FACT SHEET
(pursuant to NAC 445A.401)

Permittee Name: **Hycroft Resources and Development, Inc.**

Project Name: **Hycroft Mine Project (formerly Brimstone Project)**

Permit Number: **NEV0094114 (Major Modification 07-2012)**

A. Location and General Description

Location: The project is located on public and private land in Humboldt County in Sections 13, 14, 22-27, and 33-36, Township 35 North, Range 29 East, Sections 16-21, and 28-32, Township 35 North, Range 30 East, and Sections 1-4, 9-12, and 14, and Township 34 North, Range 29 East, Mount Diablo Baseline & Meridian, between the Brimstone Pit and the closed Lewis Project (NEV0089017). The mine site is located on Nevada State Highway 49 approximately 50 miles west of Winnemucca, near the historic town site of Sulphur.

Characteristics: The Hycroft Mine Project consists of open pit mining with ore processing using conventional cyanide heap leaching technology and precious metal recovery via zinc precipitation (Merrill-Crowe) and carbon columns. In December 2010, the Permittee submitted a minor modification which proposed increasing the permitted processing rate from 10 million tons per year to 12 million tons per year. The modification was approved by the Division in February 2011. A major modification was submitted in May 2011 proposing to build a new heap leach pad on the site of the closed Lewis pad and increase the processing rate to 30 million tons per year. The major modification was approved by the Division in December 2011. In December 2011 the Permittee submitted a major modification proposing the addition of the north and south process areas, an increase of the Brimstone heap leach pad permitted height to 400 feet, and an increase in permitted processing rate to 36 million tons of ore per year. The major modification was approved by the division in August 2012. Facilities are required to be designed, constructed, operated and closed without any discharge or release in excess of those standards established in regulation except for meteorological events which exceed the design storm event.

B. Synopsis

Geology

The Hycroft Mine Project operates within the Hycroft deposit, a low-sulfidation, quartz-adularia, gold and silver epithermal system, formed during a 3 million year interval of hydrothermal activity. The Hycroft deposit is located within the Basin and Range physiographic province in northwestern Nevada. Mineralization covers a surface area of 15 square kilometers, and is dominantly controlled by north-northeast-striking normal faults. The source for the hydrothermal fluids is interpreted to be heating of meteoric waters by an abnormally high heat gradient in an area noted for geothermal activity, with gold and silver mineralization scavenged from volcanic and sedimentary rocks and carried as bisulfide complexes in low-salinity, CO_2 rich fluids. Continued hydrothermal activity at the site is active as evidenced by hot water in some drill holes.

Project Overview

The Hycroft Mine Project primarily consists of an open pit mine, caustic soda and sodium cyanide tanks, and three (3) process areas. The Brimstone process area consists of the Brimstone heap leach pad constructed in two phases, the Lewis heap leach pad, High Pregnant Pond, Low Pregnant Pond, Barren Pond, Event Pond, and Diatomaceous Earth (DE) Settling Pond, a process plant, waste rock dumps, an emergency overflow pond, which was previously used as a pregnant pond for the Lewis Project, and the Brimstone Merrill-Crowe process building. In December 2009, an Engineering Design Change (EDC) was submitted to the Division proposing to transfer the Crofoot High Pregnant Pond, Crofoot Low Pregnant Pond, Crofoot Overflow Pond, French Drain Outflow, and Brimstone-Crofoot Solution Transfer Pipeline from the Crofoot Permit (NEV0060013 now in closure) to the Hycroft Mine Permit (NEV0094114). The ponds and pipeline had not been used for several years due to the closure status of the Crofoot site. The EDC was approved by the Division with the condition that the subject components be inspected and brought into compliance with the requirements of Nevada Administrative Code (NAC) 445A.350-447 where needed (see Permit Schedule of Compliance [SOC] items I.B.1 and I.B.2). In addition, the Crofoot Low Pregnant Pond was retained in the Crofoot Permit due to its present function as a collection pond for Crofoot heap leach pad draindown.

