CHAPTER 2.0 – PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

Energy-Source Minerals LLC (Applicant) proposes to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California (Proposed Project; Figure 2.0-1). The facility (ATLiS Plant) will process geothermal brine from the neighboring HR1 to produce lithium hydroxide as well as zinc and manganese products which would be sold commercially.

2.2 PROJECT OBJECTIVES

The Proposed Project has the following objectives:

- To produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale
- To collocate near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant
- To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy
- To minimize and mitigate any potential impact to sensitive environmental resources within the Project area

2.3 PROJECT DESCRIPTION

Project facilities would be built on three parcels privately owned by Hudson Ranch Power I LLC in the County of Imperial: APNs 020-100-025, 020-100-044, 020-100-046. The Project site is zoned M-2-G-PE (Medium Industrial /Geothermal Overlay), and the County General Plan designates the Project site as Agriculture land use. The Proposed Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium and, to the extent possible, manganese and zinc products and other products
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR1 entrance), a second primary access about 800 feet west, and an emergency access entrance only from Davis Road
- Paving of McDonald Road from Highway 111 to English Road (approximately 2 miles)
- Construction of a power interconnection line from the IID and HR1 switchyard located at the northeast corner of the HR1 site

- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services
- Construction of a laydown yard that will also support temporary offices during construction as well as serve as a truck management yard during operations
- Construction of offices, repair facilities, shipping and receiving facilities, and other infrastructure including the relocation of the IID structures and road improvements at Highway 111

2.3.1 Structures

The Project site, as shown in Figure 2.0-2, will include construction of the following buildings and structures:

- Plant offices (which will house offices and meeting rooms)
- Operations and employee facilities (which will house offices for supervisors, meeting rooms, breakroom/lunch room, locker/shower rooms)
- Maintenance shop and materials warehouse (which will house plant maintenance equipment and supplies and shops such as machine, paint, welding, and electronic)
- Materials warehouse (which will store equipment, reagents, etc.)
- Electrical building(s) (which will house motor control centers, electric power switchgear, and metering to provide power for plant operations)
- Emergency generator building
- Two reagent storage and preparation buildings
- Chemical laboratory building (which will contain a wet chemistry laboratory and analytical instruments for analysis of in-process and finished products)
- Filter press sheds (which will house filter presses)
- Lithium product production building (which will house the proprietary technology for manufacturing the lithium carbonate and lithium hydroxide products)
- Lithium product handling, packaging, and warehouse buildings (which will house the filtration and drying equipment for the lithium products and bagging and palletizing of finished products)
- Manganese product handling, production, and warehouse building (which will house the filtration and drying equipment for the manganese product and bagging and palletizing of finished products)
- Zinc product handling, production, and warehouse building (which will house the filtration and drying equipment for the zinc product and bagging, palletizing, and storage of finished products)

- Calcium oxide silo and slacker
- Limestone stockpile and solution tanks
- Hydrogen chloride offloading and storage tank(s)
- Gate guard house
- Cooling tower

The product production, handling, and warehouse buildings will be approximately 80 feet tall, and the various other components of the plan may be as high as 100 feet tall.

The sewage from the Project will be processed by the HR1 sewer treatment plant; hence, no further permitting for sewage treatment is required. Potable water will be provided from the HR1 permitted water treatment plant via an agreement between HR1 and the ATLiS Plant. An application to modify the HR1 water treatment plant by using both the existing approved plant and the former Simbol plant will be made to County Environmental Health and Safety.

2.3.2 Impurity Removal and Production Extraction Facilities

The impurity removal and the product extraction processing areas will be constructed within designated areas of the plant site on concrete pads with a containment curb. These processing areas may not be located within a building but will consist of a series of interconnected tanks and pipelines. The arrangement of these facilities is part of the Applicant's proprietary technology.

2.3.3 Product Production Facilities

Product production facilities consisting of a series of interconnected tanks and pipelines will also be constructed on the site. The processing facilities will also be erected within designated portions of the plant site on concrete pads with a concrete containment curb or in designated buildings. The arrangement of these facilities is also part of the Applicant's proprietary technology.

