refining Facilities	N/A	90-120 days (N/A)
☐	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction. certify construction is according to ENR approved plans. May also require permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
☐	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
☐	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
☐	State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15-20 days N/A
☐	401 Water Quality Certification	N/A	60 days (130 days)
☐	CAMA Permit for MAJOR development	$250.00 fee must accompany application	55 days (150 days)
☐	CAMA Permit for MINOR development	$50.00 fee must accompany application	22 days (25 days)
☐	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, NC 27611		
☐	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
☐	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
☐	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
☐	Tar Pamlico or Neuse Riparian Buffer Rules required.		

* Other comments (attach additional pages as necessary, being certain to cite comment authority)

DAQ. This facility would require a modification of Chemetall's Title V Air Permit
Ron Slack 5-12-2010

DWQ - Surfacewater - Plant may affect existing NPDES wastewater permit NC0033570. Check with permitting unit in Raleigh. If impacting > 1acre construction stormwater would be required - issued w/ Sed. + Erosion Control plan. (see attached

APS · no comment. AHP 5.17.10

LQ - E & S Control plan required for this site, Zoeo S. [illegible] 5/17/10
only if land disturbance is new & did not receive a Permit before.

JUN 2010
RECEIVED
Secretary's Office
DOA

REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

☐ **Asheville Regional Office**
2090 US Highway 70
Swannanoa, NC 28778
(828) 296-4500

☑ **Mooresville Regional Office**
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

☐ **Wilmington Regional Office**
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

☐ **Fayetteville Regional Office**
225 North Green Street, Suite 714
Fayetteville, NC 28301-5043
(910) 433-3300

☐ **Raleigh Regional Office**
3800 Barrett Drive, Suite 101
Raleigh, NC 27609
(919) 791-4200

☐ **Winston-Salem Regional Office**
585 Waughtown Street
Winston-Salem, NC 27107
(336) 771-5000

☐ **Washington Regional Office**
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

Mooresville Duke - Surface Water Comments
MS 5-12-10

temperatures ranging from 52° to 55°F. The warmest months are the summer months of June through August. During those months average monthly low temperatures range from 63° to 66°F and high temperatures range from 87° to 89°F. Average annual precipitation is approximately 48 inches. November is typically the driest month with average rainfall of 3.3 inches. July is typically the wettest month with an average of 4.7 inches of precipitation (SERCC, 2009).

Cleveland County has a high incidence of tornadoes, which is 2.1 times greater than the national average (City-Data.com, 2009). Since 1958, there have been 106 high winds events in Cleveland County, ranging from 86 to 120 miles per hour (NCSU, 2009). In the Atlantic Ocean, hurricane season storms rarely form outside the June 1 to November 30 season. However, North Carolina's proximity to the Gulf Stream and its protruding coastline make it a likely location to receive an early season (May) spike in tropical activity. There have been two severe tropical storms reported in North Carolina; however, historical record shows that there has never been a hurricane in Cleveland County. Because Cleveland County is over 300 miles west of the North Carolina coast, it is unlikely to experience a direct hit from a hurricane. South Atlantic hurricanes usually travel north and they are extremely unlikely to travel west (NCSU, 2009). The Proposed Project would have a negligible impact on climate; and climate would have a negligible impact on the Proposed Project.

Surface Water and Groundwater: The Kings Mountain facility is located in the Buffalo Creek subbasin (03-08-05) of the Broad River Basin. The receiving stream for stormwater runoff from the property is Kings Creek. The facility is subject to stormwater permit NCS000096 issued by the North Carolina Department of Environment and Natural Resources (NCDENR) (NCDENR, 2009a) under the National Pollutant Discharge Elimination System and effective from November 1, 2009 through October 31, 2014. The facility does not discharge process or sanitary wastewater to surface waters. Incorrect - have NPDES Wastewater Permit NC0033570. Discharges to Kings Creek in Broad River basin.

The Proposed Project would include the addition of a lithium hydroxide process within an existing plant building. Renovation of the existing building would involve adding two new floors. Additionally, six new ASTs would be erected near the existing plant building the on previously distributed land. Potential impacts on surface water during construction would be temporary and minor. As stated in the November 18, 2009, letter from the USFWS regarding the Proposed Project, the treatment of stormwater leaving the project area, creation of impervious surfaces, and impacts to stream buffers would be of concern to surface waters (see Appendix A); however, construction of the Proposed Project would involve negligible ground disturbance and would not involve the generation of additional impervious surfaces. Due to the distance of the project site to the nearest receiving water body, impacts to receiving waters resulting from stormwater runoff during construction would not be anticipated. The facility would remain subject to stormwater permit NCS000096 issued by the NCDENR. Furthermore, the project would not affect any stream buffers as the proposed facility is sited in an existing developed area, away from water resources. Overall, the Proposed Project would have a negligible impact to surface waters during both construction and operations.

The Kings Mountain facility does not use groundwater for any process.

Wetlands and Floodplains: No wetlands were observed within proximity to the study area during the November 5, 2009, site visit. In addition, National Wetland Inventory mapping does not indicate the presence of vegetated wetlands within the study area (EPA, 2009a).

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map Number 3710257200J does not indicate the presence of floodplains within the study area (FEMA, 2009). Therefore, negligible impacts would occur to wetlands and floodplains.

Vegetation and Wildlife: During the November 5, 2009, site visit, it was determined that no vegetation resources and little wildlife habitat existed within or directly adjacent to the study area; the study area is already developed. Informal coordination letters were sent to both the USFWS and the North Carolina Natural Heritage Program to

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

David Keilson

COUNTY: CLEVELAND

H11: ENERGY RELATED
FACILITIES/ACTIVITIES

STATE NUMBER: 10-E-0000-0401
DATE RECEIVED: 05/10/2010
AGENCY RESPONSE: 06/07/2010
REVIEW CLOSED: 06/10/2010

MS SHIRLEY FOYE
CLEARINGHOUSE COORDINATOR
DEPT OF TRANSPORTATION
STATEWIDE PLANNING - MSC #1554
RALEIGH NC

REVIEW DISTRIBUTION

CC&PS - DIV OF EMERGENCY MANAGEMENT
DENR LEGISLATIVE AFFAIRS
DEPT OF AGRICULTURE
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION
ISOTHERMAL PLANN & ECON DEV

PROJECT INFORMATION

APPLICANT: Department of Energy
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Construction of a 5,000 metric ton per year lithium hydroxide plant within an existing facility located within a 20 acre developed area in Kings Mountain North Carolina. View document at http://www.netl.doe.gov/publications/others/nepa/ea.html

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☐ NO COMMENT ☑ COMMENTS ATTACHED

SIGNED BY: David Keilson DATE: 5/17/10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 17, 2010

MEMORANDUM

Subject: Clearinghouse Number 10-E-0000-0401
New 5,000 metric ton per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina

From: David Keilson
Transportation Planning Branch

D. Keilson

The Clearinghouse project referenced above involves the establishment of a new 5,000 metric ton per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina.

Please note that the Kings Mountain Thoroughfare Plan recommends widening I-85 to six lanes in the vicinity of the project. Also note that there are plans for greenways / multi-use trails in the vicinity of the property. Please consider these plans where relevant to the project referenced above. The links below provide information about the Kings Mountain Gateway Trail and the Carolina Thread Trail.

Kings Mountain Gateway Trail:
http://www.kmgatewaytrails.org/about-the-trail/future-plans.aspx

Carolina Threat Trail:
http://www.carolinathreadtrail.org/index.php?id=37

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING BRANCH
1554 MAIL SERVICE CENTER
RALEIGH NC 27699-1554

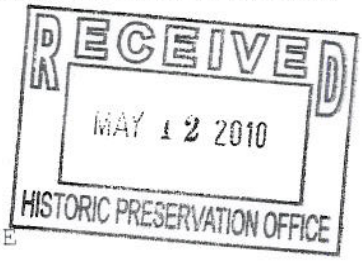
NCDOT TPB
TRANSPORTATION PLANNING BRANCH
http://ncdot.org/doh/preconstruct/tpb/

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH, NC 27601
Phone: 919-733-4705
Fax: 919-733-2417

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: CLEVELAND

H11: ENERGY RELATED FACILITIES/ACTIVITIES



STATE NUMBER: 10-E-0000-0401
DATE RECEIVED: 05/10/2010
AGENCY RESPONSE: 06/07/2010
REVIEW CLOSED: 06/10/2010

MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORDINATOR
DEPT OF CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
MSC 4617 - ARCHIVES BUILDING
RALEIGH NC

ER 09-2792

Previously Cleared
CRS

REVIEW DISTRIBUTION

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DENR LEGISLATIVE AFFAIRS
DEPT OF AGRICULTURE
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION
ISOTHERMAL PLANN & ECON DEV

PROJECT INFORMATION

APPLICANT: Department of Energy
TYPE: National Environmental Policy Act
Environmental Assessment

DESC: Construction of a 5,000 metric ton per year lithium hydroxide plant within an existing facility located within a 20 acre developed area in Kings Mountain North Carolina. View document at http://www.netl.doe.gov/publications/others/nepa/ea.html

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: [X] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley DATE: 5.17.10

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
1.	***Esmeralda County Commissioners*** The Esmeralda County Commissioners support the above project provided it is conducted in an environmentally responsible manner without harm or threat to the safety and well being of our citizens. We have concern that this document does not fully address or in some cases inaccurately addresses possible impacts. Our comments are attached. (Comments 1-7) **Section 2.2:** "Lithium waste streams from Kings Mtn would be concentrated and recycled internally at Kings Mtn., Silver Peak, or other Chemetall Facilities." **Comment**:What are these waste streams?	Lithium waste streams refer to those containing unreacted lithium carbonate and lithium residues that need reprocessing to recover the valuable lithium. This material may be shipped from the proposed Kings Mountain facility to other Chemetall facilities where the lithium could be recovered and converted into high-grade lithium carbonate or other forms of lithium suitable for use.	Kings Mountain facility waste streams consisting of calcium carbonate containing small amounts of lithium would not be shipped to Silver Peak. Other waste streams from the new Kings Mountain plant with higher lithium concentrations would be recycled at the Kings Mountain site as normal practice, but there is a low probability that occasional shipments of lithium waste streams could be sent to Silver Peak for recycling if this is determined to be more economical.
2.	**Section 2.3.2:** "During the site visit conducted on October 29, 2009, Chemetall's personnel indicated that several geothermal exploration firms may be seeking future claims in this valley, but this was not verified." **Comment:** Even at this time, Sierra Geothermal Power, Inc and RAM Power, Inc. had existing geothermal leases with the BLM in the Clayton Valley. This could have easily been verified by consultation with BLM.	**Section 2.3.2 Silver Peak.** Text has been revised as follows to identify the geothermal leases, based on the information submitted by BLM (also see Comment 17, below): ~~. During the site visit conducted on October 29, 2008, Chemetall's personnel indicated that several geothermal exploration firms may be seeking future claims in this valley, but this was not verified~~. *"Nearly the entire Clayton Valley has mining claims staked, and there has been active exploration for lithium immediately adjacent to Chemetall's holdings (BLM, 2010).* Near Chemetall's patented mining claims, *there are six geothermal leases, along with one geothermal unit, where active exploration has been conducted and where additional exploration will occur in the future. These geothermal leases are held by Sierra Geothermal Power, Inc. and Ram Power Corp (BLM, 2010)."*	Chemetall concurs with DOE.