The North Process Area, added as part of the major modification of December 2011, consists of the North Heap Leach Facility, the North Pregnant Pond, the North Barren Pond, the North Pregnant Vault, the North Barren Vault, two DE Settling Ponds (east and west), and the North Event Pond. The major

modification did not include plans for the North Merrill-Crowe process plant but the Permittee will submit a minor modification for this facility when the design is complete. The entire North Process Area is located to the northeast of the existing Lewis heap leach pad.

The South Process Area, also added by the major modification of December 2011, is located southeast of the existing Crofoot heap leach pad, and consists of the South Heap Leach Facility, the South Pregnant Pond, the South Barren Pond, the South Pregnant Vault, the South Barren Vault, two DE Settling Ponds (north and south), and the South Event Pond. The major modification did not include plans for the South Merrill-Crowe process plant but the Permittee will submit a minor modification for this facility when the design is complete.

Mining

Mining within the pit is not expected to result in the formation of a pit lake due to the depth to groundwater (see *Receiving Water Characteristics* below). Waste rock has been routinely characterized pursuant to the regulations and the Permit. In 2009, waste rock characterization showed the potential for acid generation. Humidity cell testing was initiated in October 2009, and the Division received the report of test results on June 8, 2011. The results showed that argillic, propylitic, and silicic alteration types that have been partially oxidized or are unoxidized have a potential to generate acid. These alteration types represent approximately 30% of the total waste rock in the current mine plan. Based on the results, the Permittee, in accordance with Permit requirements (see SOC item I.B.4), submitted a revised Waste Rock Management Plan on October 28, 2011 for Division review. The plan was accepted by the Division in July 2012.

Brimstone Process Area

The 9.42 million square foot Brimstone leach pad, which is divided into two phases consisting of a total of ten cells (Phase I with 4 cells, Phase II with 6 cells), will ultimately accommodate 50 million tons of run-of-mine ore. Phase I and Phase II are both complete. The ore has been end-dumped onto each pad in lift thicknesses of 25 to 50 feet to a maximum permitted heap heights of 200 feet for Phase I and 400 feet for Phase II.

The liner system for Phase I consists of a one-foot thick, low permeability clay liner (1×10^{-7} cm/s) with synthetically-lined internal solution collection ditches spaced on 200-foot centers. Six (6)-inch diameter hydraulic relief pipes, placed within a 12-inch thick overliner blanket, are spaced on 100-foot centers to maintain low hydraulic heads on the leach pad liner system. The clay used to

construct the pad liner originates from the borrow source to the southwest of the Crofoot Project. Due to the inability of the available clay to achieve the required permeability, it was amended with 5% bentonite during construction.

The downgradient main solution collection ditches of Phase I are lined with 80 mil primary and 40-mil secondary HDPE geomembrane overlying a 4-inch soil bedding layer compacted to 95% of Standard Proctor per ASTM-1557. One-inch diameter perforated PVC leak detection pipes, which daylight at the pregnant pond (LP1 and LP2), are located between the primary and secondary ditch liners.

The liner system for Phase II consists of a one-foot thick low permeability soil layer, compacted to 95% of Modified Proctor per ASTM-1557 to achieve a maximum permeability of 1×10^{-6} cm/s, overlain by an 80-mil HDPE liner with internal solution collection ditches spaced 200 feet apart. Drainage of the 3-foot thick overliner is facilitated by 4-inch diameter perforated PVC pipes placed at intervals of 35 feet.

The downgradient main solution collection ditches of Phase II are constructed of 80-mil primary and 60-mil secondary HDPE liners placed on a 12-inch soil layer, compacted to 95% of Modified Proctor per ASTM-1557 to achieve a maximum permeability of 1×10^{-6} cm/s, and traced with one-inch diameter perforated leak detection pipes between the primary and secondary liners, which daylight in the Phase I solution channel (LP3, LP4 and LP5).

The Phase II heap height was initially permitted to a maximum of 200 feet above the synthetic liner. The major modification of December 2011 included a revised stability analysis which demonstrated that increasing the heap height to 400 ft was possible while maintaining the required factors of safety for static and pseudostatic conditions. This proposal was approved by the Division in August 2012 which closed out SOC item I.B.3.