2.3.4 Pipe Rack and Process Pipelines

A pipe rack will be constructed from the Project's process area to the HR1 site. A post clarifier brine delivery pipeline from HR1 to the Project's process area and a depleted brine return pipeline from the process area to HR1 will be constructed on one or more pipe racks. A steam/steam condensate delivery pipeline will also be constructed on the pipe rack. The Project will be responsible for returning the depleted, barren brine to the HR1 site. Additional delivery or return pipelines may also be constructed onto the pipe rack as needed to handle the different fluids transported.

The delivery and return pipelines will be constructed with minimal usage of flanged connections to reduce the potential for pipe leaks. Automatic valves will be integrated into the pipeline system which would close quickly in the event of a pipe rupture to minimize the size of any potential spill. An Emergency Response Plan will be prepared and implemented should a fluid spill event occur.

2.3.5 Fire Water and Freshwater Pond

The Project will share the fire suppression system and the freshwater storage containment pond with HR1. The fire suppression system will be redesigned to accommodate the overall fire protection obligation to both plants along with the necessary controls. The raw water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral. However, a backup delivery line will also be installed from the "N" lateral located about 0.25 mile south of the plant. This redundancy is necessary for two reasons: First, when IID does maintenance work on canals a lateral can be out of service for several days; and, second, backup from the "N" lateral may be needed in the event of a natural interruption such as an earthquake that may render the "O" lateral out of service. The Imperial County Fire Department will be consulted as appropriate to review and approve the proposed fire water and freshwater pond facilities. A 500,000-gallon aboveground water tank will be constructed to serve as the primary water supply for the joint fire suppression system.

2.3.6 Stormwater Retention Basin

The Project may share the HR1 stormwater retention basin. The retention basin will be engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. If a basin cannot be shared for technical, legal, or other reasons, then the Project will construct its own basin on the far south side of the parcel. The current HR1 Plant site was constructed to eliminate any offsite discharge, and this site will be designed the same way.

2.3.7 Security Fence and Landscaping

A nominal 6-foot-high chain-link security fence, which may be topped with three-strand barbed wire, will be constructed around the Project plant site. The fence will be constructed to meet County standards for obscured fencing around processing areas. Due to security levels required for the HR1 power plant and because of the interconnectivity between HR1 and the Project, security protocols for both HR1 and the Project will be similar in nature.

2.3.8 Substation and Power Line Facilities

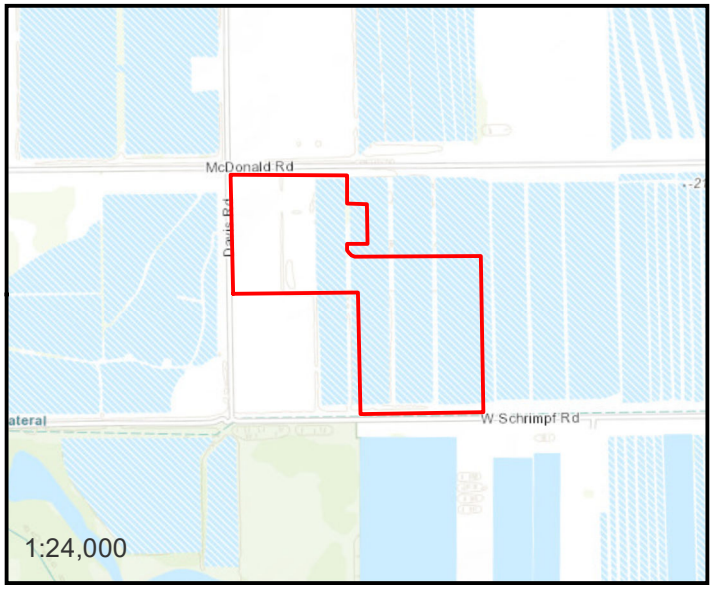
Up to 8 megawatt (MW) of electrical power will be needed for the Project operations. The power will be purchased from IID. The Project will construct an electrical substation on the Project site. An emergency 600-horsepower (hp) diesel generator(s) will be used to keep vital Project plant systems operating during power outages.