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
3.	**Section 3.1.2:** **Noise** "There would be no change from the current maximum of two truck trips per day." **Traffic and Transportation** "The main arterials near the Silver Peak Site are US Hwy 95 and 6 to the east and north and Nevada State Routes 265 and 266 to the west and south, respectively. Silver Peak is approximately 20 miles from each. Nevada State Route 265 connects Silver Peak to US Highways 95 and 6." "Traffic impacts from construction trucks and worker vehicles would be short term and easily accommodated within existing roadway and intersection capacity." "The project is not expected to require any change from the current maximum of two truck trips per day off site" **Comment** 1. Much of the truck traffic to and from the Silver Peak facility uses Esmeralda County Road #196 (Silver Peak Road) which intersects US 95 north of Goldfield Nevada. Maintaining this 20 mile road which is partially paved and part dirt is a major expense to Esmeralda County, costing $59,800 annually just to patch and grade. This road is not engineered to accommodate heavy vehicles. The road which is at the point of crumbling from the heavy trucks and high volume of traffic it is exposed to needs to be entirely overlaid which would cost Esmeralda County an estimated 4.5 million dollars. Chemetall Foote should assist the	**Comment 1.** DOE realizes that the County of Esmeralda may have significant expenses in road maintenance and may not be able to afford significant road improvements. However, DOE would not impose on Chemetall a contract requirement or mitigation measure in which DOE would be unable to share costs under the restrictions of Federal regulations. Specifically, "contributions" by Chemetall to any recipient would be unallowable expenses for purposes of DOE cost sharing in accordance with 10 CFR Part 600.317, which incorporates the cost principles of the Federal Acquisition Rules at 48 CFR Part 31. Specifically, 48 CFR Part 31.205(8) says "Contributions or donations, including cash, property and services, regardless of recipient, are unallowable, except as provided in 48 CFR Part 31.205-1(e)(3)." The cited exception applies to community events in which everyone is invited to participate. Therefore, based on a plain English reading of the applicable regulations, DOE could not reimburse Chemetall for a share of the contribution, whether the contribution is in money or in road maintenance services. Even without the specific restriction quoted above, the costs would be subjected to the general standards of "reasonableness" and "allocability", and these standards would not be met. Please see 48 CFR Part 31.201-2 through 31.201-4. Regardless of DOE's willingness to participate, Chemetall may choose to contribute money or assist the County with road maintenance, and DOE encourages responsible community involvement. Funding under this DOE program must go to intended activities (e.g., planning, design and construction of facilities, and mitigation activities that meet applicable cost reimbursement principles) that directly meet the purposes and needs of the Vehicles Technologies Program, as expressed in section 1.0 of the Draft EA. **Comment 2. Section 3.1.2 Silver Peak, Transportation and Traffic**. Text has been revised to reflect the "crumbling" condition of County Road #196	**Comment 1**: Use of County Road #196 consists mainly of light vehicle traffic. Heavy truck traffic associated with Chemetall's expansion would increase by an average of 1 truck load per day for a total daily average of 2.5 truck loads traveling across County Road #196. Chemetall has historically and currently maintains 25 percent of County Road #196 where it crosses through the Chemetall operation. Monies paid out by Chemetall in net proceeds tax, property tax and use tax helps to fund Esmeralda County. The expansion project would result in higher taxes paid by Chemetall resulting in higher revenues for Esmeralda County. Shipments leaving Silver Peak chiefly use Hwy 265. The expansion would increase outgoing traffic on average by 0.5 truck loads per day for a total daily average of 1 truck load per day on Hwy 265. **Comment #2:** Chemetall provides staff housing and a rent-free mobile home park for employees who decide to live in Silver Peak. Given Silver Peak's limited population and lack of services, such as stores, gas stations, restaurants, etc…, many employees choose to live in Tonopah or Goldfield and commute to work each day. **Comment #3:** Truck traffic in and out of Silver Peak associated with Chemetall currently averages 2.0 trucks per day. After the expansion, the average truck traffic would increase to a total of 3.5 trucks per day.

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
	county in the cost to maintain the Silver Peak road in a condition that would make it safe. We recommend a contribution of $60,000 annually. **Comment 2**. The Silver Peak facility employs a considerable number of "non town of Silver Peak residents" on a regular basis who commute from Tonopah, Goldfield and Dyer, Nevada. Commuters from Goldfield use County Road #196 described above. Commuters from Dyer often use a County dirt road "Coyote Road". If the company does not draw new staff from the residents of Silver Peak, or encourage new hires to reside in the town there will be an impact on transportation and traffic. **Comment 3**. This plant when in full operation generates way more total heavy truck traffic than two trips per day. The document should correctly state both incoming and outgoing traffic.	and Esmeralda County's concerns about its condition to handle current and increased traffic. **Comment 3. Sections 3.1.2 Silver Peak, Noise and Transportation and Traffic.** Text has been revised to indicate the correct average number of heavy truck trips off site each day, as indicated in the response by Chemetall.	
4.	**Socioeconomics:** "Approximately 10 permanent employees are expected to be hired" It is assumed that the majority of the workforce would be drawn from local candidates in Esmeralda County; therefore no increase in population or need for housing is anticipated" Construction workers employed for the construction period are assumed to be currently employed and residing and paying taxes in the Esmeralda County area. **Comment 1.** Chemetall Foote has been drawing employees from Tonopah, in Nye	**Comment 1*:* Section 3.1.2 Silver Peak, Socioeconomics.** Text has been revised to indicate that new employees would likely come from either Esmeralda or Nye County, as indicated in the response by Chemetall. The section was further revised to say that any person from outside these counties would likely establish a temporary second home in the area and export a majority of their income outside the area. **Comment 2:** Comment noted. This concern has been conveyed to Chemetall. Chemetall provides an extra incentive for employees to relocate to Silver Peak by providing housing for rent and a rent-free mobile home park.	**Comment 1:** Thirty one of the 54 employees working for Chemetall or indirectly through contractors reside in Esmeralda County. Recruiting employees from the Tonopah area has become necessary due to the limited labor resources available in Esmeralda County. Most of the Tonopah locals are established and prefer to commute to work daily. **Comment 2:** Chemetall pays property tax for all staff housing and the Chemetall mobile home park. This is the property in Silver Peak where employees would reside. All other potential properties for rent are privately

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	County (which is in the "area" and persons from outside of the Central Nevada Region. Employees from outside the area generally establish a temporary "second" home in this area and export the majority of their income outside the area. Those that live outside Esmeralda County do not pay property tax in this county. **Comment 2**. Esmeralda County would welcome small increases to population and desires that Chemetall Foote fully utilize their available land and employee housing in the town of Silver Peak. This would have a beneficial impact on the county share of sales/use tax, gas tax, and the county owned municipal water system. This would also decrease the impact on county roads due to commuting.		owned by other Silver Peak residents. Chemetall supported the Silver Peak water initiative by converting the company mobile home park over to a town--supplied water system. Chemetall was able, through this conversion, to help reduce the cost of water service for all residents of Silver Peak.
5.	**Groundwater** **Comment 1.** What will be the anticipated annual use after the project is complete? **Comment 2**. The NEV0070005 referred to was renewed in 2007. It exempts "not potable" brine waters from consideration. The background given for the permit also eludes that there is not interrelation between brine and fresh water in the basin. **Comment 3.** The whole discussion of effect on groundwater is dismissed with the statement that the company has sufficient permitted use and that the Nevada State Engineer has not designated the basin. Basin 143 has a total estimated annual yield of 20,000 acre feet. The annual yield in the basin was last calculated by USGS in 1970. Chemetall	**Comment 1:** The 1998 report by Cyprus Foote Mineral Company (CFM), as cited by the commenter, states that the company wells were supplying approximately 500 acre-feet of potable water per year and 12,000 acre-feet of brine per year at that time. According to the report, CFM's historic potable water use had been in excess of 500 acre-feet per year. More recently, between 1999 and 2008, CFM's potable water use has ranged between 373 and 643 acre-feet per year, and brine pumping has varied between less than 9,000 acre-feet per year up to about 11,000 acre-feet per year, according to Chemetall. In their response to the County Commission's comments, Chemetall indicates that the annual pumping rate for potable water would increase by approximately 160 acre-feet annually (about 100 gallons per minute) over historical usage rates, and brine usage would increase by 4,000 acre-feet annually over historical averages. **Comment 2:** A Water Pollution Control permit establishes limits and controls on waste water discharges and stormwater runoff, usually relative to the	**Comment 1**: Though reported quarterly to the Division of Water Resources, freshwater and brine usage is confidential and detailed usage should not be disclosed. Freshwater consumption would increase by approximately 160 acre-feet annually over historical usage while brine usage would increase by approximately 4,000 acre-feet annually over historical averages. **Comment 2:** A clean supply of fresh water to support the needs of our community as well as our business interest is of utmost importance to Chemetall. The Silver Peak Operation has extracted fresh water and brines from the Clayton Valley for the past 45 years. Decades of collecting and analyzing water samples have shown no degradation of our water quality.

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	alone holds permits in excess of this recharge. In the period during which the company ceased their ground water pumping water levels in the municipal wells increased by several inches. When the Silver Peak facility was known as Cyprus Foote Mineral Company they prepared a report titled " Groundwater Supply Assessment of the Fresh Water Aquifer—Clayton Valley, Nevada Esmeralda County", dated September 2, 1998. When the report was prepared the company was withdrawing approximately 12,000 acre feet of brine water and 500 acre feet of fresh water annually. This report has the following findings and is included in total as an exhibit: IV. Results and Conclusions 1) The present supply of groundwater from the three wells in the alluvial aquifer is being depleted at a rate, which exceeds recharge. Any additional pumping from the aquifer will only increase the depletion rate. The quality of the groundwater below the 4200-foot contour is suspected of being brine water or water of very poor quality. The concern is the intrusion of brine water into the fresh water aquifer which result would render both Esmeralda County's and CFM's fresh water wells useless. 2) Historic data used in conjunction with recent aquifer testing shows the aquifer to decline at a rate of .38 to 1.25 feet per year. The aquifer life is between 14 and 27 years depending on the method of analysis. Monitoring the future changing rate of decline is strongly recommended. 3) The aquifer properties associated with the regional bounding faults are unknown at this time, but are suspected of acting as leaky barriers and partially separating the brine and fresh water aquifers. The bounding faults have wells that are completed to the brine aquifer, the fresh water aquifer, and in the areas where the two are mixing. The water quality concentration of the brine aquifer is approximately 3 times that of sea water. The water quality of the fresh water varies seasonally from 650 to 1000 TDS (mg/l Total Dissolved Solids) which is relatively poor by EPA standards. 4) Aquifer characteristics used in this analysis pertain to the area where the three existing water supply wells are presently used. In order to determine the aquifer characteristics of the alluvial aquifer throughout the western extent of the Clayton Valley, much hydrogeologic data would have to be collected and analyzed. It is suspected that the aquifer properties change quite dramatically throughout the valley and are directly related to the structural features and major bounding faults. 5) Any additional pumping within the area of the CFM wells and the County well will stress the aquifer further causing an accelerated water level decline and possibly, rupture of the semi-leaky bounding faults. The proposed project calls for an expansion of the pond system which would mean an increase in annual use and place additional stress on the basin. We want the	potential for impacts to surface waters (i.e., "navigable waters of the U.S.). Chemetall's brine processing facilities do not discharge industrial waste water to surface waters, other than to those in the brine ponds. Therefore, there would be no opportunity for a waste water discharge to adversely impact surface waters, at least not outside the boundaries of the playa. Furthermore, the permit exempts "playa groundwater" from standards in subsection one of the Nevada Administrative Code 445A.424 (i.e., A facility, regardless of size or type, may not degrade the waters of the State to the extent that: the quality is lowered below a state or federal regulation prescribing standards for drinking water; or the concentration of WAD cyanide exceeds 0.2 milligrams per liter) because total dissolved solids of the playa groundwater averages [139,000 parts per million], which is far above the level for drinking water. The permit, itself, does not make a distinction between brine water and fresh water in the basin. **Comment 3:** Total available groundwater of potable quality and quantity has not been explored across the extent of the alluvial fan that provides the fresh water supply. The 1998 CFM report used first-order estimations to predict the longevity of the existing water well supply. That report gave estimates of 14 and 27 years of remaining aquifer life at then observed linear decline rates. It was further postulated in the report that the rate of water level decline and aquifer depletion might accelerate through time. The possibility of accelerated depletion was a major concern expressed in that 1998 report. Twelve years later with continued use of these water wells by the town of Silver Peak and by Chemetall, the static water levels have declined approximately an additional six feet in Chemetall's well number 2, three feet in Silver Peak's well number 1, and two feet in a nearby down-gradient monitoring well. Water levels have continued to decline but at a slower rate, rather than at an accelerating rate as predicted in the 1998 report. Available data and information supplied by Chemetall to DOE indicates that the two	Chemetall would continue monitoring and testing fresh water and brine supplies as stipulated by our Water Pollution Control permit. The continual monitoring and data collection would be used to better define and modify, as required, our expansion process. **Comment 3:** During 2009 Chemetall reduced pumping rates in response to the economic climate. Fresh water pumping was reduced by several hundred acre-feet per year resulting in noticeable increases in the fresh water level seen in the municipal water well. The rising levels were a result of reduced pumping of fresh water and not a result of fresh water to brine communication. The groundwater assessment, written in 1998, was written due to a concern Cyprus had about a request for additional water usage by Mineral Ridge. If Mineral Ridge's project had been permitted the potential usage of the fresh water supply would have risen by 724 acre feet annually, drastically reducing the life of Silver Peak's and Cyprus's fresh water supply. Chemetall's proposed expansion would only increase fresh water usage by 160 acre feet over historical usage, not permitted usage. This increase is minimal in comparison to the 1998 proposal of 724 acre feet annually over permitted rights. As stated in comment #2 above Chemetall would continue its efforts through monitoring and analyzing samples to ensure a safe fresh water supply.