The High Pregnant Pond, Low Pregnant Pond, Barren Pond, and DE Settling Pond are hydraulically connected via transfer channels and each has a maximum operating volume of 2.65 million gallons (gal). Sufficient free volume will be maintained in the operating ponds at all times to accommodate runoff from the leach pad resulting from the 25-year, 24-hour storm event while still maintaining a minimum 2 feet of freeboard.

Each pond has a 60-mil HDPE primary and secondary liner with geonet located between the liners to transfer leakage to a dedicated leak detection sump. Each of the 2-foot deep gravel-filled sumps is routinely monitored and evacuated via a 4-inch diameter PVC pipe, which is perforated in the sump and daylights above the

embankment crest. In the case of the DE Settling Pond, the 4-inch diameter pipe daylights into the barren pond. The working volume of the High Pregnant Pond sump is 280 gal, for the Low Pregnant Pond 1,050 gal, for the Barren Pond 280 gal, and for the DE Settling Pond 240 gal.

The four-million-gallon Emergency Overflow Pond, which served as a pregnant pond for the Lewis Project, provides additional containment of process solutions, if needed. This synthetically-lined pond is hydraulically connected to the Low Pregnant Pond via two 16-inch diameter pipes. The Emergency Overflow Pond was relined with 80-mil primary and 60-mil secondary HDPE liners, with a geonet in between for solution conveyance, in 2009. The leak detection sump has a fluid volume of 1,030 gal and can be inspected and evacuated through a 4-inch diameter PVC riser that daylights above the embankment crest.

In October 2009, the Permittee submitted an EDC for the addition of a pumping system to convey process solution from the Low Pregnant Pond to the Phase II area of the Brimstone Heap Leach Pad. The pumping system consists of a 45 hp barge pump in the Low Pregnant Pond, a 350 hp centrifugal booster pump mounted on a concrete pad adjacent to the Low Pregnant Pond, and a 14-inch diameter schedule 40 welded steel pipeline from there to the top of the Phase II heap leach pad. This modification was approved by the Division but construction has not yet been completed.

In May 2011, the Permittee submitted an application for major modification of the Permit proposing to rebuild the Lewis Heap Leach Pad on the same footprint and resume leaching. This requires the removal of old heap ore, which has been used as construction fill, blast hole stemming, and road base, as well as for overliner material on new leach pad synthetic liners.

The Lewis Heap Leach Pad was constructed in 1983 as part of the original mine operation. Active leaching continued until 1998 when the leach pad went into closure and the heap was rinsed prior to permanent closure in 2005. Characterization of the spent leach material after rinsing using the Meteoric Water Mobility Procedure (MWMP) showed exceedances of the Division Profile I reference values for arsenic (0.15 mg/L) and selenium (0.35 mg/L). These results were similar to those obtained from MWMP leachate from native soil samples. Based on these results, and considering the low precipitation received at the site and depth to groundwater (over 800 feet below ground surface), the Division has determined that the use of the leach pad material as construction fill, blast hole stemming, and road base on the mine site will not degrade waters of the State.

The new Lewis Heap Leach Pad covers an area of approximately 2.7 million square feet, providing capacity for approximately 16.6 million tons of ore when stacked to the maximum permitted height of 200 feet above the synthetic liner. The leach pad is located directly adjacent to the northern side of the Brimstone Heap Leach Pad with the liner systems of each joined into one continuous system. This liner system consists of a minimum 12-inch layer of compacted soil achieving a permeability of $1x10^{-6}$ cm/s or less, overlain by an 80-mil HDPE geomembrane which, in turn, is covered by a minimum 36 inches of overliner material.

The base of the leach pad is divided into three (3) cells running from southeast to northwest. Each cell is graded to direct solution flow to the center line of the cell where it is then conveyed to the northwest edge of the pad. Solution drainage is aided by the placement of 4-inch diameter perforated corrugated plastic pipe (CPP) in a herringbone pattern feeding into 12-inch or 18-inch diameter perforated CPP header pipes which run to 18-inch diameter solid CPP solution conveyance pipes in the lined channel on the northwest edge of the pad. The southern end of the solution pipe system collects solution from Cell 3 and then joins the Brimstone solution pipes discharging to the Pregnant Pond. The northern end of the solution pipe system collects solution from Cells 1 and 2 and discharges to the Pregnant Sump from where it is pumped to the Low Preg Pond and/or the Overflow Pond. Barren and lean solution is delivered to the heap in 16-inch diameter steel pipes which lie in the same lined channels where the 18-inch pregnant solution conveyance pipes are located.

