

FACT SHEET

(Pursuant to Nevada Administrative Code (NAC) 445A.401)

Permittee Name: **Western Lithium Corporation**

Project Name: **Kings Valley Lithium Exploration Project**

Permit Number: **NEV2015108**

Review Type/Year/Revision: **New Permit 2015, Fact Sheet Revision 00**

A. Location and General Description

Location: The facility is located in Humboldt County within Section 8, Township 44 North, Range 35 East, Mount Diablo Baseline and Meridian, approximately 20 miles northwest of the town of Orovada, Nevada. The facility is located exclusively on public land administered by the U.S. Bureau of Land Management (BLM), Humboldt River Field Office in Winnemucca, Nevada. To access the site, drive north from Winnemucca on U.S. Highway 95 approximately 44 miles to Orovada. Proceed west on the Kings River Road (Nevada State Route 293) for 19.7 miles. Turn north off the paved road and proceed 0.9 miles on a dirt road, then turn west on another dirt road and proceed 0.4 miles to the Project site.

General Description: The Project is a lithium mining operation that will be developed to excavate a 250 to 500 ton bulk sample of lithium ore from a small open pit surface mine. The bulk sample will be transported to the Permittee's demonstration plant in Germany for beneficiation. No beneficiation of lithium ore or generation of lithium processing fluid will occur at the Project, or at any other Nevada facility, unless applicable Water Pollution Control (WPC) Permits are previously approved by the Division. The Permittee has previously mined bulk samples of hectorite clay containing sub-ore grades of lithium from the same general area and processed them for clay without lithium recovery. Facilities that are involved solely in mining or processing clay or other non-metallic materials are exempted from the Nevada WPC regulations that pertain to mining operations (NAC 445A.387), but the mining or processing of metallic ores, including lithium, requires a WPC Permit.

B. Synopsis

Geology: The Project is situated near Thacker Pass, which represents a geographical transition zone between the Double H Mountains to the south and the Montana Mountains to the north. The Project is located within the south end of the McDermitt Caldera, a well-preserved Mid-Miocene volcanic feature that extends approximately 25 miles north from Thacker Pass into southeast Oregon and is up to 15 miles wide. The mountains surrounding the Project are primarily composed of rhyolite and dacite flows and welded tuffs, but large areas of granodiorite and related intrusive rocks occur in the northwestern part of the

range. The Kings Valley lithium mineralization occurs within layered beds of clay-rich volcanoclastic sedimentary rocks of the McDermitt Caldera Complex, which are believed to have been deposited on the bottom of a lake that formed in the caldera after the caldera-forming eruption and ensuing topographic collapse.

The lithium-bearing ore mineral at the Project is hectorite, a white to light brownish silicate clay mineral with variable magnesium and lithium contents that swells with the addition of water. Hectorite occurs in thick, continuous accumulations in the sedimentary rocks at the Project area. The hectorite deposit is covered by 5 to 30 feet of Pliocene-Pleistocene Older Alluvium, and extends to a known depth of approximately 525 feet below the ground surface (bgs), based on drill results. The bulk sample test pit will intercept the upper portion of the relatively flat-lying hectorite deposit within an intermixed volcanic ash and claystone lithologic unit. Because of a variable lithium concentration, not all of the hectorite is ore-grade for lithium, but some of the non-ore-grade material is economically mineable for the contained clay without lithium recovery.

Hydrology: Three named streams occur in the vicinity of the Project: Thacker Creek, Pole Creek, and Crowley Creek. Thacker Creek is located approximately 2 miles west of the bulk test pit and flows to the southwest into the Kings River Valley, where it infiltrates into the subsurface. Pole Creek is located approximately 3 miles northeast of the bulk test pit and flows southeast into Crowley Creek approximately 6 miles east of the Project. Crowley Creek flows further southeast into the Quinn River Valley, where it infiltrates into the subsurface. Surface topography at the Project area slopes gently to the southeast with shallow ephemeral drainages that flow toward Crowley Creek.

One spring with an associated man-made pond (which is usually dry) is located approximately 0.5 mile northeast of the bulk test pit. Historic livestock troughs that are no longer in use are located approximately 0.5 mile southeast of the bulk test pit.

In 2011, the Permittee's contractors installed five monitoring wells and one test production well in the vicinity of the Project, and completed a hydrogeologic characterization program. Groundwater monitoring has been on-going since late 2011. The closest wells to the bulk test pit are test production well PH-1 and monitoring well WSH-17, which are located a short distance to the north, and monitoring wells WSH-13 and WSH-14, which are located approximately 0.5 mile to the southeast. The static water level in all wells ranges from 73 feet bgs to 158 feet bgs. The depth to static water at the bulk test pit location is estimated to be approximately 100 feet bgs.