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	points made in the above mentioned report addressed and total annual use of water after completion of the project included in the EA. Water levels in both the alluvium and playa areas of the Clayton Valley have been declining. Loss of the town municipal supply due to a drop in the water level or a decline in water quality caused by intrusion of brine water would be a disaster the county would not have the financial ability to fix and the users of the water system would be unable to pay for. Mitigation should include a monitoring program that makes information public and provision of an alternative drinking water source for the community.	Chemetall fresh water supply wells and the three municipal fresh water supply wells plus the nearby down-gradient monitoring well are in hydraulic communication, that permeability of the alluvium between the wells is moderate to high, that ground water flow directions are generally aligned with or related to the down slope direction of the overlying topography, and that large quantities of deeper "brine" water is not being drawn up into these wells at the present time but deeper wells do draw water that is more saline (and higher in total dissolved solids). The sustainability or impact of an 18 percent increase in potable water consumption by Chemetall has not been determined by DOE. Likewise, the sustainability or impact of an increase in municipal water demand caused by an increase in the number of Silver Peak residents has not been determined by DOE. The nature of the alluvial fan deposits around Clayton Valley make it likely that additional potable water supplies could be found in other locations on this alluvial fan or on other nearby alluvial fans. The results and conclusions of the 1998 report are briefly addressed below: 1) In the potable water supply wells located on the alluvial fan west of Silver Peak, static water levels are continuing to decline but at a much slower rate than predicted in the 1998 report. DOE has not seen any evidence that large quantities of "brine" water is being drawn upwards into these wells. However, it is likely that the wells are drawing some water from greater depths in the alluvium where the concentration of dissolved solids would be higher and where the concentrations of certain undesirable constituents would be higher. The depth to "brine" water has not been verified in this area. In this context, "brine" refers to water with total dissolved solids in concentrations similar to those beneath the playa. 2) Chemetall has provided DOE with a chart that shows the static water levels between 1998 and	Though brine pumping rates on the playa would increase by up to 4000 acre feet per year over historical averages, data collected from new wells, since 1998, have indicated no evidence of brine to freshwater communication.

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		2010 for three wells in the fresh water aquifer: Silver Peak well #1, Chemetall well #2, and a nearby monitoring well. This chart shows that, while a decline in static water levels continues, the rate of decline is much less than reported for the period prior to 1998, as described in the 1998 report. Based on Chemetall's chart, it appears that the aquifer life would be much longer than predicted in the 1998 report if the historical pumping rates of the last decade were to continue into the future. The causes of the change in decline rates are not known to DOE but probably results, at least in part, from a reduction in pumping. 3) Information reviewed by DOE does not clearly support an assertion that the Landsat-interpreted northwest to southeast regional faults are all real or that they form lateral boundaries that separate brine water from fresh water laterally (in a direction that is perpendicular to the land surface slope on the alluvial fan). A set of sub-parallel faults located down gradient of the freshwater wells and shown on the old geologic map, however, may serve as a boundary between "fresh" water in the alluvial fan and "brine" beneath the playa. DOE has seen no information about wells that are completed into the faults and that support or refute the claims stated in point #3. 4) DOE agrees with the statements in point #4. However, for the purposes of DOE's decision on whether to provide financial assistance to Chemetall's proposed project, DOE believes that it is un-necessary to determine the alluvial aquifer characteristics throughout the extent of the western margin of Clayton Valley. 5) Information supplied to DOE by Chemetall does indicate that additional pumping of potable water from the existing wells would cause additional decline in the static water levels. If the proposed project is implemented, the increase in rate of decline has not been estimated by DOE. DOE has seen no information that clearly suggests the	

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		possibility of causing a "rupture of the semi-leaky bounding faults," either those claimed to exist as lateral boundaries (northwest to southeast orientation) or those located down gradient and having a southwest to northeast orientation. Based on information reviewed by DOE, it appears that the worst case scenario would be the gradual drawing of brine water toward the pumping wells, leading to increasing salinity of the produced water through time; and this would occur only if the water table near the down-gradient fault on the freshwater side was drawn down by the pumping wells below the water table on the brine side of the fault. Such a condition was suggested in the 1998 CFM report, but Chemetall's new chart of water levels over the past decade does not indicate that the fresh water aquifer's water table is lower than the playa aquifer's water table. It is likely that, if there is saltier water deep beneath the pumping wells, this lower quality water could be drawn upward into the potable water supply wells before brine would be drawn laterally from beneath the playa. If, as a result of the proposed project, the salinity (total dissolved solids) begins to increase significantly in the produced potable water of the municipal wells unaccompanied by pumping on these wells in excess of permitted rates, the rate of pumping from the Chemetall potable water supply wells should be reduced; and Chemetall should either supplement its potable water supply from other sources or reduce its demand accordingly. Information presented to DOE by Chemetall suggests that an increase in the rate of brine withdrawal from beneath the playa would not cause a drop in water levels in the fresh water aquifer in the vicinity of the municipal potable water supply wells because of the relatively low permeability of the faults where those faults cut the alluvium. If the faults are more conductive than currently believed and if the increased pumping of brines from beneath the playa would lower the shallow	

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		brine aquifer water table on the playa side of the down gradient faults, there would be a potential for an adverse effect on water levels in the fresh water aquifer, but the chance of brine water intrusion into the freshwater aquifer would be reduced. Monitoring of the static and pumping water levels, along with the concentration of total dissolved solids, is already on-going for both the municipal water supply wells and Chemetall's potable water supply wells, plus at least one nearby down-gradient monitoring well in the fresh water aquifer. The Silver Peak lithium production facility claims to have a history of assisting the town of Silver Peak in maintaining its water supply and seems to have a vested interest in assuring a water supply for the town, where a number of Chemetall employees live. The text in Section 3.1.2 Groundwater has been revised to provide more information on the potable water supply wells.	
6.	**Section 3.2.3.1.2** **Comment 1.** There is no mention of the handling or inclusion of Lithium Metal in this section or for that matter any specific discussion of this substance anywhere in the EA even though it appears on the list of hazardous materials stored at the site. Storage and use of this substance is of concern to the community as it is "A Flammable solid, Corrosive, Causes eye and skin burns. Water-reactive. Reacts violently and or explosively with water, steam or moisture. May ignite or explode on contact with moist air. May cause severe respiratory tract irritation with possible burns. May cause severe digestive	**Comment 1:** DOE understands that no lithium metal (i.e., elemental lithium) would be handled as a part of or in connection with the proposed project. **Comment 2:** See Chemetall's response to Comment 2. **Comment 3:** The text in **Section 3.2.3.1.2 Silver Peak** has been revised as follows: *"The"* process facilities *"and some of the pond"* are surrounded by security fencing to restrict public access ~~*to pond materials*~~. **Comment 4:** Comment noted. In **Section 2.3.2, Silver Peak,** the EA says: "The closest occupied structures to Chemetall's Silver Peak facilities (as measured from the Administrative Office) are approximately 1,000 feet away." And in section 3.2.1.1.2, Air Quality, the EA says: *"The closest occupied structures to the Silver Peak*	**Comment 1:** Lithium metal recycling is not part of the expansion. The rate of metal recycle is not changed in any way by this project. Lithium metal is brought on site for purposes of recycling. The metal is only handled by trained employees. All recycling activities take place in a very isolated location on the mine site and access is restricted to trained employees only. **Comment 2:** Chemetall has written policies that govern actions taken in the event of a major incident. Residents of Silver Peak would be notified if there were any indications that they may be put at risk.

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	tract irritation with possible burns. May cause central nervous system effects. May cause lung damage. Light sensitivity. May cause kidney damage. May cause pulmonary edema." (MSDS http://avogadro.chem.iastate.edu/MSDS/Li.htm) and has a number of potential health effects. **Comment 2**. Does the plan include notification of the community in the event of an incident? **Comment 3.** Not all ponds are fenced. **Comment 4.** The process plant is within 1,000 ft of residences.	*site (measured from the Administrative Office) are approximately 1,000 feet away."*	All local emergency service volunteers for the town of Silver Peak, with the exception of one volunteer, are employed by Chemetall and as such are well trained and knowledgeable of methods to safely handle all lithium materials. **Comment 3:** Chemetall concurs with DOE. **Comment 4:** Chemetall concurs with DOE.
7.	**Section 3.2.3.2.2** "The Silver Peak facility would incorporate lithium carbonate in its safety plan." **Comment:** Earlier in the document it is stated that this is already a component.	**Section 3.2.3.2.2 Silver Peak.** Text has been revised as follows: ~~The Silver Peak facility would incorporate lithium carbonate in to its Safety Plan.~~ *"The Silver Peak facility's Safety Plan includes procedures for the safe handling, storage and transport of lithium carbonate."*	Chemetall concurs with DOE.
8.	***Department of Wildlife*** Efforts to prevent avian mortalities need to match efforts to increase lithium brine production. It is the Department's goal to continue working with Chemetall for its implementing effective impact minimization measures. To this end, we view the proposed project funding as an opportunity for Chemetall to also enhance its bird monitoring and rescue efforts. We believe reasonable and practical investments in training, equipment, consultation and a dedicated avian technician position are necessary components in developing a successful and	**Section 3.2.1 Silver Peak, Vegetation and Wildlife.** Text has been added to the end of the second paragraph as follows: *"Chemetall would continue to work with the Nevada Department of Wildlife for identifying and implementing effective measures to prevent avian mortality; this would include enhancing the current bird monitoring and rescue efforts to prevent increased avian mortalities due to the increase in lithium brine production."*	The current [Industrial Artificial Pond] permit is up for renewal and/or modification in 2010. CFC is setting a zero mortality goal. This goal cannot be met without increasing both awareness and training. To achieve a zero mortality goal, seasonal employees will continue to assist the full-time migratory bird observer. A consultant, such as International Bird Rescue and Research Center (IBRRC), will be hired to recommend a plan for meeting the goal. The consultant will visit the site and evaluate migratory bird risk, then propose near term suggestions for reducing immediate

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	effective bird monitoring and rescue program. We encourage Chemetall pursuing this opportunity and can offer specific recommendations should funding be earmarked for this purpose.		mortalities, such as a daily plan for evaluating each pond, toxicity symptoms, equipment needed, etc. Additional equipment will be purchased to aid in meeting the goal; these might include a low-profile powered boat, additional nets, cages for transport, desalt station, etc. Several staff members will visit other facilities to evaluate the effectiveness of both human intervention programs, such as those used in California, and radar systems, such as those used in New Mexico, to determine long-term solutions. CFC will also reduce the volume in its highest pH pond, R2, to discourage migratory waterfowl landing. The zero mortality goal will be met through a continued partnership with NDOW. Data collection must be performed on a daily basis through the interim period of semi-idled operations (2010 to 2011), with an emphasis on rescue and relocation of migratory birds from hyper-saline ponds. Data collection should continue through one full year of full production (2012). Following the first year of full production, CFC must propose a long-term plan to NDOW for maintenance of the goal, or meet with NDOW to determine what direction is most appropriate given the new data and/or success of the plan.
9.	***Department of Wildlife*** The Department has documented bird nesting activity on several of the existing ponds. Ground disturbing activities in	**Section 3.2.1, Silver Peak, Vegetation and Wildlife.** Text has been added to the end of the third paragraph as follows: "*The Nevada Department of Wildlife, however, has documented bird nesting activity on several of the*	Chemetall concurs with DOE.