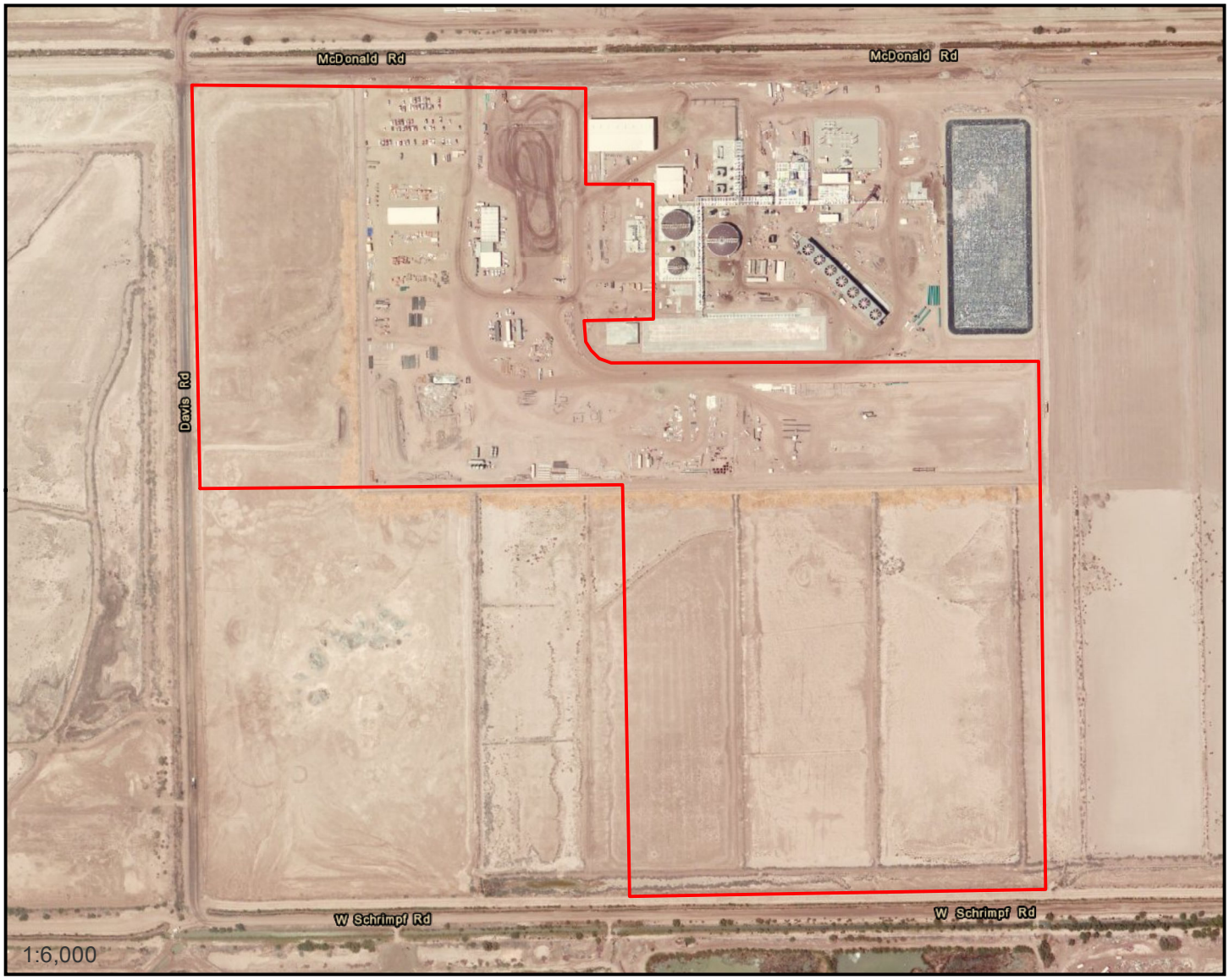
2.3.9 Road Improvements

At the junction of McDonald Road and Highway 111, improvements will also be constructed to meet the requirements of the IID, the County and Caltrans. As currently planned, these improvements will include:

- Relocation of the IID drain exit structure on the west side of Highway 111
- Relocation of the IID canal gates on the west side of Highway 111
- Northbound left turn lane on Highway 111 (or as required by an approved Traffic Study)

A short power line will be constructed along McDonald Road to the Project site between the current IID/HR1 switchyard and the plant site.