The lined channels include 12-inch diameter perforated CPP leak collection pipes located below the underliner and encased in sand. Fugitive solution in the southern portion of the channel is conveyed to the Pregnant Pond inlet channel where the pipe end is visible for routine inspection for leakage. In the northern portion of the channel, the leak detection pipe daylights within the concrete Pregnant Sump where the pipe end overhangs the sump wall where it can be easily inspected for leakage. The Pregnant Sump, in turn, also has a leak detection riser which provides access to inspect and evacuate the area around the concrete basin if necessary.

In order to collect the additional stormwater volume resulting from direct precipitation on the Lewis Heap Leach Pad during the 100-year, 24-hour storm event, an event pond will be constructed immediately north of the existing Overflow Pond. The new pond will have a 7.7 million gal capacity at 2 feet of freeboard, and 8.9 million gal at the crest. The liner system consists of an 80-mil HDPE liner placed over a 6-inch soil bedding. Residence time of any process

solution entering the pond due to an upset condition is limited by the Permit to 20 days for each event.

In March 2012, the Permittee submitted an EDC which, while retaining the permitted solution pumping rate to the Brimstone (Phase I and Phase II) and Lewis heap leach pads at 8,000 gpm each, proposed to increase the total combined permitted application rate to 12,000 gpm. This increase would require additional pond capacity to contain the fluid volume resulting from the 25-year, 24-hour and 100-year, 24-hour storm events. In order to address this, the same EDC proposed a pipeline from the Brimstone Event Pond to the Crofoot Overflow Pond to allow transfer of excess fluid to the latter in the case of a large storm event. (The Crofoot Overflow Pond was transferred to the Brimstone Permit by EDC in December 2009.) The EDC was approved in May 2012.

The Crowfoot Overflow Pond has a capacity of 13 million gal at 2 feet of freeboard. The original 40-mil HDPE liner was replaced in April 2012 with 80-mil HDPE. As a single-lined pond, residence of solution introduced during a storm event is limited to 20 days.

The proposed transfer pipeline is a single-walled 16-inch diameter HDPE construction, primarily above-ground but with three areas where it must be buried to pass under haul road crossings. These crossings also form low points where fluids will not completely drain by gravity.

In order to prevent process solution from remaining in the pond or in low points of the pipeline beyond the 20-day limit for single-lined containments, fresh water will be introduced into the Crofoot Overflow Pond and pumped up to the Brimstone Event Pond until samples of the outflow show less than 0.20 mg/L WAD cyanide. This will insure that the low points in the pipeline and the pond itself will only contain fresh water when pumping is complete.

The Brimstone process plant is designed to prevent leaks or spills from entering the environment. If process solution escapes primary containment within the building, it will gravity flow via an 18-inch diameter HDPE pipeline into either the DE Settling Pond or the Barren Pond, which provide secondary containment greater than 110% of the largest vessel volume. The caustic soda and sodium cyanide tanks, located adjacent to the process ponds, are also located within secondary containment with a volumetric capacity greater than 110% of the largest tank volume.

As part of the December 2010 minor modification application, the Permittee proposed expansion of the Merrill-Crowe process building to include an

additional clarifier, deaeration tower, filter press, and associated appurtenances. Additional concrete containment in the area of the proposed deaeration tower was included in the design, with waterstops and sealants provided at all concrete joints. The modification was approved by the Division in February 2011.

Some pregnant solution may be diverted to one of two (2) carbon in column (CIC) circuits rather than the Merrill-Crowe process plant. Each CIC circuit consists of 5 carbon columns through which process solution is pumped counter-current to the carbon. Barren solution at each exit is released to the DE Settling Pond and loaded carbon is shipped off-site for gold recovery and carbon reactivation. The Brimstone heap leach pad 80-mil HDPE liner provides secondary containment for each CIC circuit.