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	areas of potential breeding habitat should avoid the breeding and nesting season which roughly occurs between March 1 and July 31. If this seasonal avoidance is not practicable, then the Department recommends a qualified biologist survey the project site prior to any ground disturbing activities to determine if nesting is underway. In the event an active nest (containing eggs or young) is discovered or frequently attended by adult birds, a buffer around the nest appropriate for the species involved must be identified and avoided until young birds have fledged.	*existing ponds. In order to avoid impacts to these species protected under the MBTA, ground disturbing activities in areas of potential breeding habitat would be avoided during the breeding and nesting season (March 1 through July 31). If this seasonal avoidance is not practicable, a qualified biologist would survey the project site prior to any ground disturbing activities to determine if nesting is underway, and buffer areas would be established as needed to protect eggs and young birds until they fledge.*"	
10.	***Andrés Yaksic*** • According my understanding and what I have read in the media, Chemetall Foote Corporation was awarded $US 28.4 million in 2009 to establish a new 5,000 metric tons per year lithium hydroxide plant at an existing Chemetall facility in Kings Mountain, North Carolina and to upgrade and expand an existing lithium brine production facility and an existing lithium carbonate plant in Silver Peak, Nevada. However, I have recently read in the "Environmental Assessment For Chemetall Foote Corporation" made by DOE (April 2010) that DOE's Proposed Action is to provide only $16.1 million in financial assistance in a cost-sharing arrangement with the project proponent and that the total estimated cost of the project is $35.6 million. This means, only 45% of the project will be cover by DOE. I am confused since I do not know which is the correct figure of the award to that company. It is 28.4 million or 16.1	**1) Chemetall Foote funding under the ARRA**: Chemetall Foote was awarded approximately $28M of DOE funds. The total project value is approximately $63M. Chemetall Foote would provide $35M towards the total project. However, for purposes of environmental review, two EAs will be prepared: one EA will be prepared by DOE and will review every part of Chemetall's proposal except the planning and construction of a small geothermal power plant; the other EA will be prepared by the Bureau of Land Management (BLM) and will review only the proposed planning and construction of the small geothermal power plant. Because the power plant would require permitting activities and NEPA compliance by BLM and because BLM has more interest in this part of Chemetall's proposal, DOE determined to let the BLM oversee the environmental assessment of the geothermal plant. Thus while the project total value is $63M, DOE's EA will address only approximately $36M in expenditures, which would be applied to a brine field expansion and a lithium hydroxide production facility upgrade and expansion. Of this $36M, DOE would provide approximately $16 million, consistent with the overall cost share ratio (Chemetall = 55percent, DOE = 45 percent) negotiated for this award. The remainder of total funds ($27M) are to be applied to the geothermal plant, and would be released for expensing once the	Chemetall concurs with DOE.

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	million? If Chemetall has to cover the 55% of the project I assume that other projects within the US$ 2.4 Billion announced on August 5th, 2009 will also have to cover a percentage of their projects. After reading the original press release of the 2.4 B announcement (August 5th) I thought that DOE will award 2.4 billion and that the investment would be coupled with (around) another $2.4 billion in cost share from the award winners. I would really appreciate it you could help me to understand this better through your comments. Any reference is also appreciated.	second environmental assessment (led by BLM) is completed. Of the $27M for the geothermal, approximately $15M would be from Chemetall Foote and $12M from DOE. 2) **General Battery Funding under the ARRA**: As a requirement of the Recovery Act and the Battery Manufacturing Funding Opportunity, recipients of awards under battery manufacturing were required to provide 50 percent of the cost of the project. In some cases the recipient share is higher, because new budget information has become available, and the federal obligation must remain the same as at selection. In two cases the recipients' share was less than 50 percent because the technology was deemed exceptionally important, but in most cases the recipients are paying for exactly 50 percent of the costs.	
11.	***Alan Buehler, BLM*** I don't see any need to comment on the EA. The following information and statements could be irrelevant for the purposes of the EA and could be considered as suggestions. 1) On p. 18 it says that there are 0 to 40 people per square mile within an 80 mile radius. Goldfield is within about 20 miles and Tonopah is within 30. Both have more than 40 people per square mile.	**Section 3.1.2, Silver Peak, Noise.** Text has been revised as follows: The surrounding area is sparsely populated with between 0 to 40 people per square mile, within at least an 80-mile radius*, "excluding the few small towns."*	Chemetall concurs with DOE.
12.	***Alan Buehler, BLM*** 2) On p. 19 it says that the ponds have accumulated up to 15 feet of sand mixed with magnesium and calcium salts. In all likelihood the salt is composed mainly of sodium and potassium (which probably should have been stockpiled), not magnesium and calcium. You may want to check with Chemetall Foote.	**Section 3.1.2, Silver Peak, Geology and Soils.** Text has been revised as follows: In some areas, ponds have accumulated over 15 feet of salt and "muds," ~~(sand mixed with magnesium and calcium)~~ which are periodically removed.	Chemetall concurs with DOE.

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13.	***Alan Buehler, BLM*** 3) On p. 19 it says the berms are constructed of mud. I think a lot of the berms are constructed of + 6 inch rock called rip rap. You may want to check with Chemetall Foote.	The berms are constructed with soil, with some having six-inch diameter riprap on the surface of the berms.	Chemetall concurs with DOE.
14.	***Alan Buehler, BLM*** 4) Near the bottom of p. 19 it mentions that water elevations would remain the same. I didn't understand what water elevations it was referring to (groundwater, pond surface water).	**Section 3.1.2, Silver Peak, Geology and Soils.** Text was revised as follows: A portion of the potential subsidence would furthermore be offset by the aggrading or filling with sludge, and therefore, "*land* ~~water~~ *surface* "elevations would likely remain the same.	Chemetall concurs with DOE.
15.	***Alan Buehler, BLM*** 5) Near the bottom of p. 21 it says that Chemetall would develop additional wells and expand the pond system. I couldn't find quantities for the number of wells or acres of pond increase.	**Section 3.1.2, Silver Peak, Groundwater.** Text has been revised as follows: As part of the Proposed Project, Chemetall would develop additional production wells for lithium brine extraction and expand the evaporative pond system ~~The Nevada Division of Environmental Protection renewed Chemetall's Water Pollution Control Permit NEV0070005 after determining that the groundwater quality would not be degraded by operation of the facility, and that public safety and health would be protected (NDCNR, 2007).~~ The Proposed Project would be conducted in compliance with the permit and would have a negligible impact on groundwater resources, including water levels of producing aquifers "*by dredging material out of the existing ponds, not by increasing their overall surface area. Additional brine water demand for the project is estimated to be 4,000 acre-feet annually over historical averages. Fresh water consumption would increase by approximately 160 acre-feet annually over historical usage. Despite the anticipated increase in water usage both fresh water and brine usage would remain below the determined recharge rates to the basin. Thus, providing a supply of fresh water to support the needs of Silver Peak residents, as well as Chemetall's business, is of the utmost importance. "*	**Comment 5:** Through Chemetall's expansion program several wells would be rehabilitated and new wells would be drilled to provide adequate brine to maintain production requirements. Each well's performance would vary from the next. The goal of the expansion program is not the number of wells but the overall volumes produced. Chemetall would experience an increase of 4,000 acre-feet annually in brine pumping volumes over historical levels.

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
16.	***Alan Buehler, BLM*** 6) At the bottom of p. 29 it says that the No Action Alternative will have a moderate adverse cumulative impact on climate change. It's a matter of opinion, but I think that may be over stated. I suspect the No Action Alternative will have an immeasurably small adverse impact on climate change.	This statement is referring to the advancement of meeting the goal to produce advanced EDV batteries and components for the U.S., not just for the Chemetall project. Therefore, the statement remains as presented in the EA.	Chemetall concurs with DOE.
17.	***BLM, Tom Seley, Field Manager, Tonopah Field Office*** The comment I have is based on the Second Paragraph on page 10, last sentence of the paragraph which states"several geothermal firms may be seeking future claims". This statement is inaccurate. I would suggest changing to reflect that there are 6 geothermal leases, along with 1 geothermal unit where active exploration has been conducted that will have additional exploration in the future, that are immediately adjacent to Chemetall Foote. Listed below by Company are the geothermal lease numbers and the attached map shows the locations of the leases. The map may be slightly inaccurate for location of the leases, but it is very close to actual locations. In addition, geothermal leases are for a period of ten years and may be extended for 5 additional years if the proponent starts exploration near the end of their lease and need additional time to completed exploration. If a resource is developed into a geothermal powerplant then the lease is in effect for the life of the powerplant. Ram Power Corporation NVN-085736	See Response to Comment 2 on page 1.	Chemetall concurs with DOE.

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
	NVN-085737 We expect a Notice of Intent to conduct a geothermal exploration program in the near future for these 3 leases immediately north and northeast NVN-085738 of Chemetall Foote's patented lands. NVN-086936 These parcels are on the south end of Clayton Valley NVN-086937 Sierra Geothermal Power Corporation NVN-08433X This is a geothermal unit which is made of 3 or 4 individual leases that were unitized. Active geothermal exploration has occurred in the last year and additional exploration will be conducted in the future. NVN-085739 This lease is located immediately north of Chemetall Foote patented land. We are currently processing a Notice of Intent for a 15 km linear seismic line which encompasses the lease as well as lands both north and south of the lease. For mining, nearly the entire Clayton Valley area has mining claims staked, and there has been active exploration immediately adjacent to Chemetall for lithium. For additional information on the geothermal or mining claims you can access LR2000 data base at, www.blm.gov/lr2000/ Alan Buehler may have additional comments after he reviews. If you have any questions please feel free		

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	to call. (See attached file: GeoProjectsAroundClayton2.pdf)		
18.	***State Land Use Planning Agency, Skip Canfield*** Utilize appropriate lighting: • Utilize consistent lighting mitigation measures that follow "Dark Sky" lighting practices. • Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas. • A lighting plan shall be submitted with the site plan review and/or architectural or engineering drawings indicating the types of lighting and fixtures, the locations of fixtures, lumens of lighting, and the areas illuminated by the lighting plan. • Any required FAA lighting is exempt from this condition.	DOE understands that Chemetall's plans for refurbishment and expansion do not include the installation of additional outdoor lighting. However, if the plans change, Chemetall would consider environmentally friendly lighting practices.	Chemetall's expansion program would not require additional outdoor lighting.
19.	***State Land Use Planning Agency, Skip Canfield*** Utilize building materials, colors and site placement that are compatible with the natural environment**:**	DOE understands that Chemetall would not construct new buildings or structures at the Silver Peak site as a part of the project covered by this EA. There would be no new above-ground tanks, roads, power transmission lines, above-ground pipelines, outdoor material	No new structures would be built in connection with the expansion program. The majority of all drilling activities would take place within areas of existing roads,

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
	• Utilize consistent mitigation measures that address logical placement of improvements and use of appropriate screening and structure colors. Existing utility corridors, roads and areas of disturbed land should be utilized wherever possible. Proliferation of new roads should be avoided. • For example, the use of compatible paint colors such as "sudan brown" for water tanks and other vertical structures reduces the visual impacts of the built environment. Using screening, careful site placement, and cognitive use of earth-tone colors/materials that match the environment improve the user experience for others who might have different values than what is fostered by built environment activities. • Federal agencies should require these mitigation measures as conditions of approval for all permanent and temporary applications.	conveyances, or parking lots.	pipelines and power transmission lines. Activities requiring additional roadways, pipelines or power transmission lines would be in accord with standard practices.
20.	***Nevada Division of Water Resources, Steve Shell*** A review of the area, Hydrographic Basin No. 143, Central Region, Clayton Valley Sub Basin indicates there are two active water rights appurtenant to the described lands in this proposed project, both owned by Chemetall Foote Corporation. There are several more active water rights in the general vicinity.	A review of the Nevada Division of Water Resources Water Rights Database indicates there are 24 different water rights owned by Chemetall Foote in the Clayton Valley Sub Basin. However, another Nevada Division of Water Resources' reference indicates there are 25 water rights (NDCNR, 1999).	Chemetall holds 25 water rights, nineteen certificated and six permitted. Eighteen certificates are listed under Chemetall and one certificate is listed under Cyprus Foote Minerals (49988).