Project Location

N

0 150 300 600

Feet

Figure 2-1

Energy Source Mineral Project

Project Location & Vicinity

Name: 21268 PLAN Fig 2-1 Project Location and Vicinity.Mxd
Print Date: 3/2/2021, Author: pcarlos

CHAMBERS GROUP

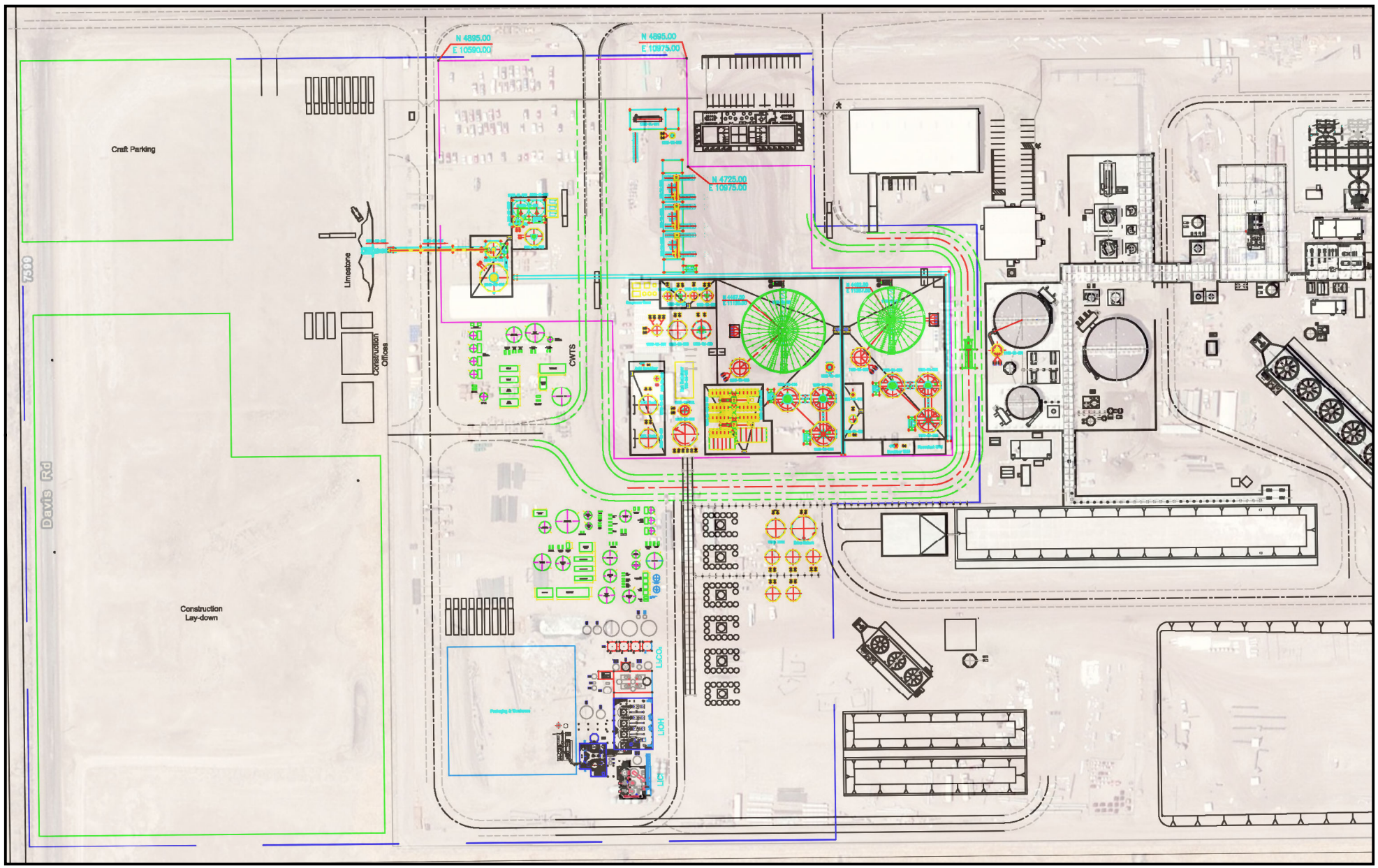


Figure 2-2
Energy Source Mineral Project
Project Site Plan

N

0 100 200 400
Feet

Name: 21268 PLAN Fig 2-2 Project Site Plan.Mxd
Print Date: 11/25/2020, Author: pcarlos

CHAMBERS GROUP

2.4 PROJECT COMPONENTS

The Project consists of construction and operation of the ALTiS Plant to process geothermal brine from the neighboring HR1 to produce lithium hydroxide, zinc, and manganese products to be sold commercially.