Two riprap-lined diversion v-ditches will direct runoff resulting from the 100-year, 24-hour storm event away from the process components. One ditch is located on the north side of the Brimstone Phase I (temporary) and the other will be located on the east side of the Brimstone Phase II Heap Leach Pad (permanent).

North Process Area

The 6.8 million square foot North Heap Leach Facility (NHLF) is to be constructed in a single phase consisting of a total of ten (10) cells. Crushed ore will be stacked in nominal 35-foot high lifts to a maximum height of 400 feet measured vertically from the top of the synthetic liner. Stability analyses of the heap at this design height was carried out and results predicted static and pseudostatic factors of safety which exceeded the Division minimum requirements. In addition, a displacement analysis was included which resulted in a worst case predicted lateral movement of 2 inches under design seismic conditions.

The liner system design for the NHLF consists of a one-foot thick, low permeability soil layer (1×10^{-6} cm/s) overlain by an 80-mil High Density Polyethylene (HDPE) geomembrane liner. Solution is conveyed in 4-inch diameter perforated HDPE collection pipes, placed on 50-foot centers, leading to 8-, 10-, 12-, and 15-inch diameter perforated HDPE secondary collection pipes. These lead to 18-inch solid HDPE primary collection pipes for conveyance to the process area. The collection pipes are covered with a 24-inch layer of free-draining overliner material for protection.

The solution collection channels in which the secondary collection pipes lie include a leak detection system below the 80-mil HDPE liner. A 2-inch

perforated PVC pipe runs parallel to the channel, with 4-inch solid PVC pipes leading to leak detection risers at eight (8) locations around the heap (NLP1-8).

The North Pregnant Pond, North Barren Pond, and two (2) DE Settling Ponds (east and west) are hydraulically connected via transfer channels. The Pregnant and Barren ponds each have a maximum storage volume of 3.7 million gal. The DE Settling Ponds each have a maximum storage volume of 1.05 million gal. Each of these ponds is constructed with side slopes of 3:1 (horizontal:vertical) with spillways connecting them hydraulically. Each pond has a liner system consisting of, from bottom to top, 12 inches of compacted soil (permeability $1x10^{-5}$ or less), and a 80-mil HDPE secondary liner, geonet, 80-mil HDPE primary liner. Each pond includes a leak detection and recovery sump (2,200 gal capacity) at the low point, with a 10-inch diameter PVC pipe extending from the sump, where the submerged portion is slotted, to the crest of the pond to allow inspection and evacuation if necessary.

The North Barren Pond includes a spillway leading to the North Event Pond to allow overflow of excess fluid in the event of a large storm. The North Event Pond has a liner system consisting of, from bottom to top, 12 inches of compacted soil (permeability $1x10^{-5}$ or less) and an 80-mil HDPE liner. The total storage capacity of the pond at the bottom of the invert is 15.8 million gal. As a single-lined pond, impoundment of process solution is limited to 20 days for each event.

Barren and lean solution are delivered to the heap leach pad from the North Barren Solution Vault. The vault consists of a concrete slab and wall system approximately 22.5 feet across by 34 feet long and 18 feet deep, constructed over 2 feet of drain gravel, which in turn sits on an 80-mil HDPE secondary liner. An 8-inch diameter PVC riser pipe extends from the drain gravel through the backfill around the vault, and daylights above finished grade to allow inspection and evacuation of fluid if necessary. The vault receives barren solution from the process building and, if necessary, from the Barren Pond, and lean solution from the heap leach pad. Three (3) vertical turbine pumps deliver the barren/lean solution to the heap leach pad through the 24-inch diameter steel main header pipe. The vault is designed to overflow back into the Barren Pond.

Pregnant solution is delivered to the process building from the North Pregnant Solution Vault. The vault consists of a concrete slab and wall system approximately 12.7 feet across by 28 feet long and 18 feet deep, constructed over 2 feet of drain gravel, which in turn sits on an 80-mil HDPE secondary liner. An 8-inch diameter PVC riser pipe extends from the drain gravel through the backfill around the vault, and daylights above finished grade to allow inspection and evacuation of fluid if necessary. The vault receives pregnant solution from the

heap leach pad and, if necessary, from the Pregnant Pond. Two (2) vertical turbine pumps deliver the pregnant solution to the process building through the 24-inch diameter steel main header pipe. The vault is designed to overflow back into the Pregnant Pond.