Based on well data, in the larger area surrounding the Project the groundwater gradient is generally southward to southeastward, hence the groundwater equipotential contours generally trend eastward to northeastward; however, in the

immediate Project area the groundwater equipotential contours abruptly jog southward approximately 1,500 feet and then continue northeastward, suggestive of the presence of a hydrogeologic structure. Thus in the immediate Project area, the groundwater gradient appears to be southwestward, but just to the west of the Project the gradient is westward, and just to the east of the Project it is southeastward. None of the existing monitoring wells appear to be directly downgradient of the bulk test pit location, but monitoring well WSH-13 is located only slightly east of directly downgradient, so it was added to the Permit. The Permit also requires monitoring of upgradient well WSH-17 (also known as well PH-2).

Baseline groundwater analyses performed on samples collected from the test production well and monitoring wells indicate that groundwater in the Project area meets all State of Nevada Division of Environmental Protection (Division) groundwater quality reference values, except for occasional naturally elevated aluminum (up to 0.44 milligrams per liter [mg/L] in monitoring well WSH-3), antimony (up to 0.025 mg/L in monitoring well WSH-13), arsenic (up to 0.063 mg/L in test production well PH-1), fluoride (up to 5.0 mg/L in monitoring well WSH-17), iron (up to 3.5 mg/L in test production well PH-1), and pH (up to 8.92 standard units [SU] in monitoring well WSH-3). Of these, it is common for antimony, arsenic, and fluoride to be naturally elevated.

Rock Characterization: The purpose of the initial bulk sample test pit is to extract a 250 to 500 ton ore-grade lithium bulk sample having an average lithium concentration of 3,500-4,500 parts per million (ppm), combined with economically recoverable grades of byproduct potassium and sodium. The Permittee performed an extensive geochemical characterization study of the waste rock and ore around the Project area, including total sulfur analyses, whole-rock digestion multi-element analyses, static and kinetic testing, and Meteoric Water Mobility Procedure (MWMP) analyses to determine the potential for the mining operation to degrade waters of the State.

Over 10,000 samples from 200 drill holes were analyzed for total sulfur concentration. Those data indicate that all alluvium and volcanoclastic sediments located within the uppermost 50 feet bgs contain less than 1 percent total sulfur, probably due to the effects of surficial oxidation, while deeper rocks commonly contain more than 1 percent total sulfur. Because the initial bulk test pit will be excavated to a depth of only approximately 26 feet, the waste rock and ore are therefore expected to be oxidized with less than 1 percent total sulfur.

Static testing results for 68 waste rock samples from the area surrounding the initial bulk test pit indicate that 85 percent of the samples are not potentially acid generating (non-PAG). All static test samples collected from less than 50 feet bgs are non-PAG. Eight humidity cell tests (HCTs) were performed to evaluate the acid generating potential of the 15 percent of all static test samples that were

potentially acid generating (PAG), although these PAG samples are from depths of 75 feet bgs and greater, which is far deeper than the bulk test pit will be excavated. None of the eight HCTs went acid, indicating that acid generation is not anticipated at the Project regardless of the depth of mining. However, the HCTs commonly displayed elevated antimony and arsenic concentrations above Division Profile I reference values. It is also common for these same constituents to be naturally elevated in Project groundwater monitoring wells; hence, degradation of groundwater above the natural background range for these constituents is considered unlikely.

MWMP-Profile I analyses were performed on 18 samples of potential waste rock from the area surrounding the initial bulk test pit. The analytical results show that antimony, arsenic, and fluoride concentrations consistently exceed Division Profile I reference values. However, as noted above, these constituents are also naturally elevated in the groundwater monitoring wells associated with the Project. Iron, magnesium, manganese, and sulfate also exceed Division Profile I reference values for a few samples, but only for samples that have total sulfur concentrations greater than 1 percent, which were all collected from depths greater than 50 feet bgs.

Mining: The initial lithium bulk test pit will be excavated to a depth of approximately 26 feet. The alluvium averages 17 feet thick in the bulk test pit area; therefore, alluvium is expected to comprise over 50 percent of the waste rock generated from the initial bulk test pit mining. The remaining waste rock and ore will consist of interbedded clay and volcanic ash, tan claystone, blue/green claystone, and grey claystone. The development of the bulk sample test pit will include the construction of two overburden stockpiles (east and west of the pit), a growth-media stockpile (south of the pit), an access road, a staging area, and stormwater diversions and controls. The design of the test pit is based on the results of exploration drill hole WLC-118, which was drilled at the test pit location.

The initial bulk sample test pit will consist of a 17-foot deep upper excavation measuring approximately 210 feet by 180 feet in plan, followed by an approximately 9-foot deep lower excavation measuring approximately 20 feet by 20 feet in plan. The ore-grade lithium sample will be obtained from the lower excavation. The north and south walls of the upper excavation will be cut at a slope angle of one horizontal to one vertical (1H:1V), while the east and west walls will be cut at a shallower angle of 2H:1V. An access ramp will be constructed in the east wall of the pit.