2.4.1 Project Construction

Construction will include light grading of approximately 30 acres of land that will include the Project site, new entry road off McDonald Road, and an emergency access road off Davis Road and a connection to the IID/HR1 electric substation. The Project site driveway, parking, and maneuvering areas will be constructed to County standards (generally a minimum of 3 inches of asphaltic concrete paving or higher quality material).

The Project will either be constructed to an elevation above the Imperial County designated special flood hazard for lands near the Salton Sea, or have the existing berm extended to the outer perimeter of the site. The Project will be constructed so that no offsite discharge of any waters will be allowed, and all water will be managed on site.

It is estimated that on average 20 to 25 trucks per day will travel in and out of the Project site during construction except during grading, when about 50 to 60 trucks will be traveling in and out of the Project site. An average of 100 workers will commute to the Project site during construction.

Construction Work Force and Schedule

Project construction would begin when all necessary permits are obtained, which is expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete in Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90 percent of work occurring during daylight hours over five or six days per week over an intermittent 24-month period. The remaining 10 percent of work would occur during nighttime hours to avoid extreme summer temperatures. Approximately 200 to 250 construction workers are anticipated at peak periods. Construction workers will commute to the site, and there will be no onsite housing of workers. Construction parking will be in the 15-acre laydown area, which will be located at the southeast corner of Davis Road and McDonald Road on what is currently APN 020-100-025.

Construction Equipment

Below is a list of construction equipment anticipated to be required for the Project:

- Off-highway trucks
- Rollers
- Crawler tractors
- Excavators
- Graders
- Water trucks
- Compactors
- Rubber-tired loaders
- Scrapers

- Cranes
- Generator sets
- Concrete pump
- Plate compactors
- Rough terrain forklifts
- Skid steer loaders
- Tractor/Loader/Backhoe
- Aerial lifts
- Welders
- Air compressors
- Pavers
- Paving equipment

Construction Water Supply Source and Requirements

It is estimated that up to 50,000 gallons per day of water will be needed during Project construction for fugitive dust control during Project site grading and construction activities. This water will be obtained from the existing onsite freshwater containment pond or from the Applicant's own generation at the HR1 facility.

2.4.2 Project Operations

The Project's plant will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of lithium hydroxide monohydrate (LIOH), and zinc, and manganese products. The production operations will consist of the following general processing steps:

1. Impurity removal
2. Lithium extraction as lithium chloride (LiCl)
3. Conversion and processing of LiCl to lithium products
4. Drying and packaging of lithium products
5. Zinc extraction and processing to zinc products
6. Manganese extraction and processing to manganese products
7. Offsite product shipping

The production processing steps may be altered over time as production methods and efficiencies evolve and new or revised product lines are developed at the facility. The arrangement of the processing equipment is part of the proprietary technology developed for the Project.

Impurity Removal

Post heat extraction geothermal brine from the secondary clarifier of the HR1 power plant site will be transported via pipeline to the impurity removal process area on the ATLiS plant site. A nominal 7,000 gallons per minute (gpm) of the brine will be processed by the facility. This projected process rate is used as the basis for the estimate provided throughout this Project description, but the actual rate of brine eventually processed on the site will be optimized to take advantage of the available facilities on the HR1 and ATLiS plant sites.

Iron (Fe) and silica (SiO_2) will be removed from the brine, followed by the removal of the manganese (Mn) and zinc (Zn) in a two-stage process. The separated Fe-SiO_2 material and the Mn-Zn material will be dewatered in the filter press sheds. The mineral-depleted brine will then be transported via pipeline to the Lithium (Li) extraction process area.