A reagent storage pad will be located at the west end of the west DE Settling Pond. The pad will consist of a concrete slab with 12-inch containment curbs on three sides. The fourth side is left open to allow leakage to flow directly into the DE Settling Pond. A continuous cast-in-place HDPE welding strip will be embedded into the slab edge which faces the DE Settling Pond to allow welding of the pond primary HDPE liner for a continuous flow path onto primary containment. Two tanks will be placed on the pad – an anti-scalant tank and a cyanide storage tank.

Processing of pregnant solution at the North Area Process Facility is to be done in a process building using zinc precipitation (Merrill-Crowe). The design details of the process building were not included in the major modification of December 2011. A minor modification will be required, therefore, to be submitted to the Division for review and approval before construction of this component may proceed (modification fees will apply).

The natural topography of the site around the North Area Process Facility results in the natural conveyance of stormwater around and away from the process components. Minor stormwater flows which run toward the site will be managed by the construction of berms and v-ditches to direct those flows away from the heap leach pad and pond areas.

South Process Area

The 20.5 million square foot South Heap Leach Facility (SHLF) is to be constructed in a single phase consisting of a total of 21 cells. Crushed ore will be stacked in nominal 35-foot high lifts to a maximum height of 400 feet measured vertically from the top of the synthetic liner. Stability analyses of the heap at this design height was carried out and results predicted static and pseudostatic factors of safety which exceeded the Division minimum requirements. In addition, a displacement analysis was included which resulted in a worst case predicted lateral movement of 2 inches under design seismic conditions.

The liner system design for the SHLF consists of a one-foot thick, low permeability soil layer (1×10^{-6} cm/s) overlain by an 80-mil High Density Polyethylene (HDPE) geomembrane liner. Solution is conveyed in 4-inch diameter perforated HDPE collection pipes, placed on 50-foot centers, leading to

8-, 10-, 12-, 15-, and 18-inch diameter perforated HDPE secondary collection pipes. These lead to 18-inch solid HDPE primary collection pipes, transitioning to 22-inch diameter HDPE pipe for conveyance to the process area. The collection pipes are covered with a 24-inch layer of free-draining overliner material for protection.

The solution collection channels in which the secondary collection pipes lie include a leak detection system below the 80-mil HDPE liner. A 2-inch perforated PVC pipe runs parallel to the channel, with 4-inch solid PVC pipes leading to leak detection risers at eight (8) locations around the heap (SLP1-8).

The South Pregnant Pond, South Barren Pond, and two (2) DE Settling Ponds (north and south) are hydraulically connected via transfer channels. The Pregnant and Barren ponds each have a maximum storage volume of 3.7 million gal. The DE Settling Ponds each have a maximum storage volume of 1.05 million gal. Each of these ponds is constructed with side slopes of 3:1 (horizontal:vertical) with spillways connecting them hydraulically. Each pond has a liner system consisting of, from bottom to top, 12 inches of compacted soil (permeability $1x10^{-5}$ or less), and a 80-mil HDPE secondary liner, geonet, 80-mil HDPE primary liner. Each pond includes a leak detection and recovery sump (2,200 gal capacity) at the low point, with a 10-inch diameter PVC pipe extending from the sump, where the submerged portion is slotted, to the crest of the pond to allow inspection and evacuation if necessary.

The South Barren Pond includes a spillway leading to the South Event Pond to allow overflow of excess fluid in the event of a large storm. The South Event Pond has a liner system consisting of, from bottom to top, 12 inches of compacted soil (permeability $1x10^{-5}$ or less) and an 80-mil HDPE liner. The total storage capacity of the pond at the bottom of the invert is 33.9 million gal. As a single-lined pond, impoundment of process solution is limited to 20 days for each event.