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21.	***Nevada Division of Water Resources, Steve Shell*** Please be advised that wells and/or points of diverting water on these lands, whether new or existing, shall require prior approval of the State Engineer, including changes of the point of diversion, place of use, and/or manner of use. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Chapters 533 and 534 of the Nevada Revised Statutes (NRS), and not otherwise.	DOE understands that Chemetall would coordinate with the State Engineer as required and complete applicable permitting requirements.	Chemetall concurs with DOE.
22.	***Nevada Division of Water Resources, Steve Shell*** Any water or monitor wells, or boreholes that may be located on either acquired or transferred lands are the ultimate responsibility of the owner of the property at the time of the transfer and must be plugged and abandoned as required in Chapter 534 of the Nevada Administrative Code.	DOE understands that Chemetall Foote would comply with Chapter 534 of the Nevada Administrative Code.	Chemetall concurs with DOE.
23.	***Nevada Division of Water Resources, Steve Shell*** If artesian water is encountered in any well or borehole it shall be controlled as required in NRS § 534.060(3).	DOE understands that Chemetall Foote would comply with NRS § 534.060(3).	Chemetall concurs with DOE.
24.	***Nevada Division of Water Resources, Steve Shell*** Any water used on the described project for construction, dust control, or maintenance should be provided by an established utility or under permit or waiver issued by the State Engineer's Office.	DOE understands that Chemetall Foote would coordinate with the State Engineer as required.	Chemetall's expansion program would not include major construction activities. Expansion would occur through rehabilitation of existing well structures and drilling new production wells.
25.	***Nevada Division of Water Resources,***	Comment noted. See Chemetall's response to this	Chemetall's expansion project would not

Comment Number	Public Comment on Chemetall EA from Esmeralda County, Nevada	DOE Response (Text in italics and underlined is revised text in the EA, Text with strike through is deleted text)	Chemetall Foote Response
	Steve Shell Any person proposing to construct a dam in this state shall, before beginning construction, obtain from the State Engineer a permit to appropriate, store and use the water to be impounded by or diverted by the dam, NRS 535.010(1). Before constructing, reconstructing or altering in any way any dam, notify the State Engineer thereof; and where the dam is or will be 20 feet or more in height, measured from the downstream toe to the crest of the dam, or is less than 20 feet in height and will impound more than 20 acre-feet of water, must submit to the State Engineer in triplicate plans and specifications thereof for his approval in accordance with Nevada Revised Statue Chapter 535 and Nevada Administrative Code Chapter 535 prior to construction is to begin, NRS 535.010(2)(a)(b).	comment.	involve the construction of dams. Increased brine production is the main emphasis of the expansion program. Chemetall would utilize our existing infrastructure which is governed within the text of our Water Pollution Control permit and within the text of our Reclamation Plan.
26.	***Nevada State Historic Preservation Office*** Proposal supported as written.	Comment noted.	Chemetall concurs with DOE.

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27.	***Nevada Division of Environmental Protection, Bureau of Air Pollution Control (BAPC)*** In response to the referenced public notice, the Nevada Division of Environmental Protection -- Bureau of Air Pollution Control (BAPC) offers the following comments: Chemetall Foote currently operates under a Class 2 air quality operating permit (AP14790050.1). This permit will require revision in order to accommodate the proposed project and pre-construction activities. It is also possible that the facility may exceed 100 tpy threshold for the Class 2 permit and become a Class 1 (major source) operating permit. The facility must also be in full compliance with their permit before a revision can take effect.	Section 3.2.1.1.2 Silver Peak, the text has been revised as follows: ***Current and Projected Emissions*** Currently, the Silver Peak site produces Li_2CO_3 and LiOH. The Silver Peak facility operates via a Class II Air Quality Operating Permit issued by the NDEP Bureau of Air Pollution Control: Permit No. AP1479-0050."~~02~~*1*. " This permit applies to most of the equipment used and materials handling activities in the facility's manufacturing process. "*This permit would not require revision to include the proposed project and pre-construction activities"*. In Nevada, a Class II operating permit is typically required for facilities that have the potential to emit less than 100 tpy of any one regulated pollutant, and less than 25 tpy total HAPs, and less than 10 tpy of any one HAP. "*If the proposed facility were to exceed any one of these thresholds, it would be required to obtain a Class 1 operating permit as a major source."* ~~*Therefore, the Silver Peak facility is a minor source of air pollution.*~~ For its "*original"* operating permit, the facility requested and demonstrated that it could meet the Federally-enforceable emissions cap, thereby ensuring that the facility would comply with all applicable requirements and not cause significant deterioration to the area's air quality.	Chemetall's expansion program would not require a modification to our existing Air Quality permit AP1479-0050.~~02~~*1*. The expanded capacities would not require additional equipment or modifications to existing equipment to meet the anticipated production needs. The expanded production volumes will be within the scope of our current permit. Chemetall would continue operating under a Class II operating permit.
28.	***Paul Rupp*** Having learned of DOE/EA-1715D recently, I have studied the 71 pages (PDF) and do not understand or agree with DOE/EA-1715D. I live within 1000 ft of Chemetall's processing plant and operations.	The proposed project is not anticipated to intrude on Mr. Rupp's property. The comment does not address any specific concerns or issues; therefore, a more detailed response cannot be provided.	Chemetall concurs with DOE.

Comment Number	Public Comment on Chemetall EA from North Carolina State Clearinghouse	DOE Response (text in italics is revised text in the EA)	Chemetall Foote Response
29.	***Esmeralda County Land Use Advisory Committee: Esmeralda County Public Lands Policy Plan*** Esmeralda County is requesting the DOE, as a cooperating agency, to review this plan regarding local land use plans and policies relevant to DOE requirements for land uses. Any DOE land use requirements within Esmeralda County should be coordinated with Esmeralda County.	DOE appreciates the opportunity to review the Esmeralda County Public Lands Policy Plan, as it relates to the proposed DOE action that is the subject of this EA. After reviewing the Plan, DOE finds that its proposed action is not inconsistent with the Policy Plan. The proposed DOE action would support continued operations of Chemetall's Silver Peak lithium brine mining and processing operations and thereby support the benefits that this commercial mining activity brings to Esmeralda County in the form of jobs, economic stimulus, tax revenues and, hopefully, increased local home occupancy rates -- consistent with the goals of the American Recovery and Reinvestment Act of 2009. As the second largest employer in Esmeralda County (p. 11, Figure 5 in the Plan), continuation of the direct and indirect jobs associated with Chemetall's Silver Peak operations is vitally important to the local job market, county employment levels, and base economic activity in the county. The proposed DOE action would not change the use of public lands nor upset the competing demands on the resources of the county. The project aims to refurbish the brine production wells and the old processing plant, bringing these facilities to higher performance levels. At this time it is not clear whether an additional potable water well would be required in the future as a result of Chemetall's proposed activities at Silver Peak, but Chemetall would have the burden of meeting its needs for milling water without burdening the town of Silver Peak or the county government. Based on available geologic and topographic information reviewed by DOE, it appears that suitable water for Chemetall's milling (approximately 100 gallons per minute additional pumpage) does exist within alluvial fans along the southwestern margin of the Clayton Valley playa; there are various opportunities to avoid further impairment of the municipal water supply well yields and quality; the proposed increase in milling water use and incidental municipal water use (from additional residents moving into Silver Peak) would be in the public interest (lithium is a strategic mineral resource	

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		for the United States and the mining operation at Silver Peak currently is the only active domestic supply); and Chemetall's proposed project is feasible and is not a speculative attempt to collect water rights. DOE anticipates that Chemetall would monitor water supply conditions and share the monitoring results with the town of Silver Peak and the County Commission and would coordinate with the appropriate officials and interested parties regarding any required mitigation measures. Consistent with Esmeralda Board of County Commissioners' Policy 19-3, Chemetall, as the project proposer/developer, would have the burden of monitoring, planning, and either undertaking or compensating for any necessary mitigations.	
30.	**North Carolina Department of Cultural Resources, State Historic Preservation Office**: No Comment	Comment noted.	Comment noted.
31.	***North Carolina Department of Environment and Natural Resources*** The Department of Environment and Natural Resources has completed its review. Our regional office within the geographic area of the proposed project has identified permits that may be required prior to project construction: **Comment 1**. Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.O100 thru 2Q.0300) – Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113) **Comment 2.** The Sedimentation Pollution Control Act of 1973 must be properly	**Comment 1**. **Section 3.2.1.1.1 Kings Mountain**. Text has been added as follows: "*The NCDENR has informed Chemetall that, in accordance with 15 A NCAC (2Q.O100 thru 2Q.0300, and 2Q.0113), the Kings Mountain facility would require a permit to construct and a modification of its Title V permit to operate prior to installation and operation of any air pollution sources at the facility."* **Comment 2.** Less than one acre of land would be disturbed; thus, an erosion and sedimentation control plan would not be required.	**Comment 1.** DOE's response is accurate. It would be necessary for Chemetall to obtain the required permits to construct and operate the proposed lithium hydroxide plant. **Comment 2.** The DOE response is correct. Less than one acre of land would be disturbed as the lithium hydroxide plant would be located in an existing building.

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	addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) At least 30 days before beginning activity. A fee of $65 for the first acre or any part of an acre.		
32.	***North Carolina Department of Environment and Natural Resources Division of Air Quality*** DAQ - This facility would require a modification of Chemetall's Title V Air Permit.	**Section 3.2.1.1.1 Kings Mountain**. Text has been added as follows: "*The NCDENR has informed Chemetall that, in accordance with 15 A NCAC (2Q.O100 thru 2Q.0300, and 2Q.0113), the Kings Mountain facility would require a permit to construct and a modification of its Title V permit to operate prior to installation and operation of any air pollution sources at the facility."*	**Comment 1.** DOE's response is accurate. It would be necessary for Chemetall to obtain the required permits to construct and operate the proposed lithium hydroxide plant.
33.	***North Carolina Department of Environment and Natural Resources Division of Water Quality*** DWQ- Surface water - Plant may affect existing NPDES wastewater permit NC0033570. Check with permitting unit in Raleigh. If impacting > 1 acre construction stormwater [permit] would be required – issued with sediment & erosion control plan.	Less than one acre of land would be disturbed; therefore, an NPDES stormwater permit along with an erosion and sedimentation control plan would not be required. According to the comment, Chemetall's industrial complex at Kings Mountain currently discharges wastewater under permit number NC0033570. If there would be additional wastewater generated by the proposed plant, the existing NPDES wastewater permit would be modified.	DOE's response is accurate. The lithium hydroxide plant would be located in an existing building, and land disturbance would be under the one acre threshold.
34.	***North Carolina Department of Environment and Natural Resources Division of Pollution Prevention and Environmental Assistance*** PPS- No Comments	Comment noted.	Comment noted.
35.	***North Carolina Department of Environment and Natural Resources Division of Land Resources*** LQ - E&S Control Plan required for this site only if land disturbance is new and did not receive a permit before.	Less than one acre of land would be disturbed; thus, an erosion and sedimentation control plan would not be required.	DOE's response is accurate. The lithium hydroxide plant would be located in an existing building, and land disturbance would be under the one acre threshold.