The separated Fe-SiO_2 material will be initially managed as a waste stream. The waste material will be collected and analyzed in conformance with appropriate laboratory testing protocols to ensure that it is handled and disposed of in an appropriate manner.

If and when, in the future, opportunities exist to use this material, the Applicant plans to market Fe- SiO_2 material as an additional product(s) to be shipped to a third party(ies) for use in other industrial processes; and it will no longer be a waste but a product. The market for Fe-SiO_2 material is currently being developed. Based on average production rates at the target nominal process rate of 7,000 gpm, approximately 136,200 metric tons of Fe-SiO2 material will be processed annually.

Li Extraction as Lithium Chloride

The treated brine will be fed to a Li extraction process located within the Li extraction process area on the ATLiS plant site. This area will be outside on a concrete pad. The area will contain proprietary Li extraction media. Li from the brine will be retained on the extraction media. A LiCl product stream will be produced from the extraction process. The LiCl will be transported via pipeline from the Li extraction area into the Li purification process area. Impurities will be removed from the LiCl product stream and handled as nonhazardous waste. The purified LiCl will then be concentrated in an evaporator or equivalent process.

Conversion and Processing of LiCl into Li Products

The purified, concentrated LiCl will be transported via pipeline from the Li purification area to the Li product production building. Proprietary technology will be used to convert the LiCl and then into lithium carbonate (Li_2CO_3) and then into the LiOH product stream.

Drying and Packaging of Li Products

The LiOH product stream will be transported to a lithium product handling, production and warehouse building where the crystals will be separated from the Li-rich process fluid in a dewatering system. LiOH crystals will be dried, sized, and cooled.

Packaging of the Li Products

The dried Li products will be packaged, palletized, staged, and loaded into trucks for distribution in the Li product handling, production, and warehouse buildings. The dried Li products will be loaded into bulk bags in a bagging station. Packaging is expected to be 500-kilogram (kg) to 1,000-kg super sacks.

Extraction of Zn and Mn

Zn/Mn filter cake will be acid-leached, separated, and purified in a two-part solvent extraction process. The separated streams will each then be dried and packaged for further processing by others.

Mn Extraction and Processing to Mn Products

The Mn removed by the solvent extraction process will be precipitated into Mn oxides/hydroxides products, then dewatered in filter presses into wet cake product. The products will be transported to the Mn product handling, production and warehouse building for further handling, packaging, and offsite shipment to market.

Product Shipping to Offsite Markets

The ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the ATLiS plant is estimated as 19,000 metric tons of Li product, 10,000 to 20,000 metric tons of Zn product(s), and up to 60,000 metric tons of Mn product(s). Products will be transported by freight truck on existing roadways to shipping distribution points. Other products of the production operations may be generated by the proprietary technology on the ATLiS plant site and would also be shipped offsite to market by truck. Trucking will generally be to markets in the greater Los Angeles basin, Arizona, and Texas.

Operational Truck Traffic

It is estimated that approximately 24 trucks per day will travel in and out of the Project site during normal operations. The truck traffic includes about 10 trucks per day of outgoing products, including one truckload of dry lithium, two truckloads of 31-percent hydrochloric acid (HCl), three truckloads of zinc, and four truckloads of manganese. Truck traffic also includes about eight truck deliveries of reagent chemicals, cooling tower treatment chemicals, consumptive media, product packaging materials, and fuel. The estimate also includes six trucks of outgoing waste generated on the site. The majority of the outgoing waste generated on site is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10 percent of trucks carrying filter cakes (waste debris mix of silica, sand, and iron) from the plant would be required to be delivered to a waste treatment facility in Arizona.

Operational Water Supply Source and Requirements

Approximately 90,000 gallons per hour (g/h) or about 3,400 acre-feet per year (AFY) of canal water will be purchased from IID for Project cooling water and additional process water. Approximately 112 g/h or about 3 AFY of the canal water to be purchased will be used for potable water purposes, including potable washbasin water, eyewash equipment water, water for showers and toilets in crew change quarters, and sink water in the sample laboratory.

Operational Plant Maintenance

Operation of the Project would be dependent on the ability of the HR1 facility to deliver spent geothermal brine for processing at the ATLiS facility. Thus, approximately every three years the Project facility will be shut down for about three weeks to complete a facility cleaning in alignment with the HR1 plant cleaning. This process would remove mineral scale from Project plant piping.