After completing the upper excavation, the Permittee will sample the pit floor and determine, based on analytical test results, the exact location for the lower excavation. The 250 to 500 ton bulk ore sample will be removed from the lower excavation, loaded into highway-legal 40-ton haul trucks, and shipped off-site.

After removal of the bulk sample, the lower excavation will be immediately backfilled with stockpiled overburden material. The upper excavation will remain open until the completion of the Project to allow future ore-grade lithium bulk samples to be collected if desired, after Division approval of a Permit modification. At the end of the Project, the entire bulk sample test pit will be backfilled with overburden material and all areas will be recontoured and revegetated.

Although the Permittee currently plans to mine only 250 to 500 tons of ore, the Permit authorizes mining up to 18,200 tons of ore per year. However, the Permit also authorizes mining only from the initial bulk sample test pit to a maximum depth of approximately 30 feet bgs. Prior to any deviation from or expansion of the approved mine plan, the Permittee must obtain a written determination from the Division as to whether the change requires a prior Permit modification, and if so, what type. If the Permittee wishes to mine from any other location, or to mine deeper than previously approved, an application and appropriate fee for a Permit modification must be submitted to, and approved by, the Division prior to proceeding. Such a Permit modification must either demonstrate that the proposed mining will not create the potential for degradation of waters of the State, or propose sufficient engineered containment to eliminate any potential for degradation of waters of the State.

The east and west overburden (waste rock) stockpiles will contain a combined total of approximately 23,000 cubic yards of material. The overburden stockpiles will each be approximately 20 feet high. Based on characterization results, the overburden stockpiles will not require the construction of engineered bases or other containment.

Up-gradient stormwater run-on will be prevented from entering the bulk sample test pit via diversion berms, ditches, culverts, and grading. These stormwater controls are designed to accommodate the 100-year, 24-hour storm event (2.65 inches). Therefore, except for storms that exceed the design storm event, the pit will collect only the precipitation that falls directly within the pit footprint. The soils mapped at the Project site feature relatively slow infiltration rates and medium to rapid run-off. The limited infiltration from in-pit stormwater accumulations is unlikely to degrade groundwater, especially when it is considered that the only constituents of concern (antimony, arsenic, and fluoride) are already naturally elevated in the underlying groundwater.

The lithium ore bulk sample will be shipped to the Permittee's existing demonstration plant in Germany, where it will be granulated, calcined, and processed through leaching and crystallization to produce lithium carbonate. Processing at the German plant may also include the production of potassium sulfate and sodium sulfate byproducts. At the Nevada mining operation no beneficiation chemicals will be stored or used on-site.

Ancillary Facilities: Petroleum products and other fluids, including diesel, motor oil, antifreeze, and hydraulic fluid, will be used on-site by mining and hauling vehicles. However, no petroleum depot or fueling station is proposed at the Project. A service truck will be present at the Project site only when needed to resupply Project vehicles with petroleum products and other fluids, and to perform vehicular maintenance.

An application for a petroleum-contaminated soil (PCS) management plan has not been submitted for the Project; therefore, any PCS generated from cleanup of petroleum releases, and any other non-mined waste material, must be properly disposed at an off-site facility authorized to receive such material in accordance with applicable regulations.

The Permittee maintains a weather station located approximately 0.6 miles northwest of the initial bulk test pit on public land managed by the BLM. The weather station is monitored daily for temperature, humidity, barometric pressure, wind speed and direction, solar radiation, and precipitation.

C. Receiving Water Characteristics

As described in the hydrology section above, drainages at the Project are shallow and ephemeral, and flow to the southeast toward Crowley Creek, which is located approximately 6 miles to the east. One spring is located approximately 0.5 mile northeast of the initial bulk test pit. The depth to groundwater at the Project location is estimated to be approximately 100 feet bgs, based on well data. Groundwater quality in the vicinity of the Project is good, except antimony, arsenic, and fluoride are naturally elevated above Division Profile I reference values in some wells.

D. Procedures for Public Comment

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate, and close, subject to the conditions within the Permit, is being sent to the **Humboldt Sun Newspaper** for publication. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and

must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the Permit.

F. Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharge(s) except for those accumulations resulting from a storm event beyond that required by design for containment.

The facility is a mining operation only, without ore beneficiation; therefore, no process fluid is generated and no engineered containment is required. There is a potential for stormwater that contacts the ore and waste rock to mobilize antimony, arsenic, and fluoride, but this will be minimized by stormwater controls. The bulk test pit will not penetrate the groundwater table.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to

prevent migratory bird mortality: 1) physical isolation of toxic water bodies through barriers (e.g., by covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Prepared by: Thomas E. Gray
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