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36.	***North Carolina Department of Environment and Natural Resources Division of Water Quality*** ***Surface Water and Groundwater:*** The Kings Mountain facility is located in the Buffalo Creek subbasin (03-08-05) of the Broad River Basin. The receiving stream for stormwater runoff from the property is Kings Creek. The facility is subject to stormwater permit NCS000096 issued by the North Carolina Department of Environment and Natural Resources (NC DENR) (NC DENR, 2009a) under the National Pollutant Discharge Elimination System and effective from November 1, 2009 through October 31, 2014. The facility does not discharge process or sanitary wastewater to surface waters. *Incorrect – have NPDES wastewater permit NC0033570. Discharges to Kings Creek in Broad River Basin.*	**Section 3.1.1, Surface Water and Groundwater**. Text has been revised as follows: The facility "*discharges condensate, non-contact cooling water, and boiler blowdown to Kings Creek in accordance with National Pollutant Discharge Elimination System permit NC0033570 issued by the NCDENR"* ~~does not discharge process or sanitary wastewater to surface waters.~~ The Proposed Project would include the addition of a lithium hydroxide process within an existing plant building. Renovation of the existing building would involve adding two new floors. Additionally, six new ASTs would be erected near the existing plant building the on previously distributed land. Potential impacts on surface water during construction would be temporary and minor. As stated in the November 18, 2009, letter from the USFWS regarding the Proposed Project, the treatment of stormwater leaving the project area, creation of impervious surfaces, and impacts to stream buffers would be of concern to surface waters (see Appendix A); however, construction of the Proposed Project would involve negligible ground disturbance and would not involve the generation of additional impervious surfaces. Due to the distance of the project site to the nearest receiving water body, impacts to receiving waters resulting from stormwater runoff during construction would not be anticipated. The facility would remain subject to stormwater permit NCS000096 issued by the NCDENR. *" Process water would not be discharged to Kings Creek (see "Utilities and Energy Use"; however, an additional 5,000 gallons per day of non-contact cooling water would be discharged, in addition to the existing discharges, under a modification to permit NC0033570. Continued compliance with the effluent water quality specifications of the permit would reduce the impacts to the physical and chemical characteristics of Kings Creek."* Furthermore, the project would not affect any stream buffers as the proposed facility is sited in an existing developed area, away from water resources. Overall, the Proposed Project would have a negligible impact to surface waters during both construction and operations."	The facility currently operates under stormwater permit NCS000096 , which discharges into the receiving stream Kings Creek. No process waters or sanitary wastewater is discharged to surface waters. Discharges of condensate and boiler blow-down water are to Kings Creek in the Broad River Basin in accordance with National Pollutant Discharge Elimination System Permit NC0033570 issued by the NCDENR. Chemetall Foote is currently investigating the possibility of discharging some non-contact process water and other water to the local POTW facility in the city of Kings Mountain.

Comment Number	Public Comment on Chemetall EA from North Carolina State Clearinghouse	DOE Response (text in italics is revised text in the EA)	Chemetall Foote Response
37.	***State of North Carolina Department of Transportation*** Please note that the Kings Mountain Thoroughfare Plan recommends widening 1-85 to six lanes in the vicinity of the project. Also note that there are plans for greenways/multi-use trails in the vicinity of the property. Please consider these plans where relevant to the project referenced above. The links below provide information about the Kings Mountain Gateway Trail and the Carolina Thread Trail. Kings Mountain Gateway Trail: http: //www.kmgatewaytrails.org/about-the-trail/future-plans.aspx Carolina Threat Trail: http://www.carolinathreadtrail.org/index.php?id=37	DOE understands that Chemetall Foote would coordinate with the North Carolina Department of Transportation regarding any possible conflicts between Chemetall's proposed project and the State's implementation of the Thoroughfare Plan and the trail development and use plans.	The proposed project location is approximately 1,000 feet from the I-85 corridor and would not interfere with widening of I-85. Chemetall Foote has provided the right-of-way for the greenways trails on the perimeter of the property. The proposed project would be located in an existing structure where current manufacturing activities occur. Therefore, the project would have no impact on the greenways trail. However, Chemetall Foote would coordinate with all applicable agencies if any conflicts are discovered during the proposed project.

RE-ANALYSIS of GROUNDWATER SUPPLY
FRESH WATER AQUIFER of CLAYTON VALLEY, NEVADA

Melissa Jennings

August 13, 2010

I. Purpose for Analysis

Chemetall Foote Corp. (CFC) proposes to expand its Silver Peak Operations lithium extraction facility. Lithium production from brine aquifers of Clayton Valley has been ongoing since the mid-1960s. Groundwater of the Clayton Valley playa is non-potable and is referred to as brine due to the high concentrations of dissolved constituents, including lithium salts. The town of Silver Peak (SP) and CFC obtain relatively fresh groundwater for municipal supply and industrial processing from an aquifer overlying playa sediments located west of the valley. The primary geology of this aquifer is alluvium, and two CFC supply wells and three SP wells extract fluid from this aquifer. CFC's proposed expansion will result in an increase in the use of fresh water for processing, as well as increased pumping from brine aquifers.

A previous groundwater study, conducted in 1998, used information gathered from the potable water supply wells and available springs to show the potable water elevation to be declining at a rate of 0.38 to 1.25 feet per year. Based on information and assumptions used in the study, the aquifer life was estimated to be 14 to 27 years, depending on the method of analysis. Extrapolation of geological structures from satellite imagery projected northwest-southeast trending faults to serve as a semi-leaky hydrogeologic barrier between the potable and non-potable water aquifers. The report concluded that it was possible for the potable water supply to be depleted or compromised.

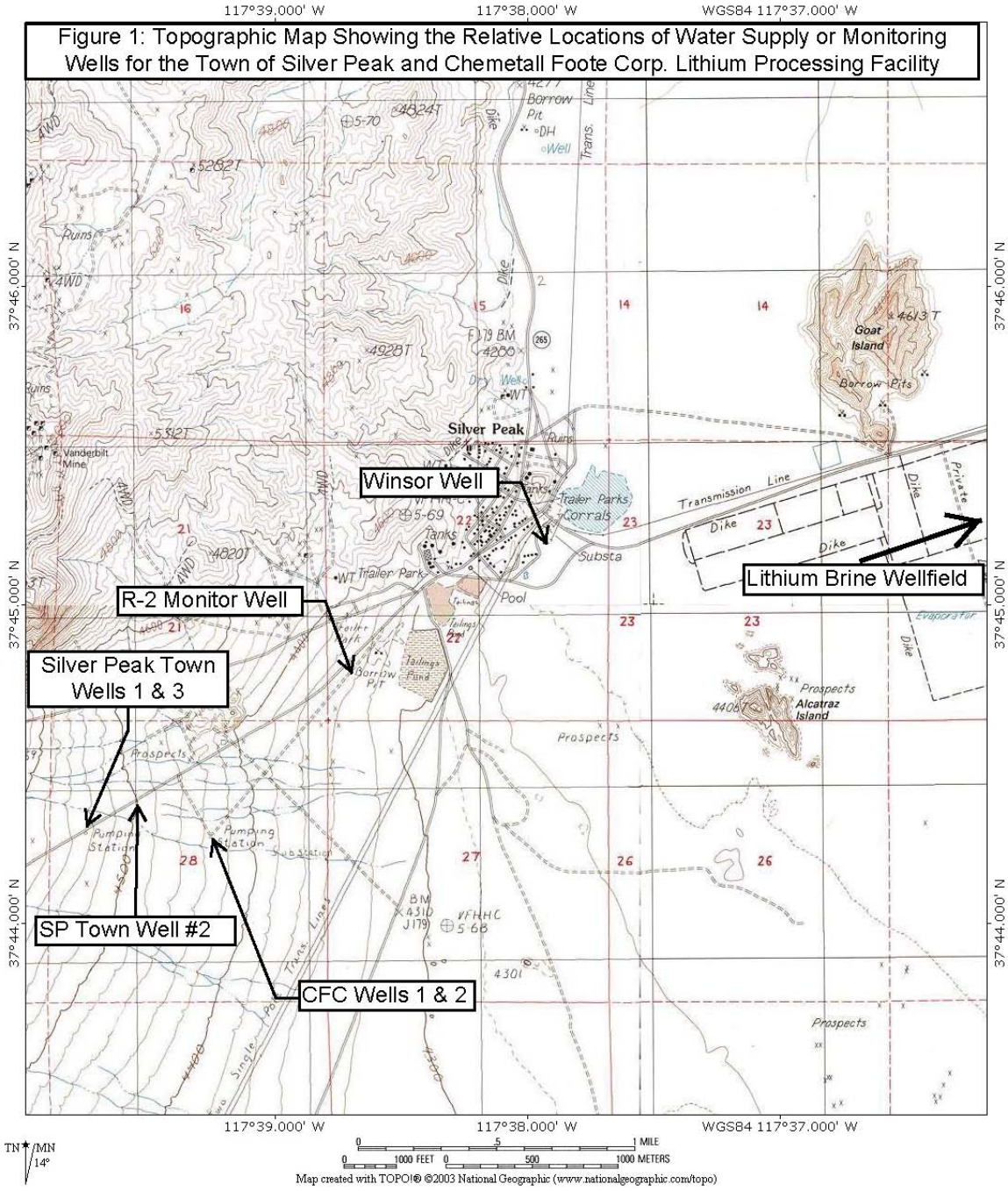
The 1998 report was written when the Nevada Division of Water Resources was being petitioned by a private party to increase water allocations from the same area of Clayton Valley, potentially from the same groundwater aquifers, serving the Town of Silver Peak and CFC's Silver Peak Operations. Additional permitting to other entities and subsequent over-pumping of the potable water aquifer could result in a number of detrimental circumstances, including equipment failure, well structural failure, potable water supply contamination, costs of exploration for a new water source, and costs of new construction. Preservation of the potable water supply is an important consideration in CFC's proposed expansion. The purpose of this re-analysis is to show that potable water supplies are finite, but not in jeopardy. Under careful management and cooperative planning, the town of SP and CFC can enjoy the resource responsibly.

II. Background

Prior to the discovery of lithium, potable water was pumped from a well just north of the current lithium processing facility, in the center of Silver Peak. The discovery of lithium in water of the Clayton Valley, just east of the town of Silver Peak supported the construction of a lithium mine, and playa water was evaporated and processed for profit. Potable supply water was pumped to the playa from springs near town to facilitate handling and processing of the brines. Several geological features confine the lithium deposit; these include faults, impermeable geological formations, permeable geological formations, and recharge. The presence of lithium in waters

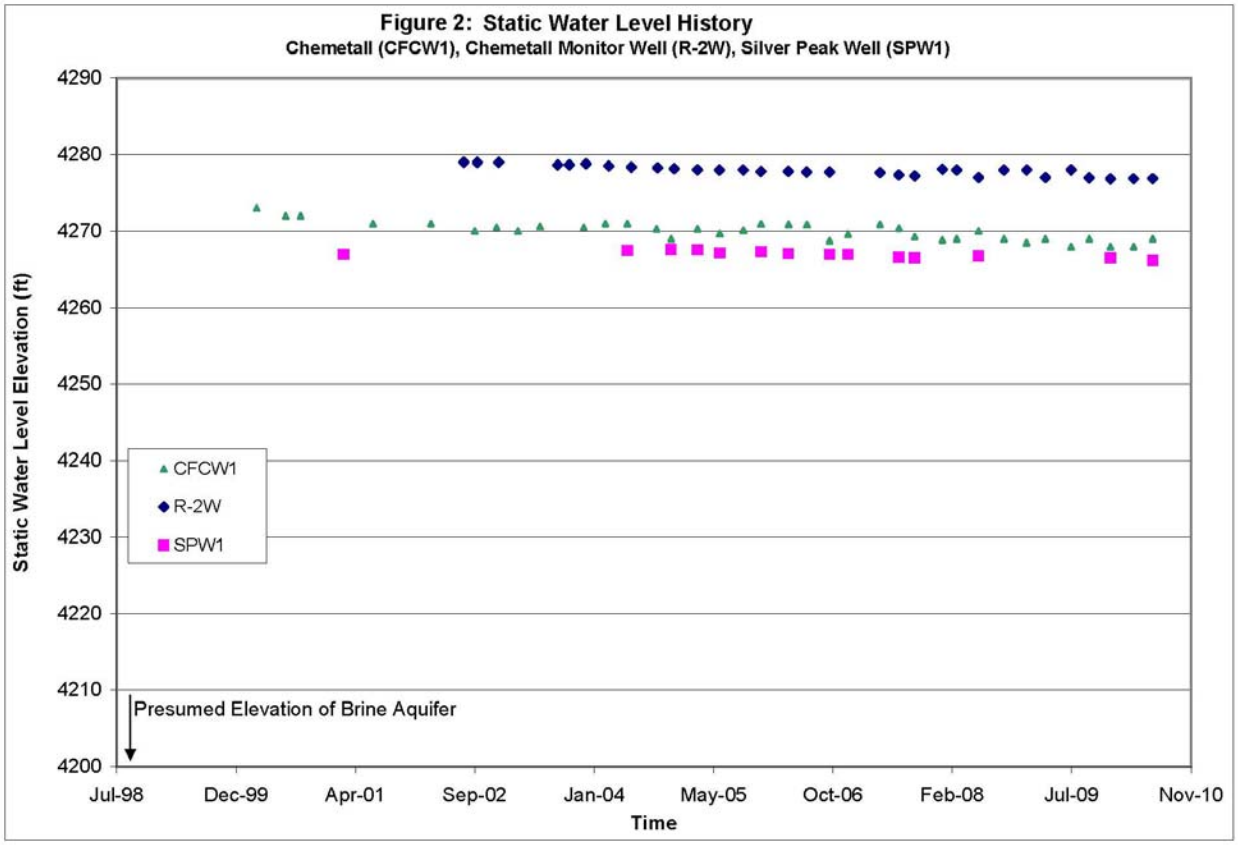
within a specific area of the valley proved the resource to be localized and finite. The company drilled wells for lithium extraction across a portion of the valley floor, and over time, this resulted in drawing down the groundwater table of the brines beneath the playa. Meanwhile, springs could not supply sufficient quantities of water for the playa operations, and the town well was drawing down its fresh water supply to the bedrock interface; thus potable water was sought to the southwest of the town by drilling into the thick alluvium. From the time when the first well was drilled into the thick alluvium until now, there has been no evidence to suggest that lithium brine extraction depleted this localized water table within the structurally complex alluvial fan area located southwest of the town. While the water table in the wells has been observed to gradually decline, the data point to a pumping rate that slightly exceeds the recharge rate locally.