Operational Work Force and Schedule

Project operations will begin as soon as construction activities are completed, expected to be Q2 of 2023. Beginning with startup operations, the Project is expected to be operated by a total staff of approximately 62 full-time, onsite employees. Plant operations will continue 24 hours per day, 7 days per week. It is

projected that up to 40 employees will be on site at any given time with 24 day-staff employees and two rotating shifts of 16 additional employees overlapping the day-staff and covering nights, weekends, and holidays.

2.4.3 Project Decommissioning

The projected life of the Project is a nominal 30 to 40 years. The Applicant will prepare a Site Abandonment Plan in conformance with Imperial County requirements, for consideration by the Planning Commission prior to Project approval. This plan would describe the proposed equipment dismantling and site restoration program in conformance with the wishes of the respective landowners/lessors and Imperial County requirements in effect at the time of abandonment and would be implemented at the end of Project operations. Decommissioning activities would be similar to Project construction activities; however, decommissioning is likely to be less intensive than construction. Because this phase would occur approximately 30 to 40 years in the future, decommissioning is anticipated to employ equipment that is more technologically advanced than that used during construction. Further, the need for site preparation and associated activities will be reduced.

2.5 PROJECT DESIGN FEATURES INCORPORATED INTO THE PROPOSED PROJECT

This analysis was based on implementation of the following project design features that the project applicant has committed to implementing.

The Project applicant will implement the following features during construction of the Project:

- All off-road diesel-powered equipment that is greater than 50 horsepower that is used onsite during construction of the project shall meet USEPA Tier 4 off-road emission standards.
- Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
- Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.
- When commercially available, replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

The Project applicant will implement the following features during operation of the Project:

- Provide charging stations for electric vehicles
- Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.
- Provide shower and locker facilities to encourage employees to bike and/or walk to work.

- Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B. It should be noted that the project would also pave McDonald Road form Highway 111 to English Road.

- Measures which meet mandatory, prescriptive/performance measures as required by Title 24.

2.6 REQUIRED PERMITS AND APPROVALS

As required by the CEQA Guidelines, this section provides, to the extent the information is known to the County, a list of permits and approvals to implement the Project and list of agencies that will review this Draft EIR and use it in their decision-making process. The following lists County entitlements and permits that may be required for the Project prior to construction and operation:

- Imperial County Planning Department – Minor Subdivision
- Imperial County Planning Department – Water Supply Assessment
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

The Final EIR must be certified by the Planning Commission as to its adequacy in compliance with CEQA prior to any actions being taken on the Project. The analysis of this Draft EIR is intended to provide environmental review for the Project, including the production of lithium hydroxide and zinc and manganese products, in accordance with CEQA requirements.

2.6.1 Other Required Permits And Approvals

Other required permits and approvals may be necessary in order to approve and implement the Project as the County finds appropriate. Approvals include, but are not limited to, architectural plan and design, landscaping, lighting, transportation permits and approvals for driveways and routes, grading, hauling, and public utilities. Potential responsible and trustee agencies may include:

- Caltrans – Encroachment Permit

- California Department of Toxic Substances/Certified Unified Program Agency (CUPA) – Hazardous Materials / Environmental Protection Agency Approvals and Permits

- Regional Water Quality Control Board – Water Discharge Requirement

- Imperial Irrigation District – Encroachment Permit

- Imperial County Air Pollution Control District – Permit to Construct and Permit to Operate

- Environmental Health Departments for HR1 – Potable Water Treatment Modified Permit

- Imperial County Public Works – Encroachment Permit

- Imperial County Fire Department and Office of Emergency Services

2.6.2 Reviewing Agencies

Reviewing Agencies include those agencies that do not have discretionary powers but that may review the Draft EIR for adequacy and accuracy. Potential Reviewing Agencies include the following:

- Caltrans
- California Department of Toxic Substances/Certified Unified Program Agency
- Regional Water Quality Control Board
- Imperial Irrigation District
- Imperial County Air Pollution Control District
- Environmental Health Departments for HR1
- Imperial County Public Works
- Imperial County Fire Department and Office of Emergency Services