The first CFC potable water supply well, CFCW1, was completed in 1968. Drilled to bedrock at 458 feet, the water met drinking water standards, over the full depth of the well. Based on the land surface and drilling depth, potable water was found down to the bottom of the hole at 3,980 feet elevation in CFCW1 – no brines were encountered. The town constructed the next supply well, SPW1, in 1975 just west of CFCW1 and completed the well to 400 feet depth or to 4,150 feet elevation. In 1986, CFC constructed and began using a new supply well, CFCW2, because the first well showed wear and corrosion. CFCW2 is constructed to a depth of 382 feet or to 4,062 feet elevation. In 1998, CFCW1 was rehabilitated with a liner and brought back into service as a backup well. In 2003, SP constructed a backup well, SPW2, just northwest of SPW1. The well was completed to a depth of 400 feet, or to 4,106 feet elevation. This well did not encounter brine, but had water quality problems with higher concentrations of total dissolved solids, uranium and fluoride than allowed by drinking water quality standards. Finally, in 2009, SP drilled a third well, SPW3, to a depth of 400 feet, or to 4,150 feet elevation, which serves as the backup supply well (Figure 1).



When the 1998 report was prepared, water levels and pumping information were available from three sources for the potable water aquifer: the CFC supply wells (2) and the SP municipal well (1). Now, in 2010, information has been gathered for a longer period of time from those same wells used in the 1998 report, and additional information has been collected from the two newer SP wells that tap the same aquifers. Additionally, in 2002 CFC installed a monitor well to the east of the supply wells, between the brine aquifer and supply wells, to monitor water quality near the CFC R-2 Pond. The wells installed after 1998 provide more data for comparison with the 1998 study.

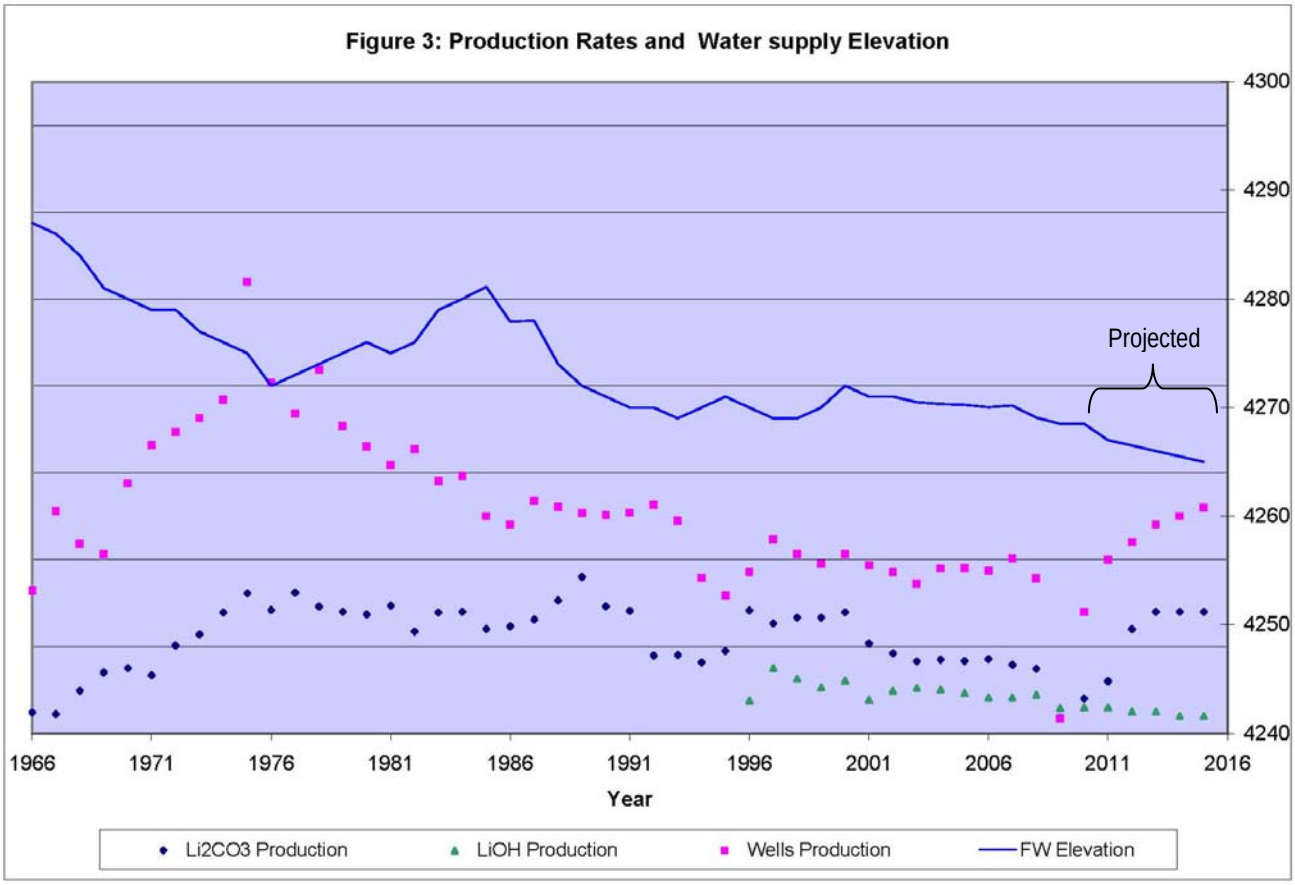
Static water levels within both CFC supply wells continue to show a downward trend, but at a much lesser rate than reported in 1998. The groundwater study of 1998 stated that static groundwater levels dropped at an average rate of approximately 1 foot per year (1986 to 1998) in CFM wells and approximately 0.5 foot per year (1975 to 1998) in the SP well. Since that time, the rate of decline has lessened. The water table elevation in CFC supply wells has dropped 7 feet in 14 years or **0.5 feet per year** (1998 to 2010) and the original SP supply well has dropped 2.4 feet in 14 years **0.17 feet per year** (1998 through 2010). In the CFC R-2 Monitor Well, drilled in 2002, the water table elevation has declined at a rate of 2.16 feet in 8 years, for a rate of **0.27 feet per year** (Figure 2).



The principle concern in the 1998 report was not the average rate of decline over time, but the possibility of an increase in the rate of decline over time. If the rate of decline over time was too rapid, i.e. potable water pumping was excessive, the 1998 report expressed a fear that a barrier between potable and non-potable water could rupture. In the 1998 study, it was presumed that the non-potable water would be found below an elevation of 4,200 feet, although data from all supply wells contradicts this. Potable water quality was found as deep as 3,980 feet elevation.

In order to understand the activities occurring at that time, one must know a little history of the facility. Lithium chloride brine has been extracted from the brine aquifers of Clayton Valley playa since the mid-1960s. The extraction rate peaked in the mid-1970s, and production rates have varied since that time. Lithium carbonate production rates closely mimic brine pumping

rates, such that when brine pumping rates are high, the production of lithium carbonate is high, which requires CFC's mill to use potable water at a greater rate. The lithium hydroxide plant was under construction from 1995 to 1996. Lithium hydroxide production peaked in 1997 and production rates have varied since that time. When all production volumes are superimposed with the water table elevation over time, the increase in the rate of decline that was described in the 1998 groundwater report is explained (Figure 3). Given the history of fresh water levels in the wells versus the fresh water pumping rates and production levels of the mill, it is possible to forecast (approximately) the rate of decline in the fresh water levels in the future (see Figure 3).



III. Geology and Structures

The groundwater supply assessment of 1998 described a series of northwest-southeast trending faults, identified from satellite imagery, as being barriers to groundwater types, separating potable water from non-potable water. These faults act as leaky barriers in the subsurface which control the movement and direction of groundwater. The same satellite imagery and more recent geological mapping identify several parallel north-south trending faults that fit the boundary conditions, presence of springs, water quality, and drilling data more appropriately than the northwest-southeast fault zone previously suggested.

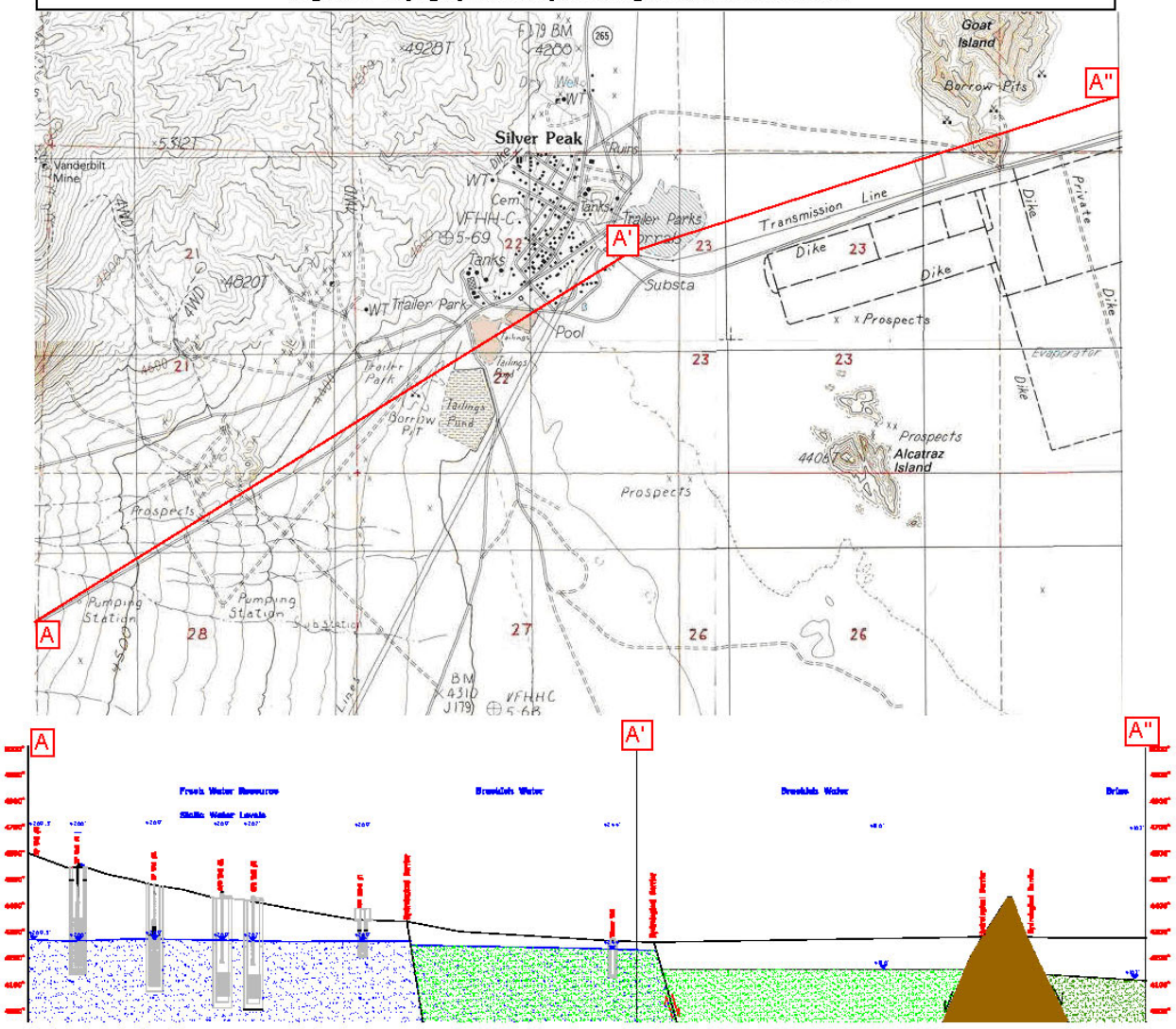
Generally within all the potable water supply wells and monitor wells drilled to date, the geology of the potable water aquifer is predominantly alike, i.e. alluvium; sandy, silty, and poorly sorted

gravel. The material is semi- to un-consolidated and hosts a supply of groundwater that is sufficient for both the Town of Silver Peak and CFC's operational needs. The geology and aquifer properties vary dramatically from those of the playa's brine aquifers.

Similar to the current playa environment and located between the steeper alluvial fan and the playa salt flats, there is a transitional zone where a thin sheet of finer-grained alluvium is overlying playa sands, silts and clays. This transition zone on the playa margin is an area for natural spring formation because groundwater migrates laterally through the more porous strata in the overlying thin alluvium, which is above impermeable clay layers in the playa sediments below, until the groundwater emerges on the land surface. Springs deposits are seen around the west and east sides of Clayton Valley, although lack of precipitation and regional water tables prevent fluid from flowing today.

The presence of north-south trending faults is indicated by the groundwater table elevations and groundwater quality in the monitor and supply wells. The water table is relatively horizontal within the area occupied by these wells. However, it is lower in the down-thrown block (graben) located between the playa margin and the up-thrown block (horst) formed between Goat and Alcatraz Islands. Inside this graben structure is the Winsor well, another data point for comparison. The water table is lower here, 4,244 feet elevation and the water quality is somewhat brackish, supporting the theory that hydrological barriers exist between the non-potable and potable water aquifers. This theory is likewise supported by exploration and geothermal drilling activity within the graben structure between Goat Island and the town of Silver Peak.

Figure 4: Topographical Map showing Cross Section A-A'-A"



IV. Groundwater Recharge

The Clayton Valley drainage basin, is approximately 518 mi^2 (1,342 km^2), while Clayton Valley playa, at an elevation less than 4,300 ft (1,465 m), is approximately 30 mi^2 (78 km^2). Water resource reconnaissance by Rush, 1968, shows that Clayton Valley playa's estimated perennial yield is 22,000 acre-ft per year, the majority of this comes as "underflow" (i.e., relatively deep groundwater flow through fractures in non-sedimentary rock) from Big Smoky Valley and Alkali Springs Valley, north and east respectively (see Figure 5). Within Clayton Valley, groundwater also percolates down through fractures in the volcanic, igneous and metamorphic rocks of the surrounding mountain sides and down through the valley margin alluvium until it recharges the brine aquifers beneath the playa surface.

Groundwater flows in response to a pressure gradient, as discussed in the 1998 report, moving from higher to lower pressure over a given distance. Near the end of a recovery period (a period of time when pumping rates were less than aquifer recharge rates) from February 2009 to February 2010, static water levels in brine wells were obtained throughout the Clayton Valley playa. In terms of recharge, the time period resulted in significant recharge and restoration of fluids to the depleted aquifers. Static water levels in the brine aquifers recovered as much as two hundred feet. In the shallowest aquifer, the static water level rose to the 4,160 feet elevation, while in the deepest aquifers, water levels rose to 4,070 feet elevation. Generally, across the playa, from southwest to northeast, static water levels range from 4,160 feet (southwest) to 4,070 feet (northeast) or about 17 feet per mile.

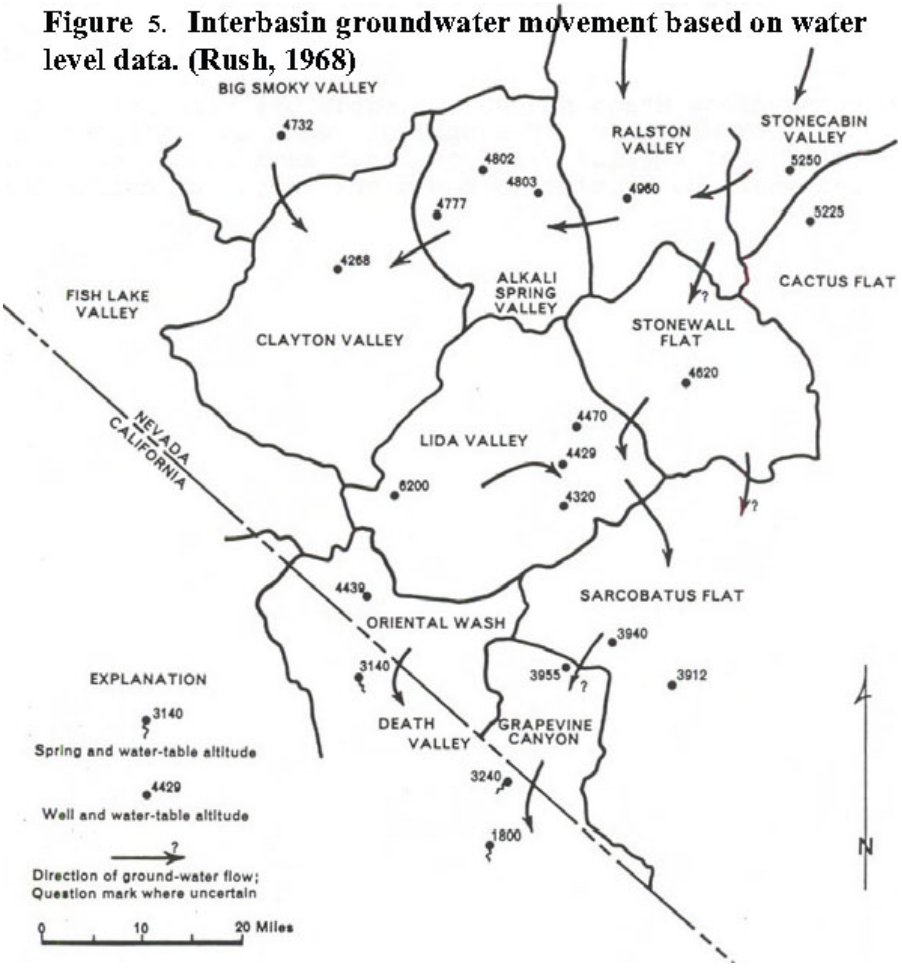
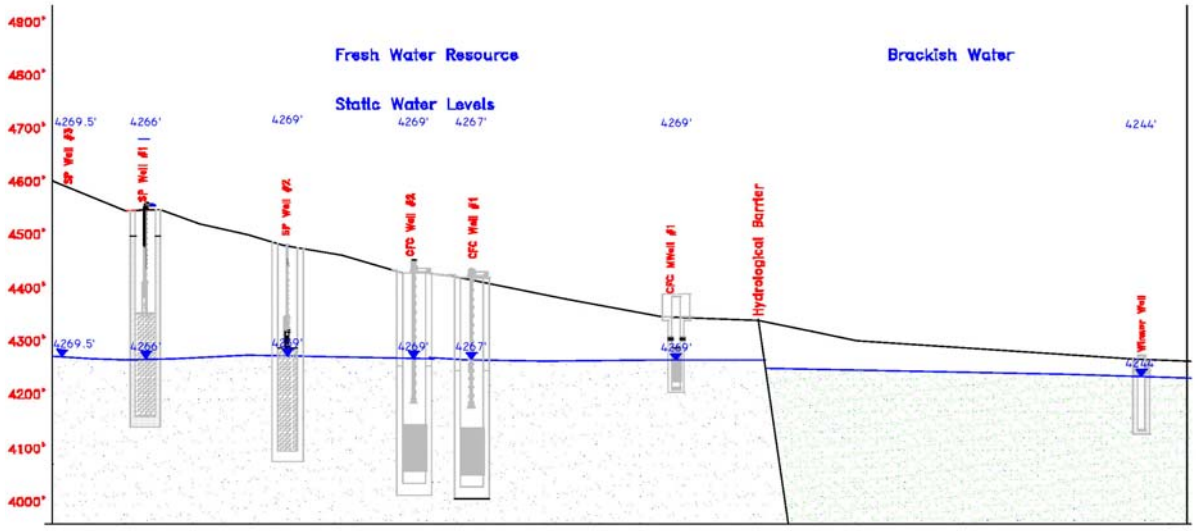


Figure 5. Interbasin groundwater movement based on water level data. (Rush, 1968)

Water level recharge to the playa aquifers was not concurrent with water recharge to the potable water aquifer; although water levels did rise in the potable water wells, the recovery was not as dramatic. In the potable water supply wells, the static water level varies from 4,269 feet at SPW3 (west) to 4,266 feet at SPW2 to 4,268 feet at CFCMW (east). In the potable water aquifer, with new data from additional wells, the recalculated value of the pressure gradient is 13 feet per mile, with groundwater flow moving towards the playa (Figure 5).

The new information suggests that while both aquifers are not at steady state, the degree of gradient has changed in response to reduced pumping. The difference in groundwater gradient is still consistent with a mining situation in the playa aquifers, though the degree of mining is not as severe as in 1998. The proposed expansion will result in greater water extraction from both aquifers; however, the gradients will not exceed the gradients seen in 1998, due to changes in aquifer management. The gradients seen today and in the future will remain more consistent with the natural hydraulic and topographical gradients.

Figure 6: Cross Section of Fresh Water Resource Area



All land surface elevations corrected to Google Map reference
Wells and equipment horizontally exaggerated.
Static Water Levels Current August 5, 2010

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IV. Conclusions

The present supply of groundwater for CFC and SP originates from the same source, alluvium aquifers that overly playa sediments. The recharge area of these alluvial aquifers is to the west of the wells, and the groundwater gradient and flow is from west to east towards the playa. The water table within Clayton Valley playa ranges from 4,160 to 4,070 feet elevation while potable water exists between 4,280 and 3,980 feet elevation in the alluvial fan. Significant recharge to playa wells during a recovery period 2009-2010 did not affect potable water quality or groundwater levels in the potable water aquifer. During the same period, reduced potable water consumption resulted in only slight recovery to the potable water aquifer.

Geologic features that confine the lithium-brine aquifers also appear to protect potable water by serving as barriers to groundwater movement. Geologic structures, such as faults or mineralized zones in geologic formations may constrain groundwater flow patterns and further protect potable water aquifers from brine water intrusion due to pumping.

CFC's proposed expansion will result in brine extraction levels higher than the past ten years, thus potable water consumption will increase. The increase in water consumption will not exceed the range achieved in the early 1990s. Groundwater quality monitoring and continuous monitoring of groundwater levels will continue on a quarterly basis. Careful management and planning will benefit the longevity of the lithium mine and the potable water supply. It is in the best interest of both CFC and SP to manage the potable water aquifer so that no irreversible damage occurs.

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