Barren and lean solution are delivered to the heap leach pad from the South Barren Solution Vault. The vault consists of a concrete slab and wall system approximately 22.5 feet across by 34 feet long and 18 feet deep, constructed over 2 feet of drain gravel, which in turn sits on an 80-mil HDPE secondary liner. An 8-inch diameter PVC riser pipe extends from the drain gravel through the backfill around the vault, and daylights above finished grade to allow inspection and evacuation of fluid if necessary. The vault receives barren solution from the process building and, if necessary, from the Barren Pond, and lean solution from the heap leach pad. Three (3) vertical turbine pumps deliver the barren/lean solution to the heap leach pad through the 24-inch diameter steel main header pipe. The vault is designed to overflow back into the Barren Pond.

Pregnant solution is delivered to the process building from the South Pregnant Solution Vault. The vault consists of a concrete slab and wall system approximately 12.7 feet across by 28 feet long and 18 feet deep, constructed over 2 feet of drain gravel, which in turn sits on an 80-mil HDPE secondary liner. An 8-inch diameter PVC riser pipe extends from the drain gravel through the backfill around the vault, and daylights above finished grade to allow inspection and evacuation of fluid if necessary. The vault receives pregnant solution from the heap leach pad and, if necessary, from the Pregnant Pond. Two (2) vertical turbine pumps deliver the pregnant solution to the process building through the 24-inch diameter steel main header pipe. The vault is designed to overflow back into the Pregnant Pond.

A reagent storage pad will be located at the south end of the south DE Settling Pond. The pad will consist of a concrete slab with 12inch containment curbs on three sides. The fourth side is left open to allow leakage to flow directly into the DE Settling Pond. A continuous cast-in-place HDPE welding strip will be embedded into the slab edge which faces the DE Settling Pond to allow welding of the pond primary HDPE liner for a continuous flow path onto primary containment. Two tanks will be placed on the pad – an anti-scalant tank and a cyanide storage tank.

Processing of pregnant solution at the South Area Process Facility is to be done in a process building using zinc precipitation (Merrill-Crowe). The design details of the process building were not included in the major modification of December 2011. A minor modification will be required, therefore, to be submitted to the Division for review and approval before construction of this component may proceed (modification fees will apply).

The local topography east and south of the SHLF rises significantly, resulting in a large watershed area directed at the heap leach pad. In order to divert stormwater flows around the heap leach pad and process area and into natural drainages to the west of the facility, stormwater diversion channels are included in the design around the south, east and north sides of the area. The channel is designed with a trapezoidal cross-section ranging from 3 feet to 5 feet in depth and 6 feet to 8 feet in width (flat bottom width). All channels are protected from erosion by placement of riprap on the bottom and sides. Hydraulic calculations of the channel capacity show that it is capable of diverting flows resulting from the 100-year, 24-hour storm event.

Petroleum Contaminated Soil Management

A Petroleum Contaminated Soil (PCS) Management Plan was approved as an EDC in August 2011, authorizing on-site disposal of PCS at a specified location on the Brimstone Expansion Waste Rock Dump (WRD) W-37. Prior to management under the PCS Plan, determinations must be performed to demonstrate that the PCS is not hazardous waste. Hazardous waste must be managed and disposed of in accordance with applicable regulations. On-site disposal of PCS is also contingent on the results of periodic screening analyses, which must show that the PCS does not exceed screening levels established via risk assessment for various organic constituents. Otherwise, the PCS must be properly disposed of off-site.

PCS may be temporarily stored on three approved PCS temporary holding pads while screening analyses are performed, or it may be provisionally placed at the approved disposal location on the Brimstone Expansion WRD, provided that it will be removed and properly disposed of elsewhere in accordance with approved contingency plans if it exceeds screening levels during subsequent screening analyses. Various time limits and other stipulations in the PCS plan and Permit apply to temporary storage, provisional placement, and contingency plans. SOC Item I.B.5 was added to the Permit with the PCS plan approval, requiring documentation, by November 30, 2011, of removal and proper disposal of all PCS from the former bioremediation pads. This task was completed on November 22, 2011 and the full report of the removal and disposal was received on November 28, 2011. The SOC item also requires completion of final permanent closure of the former bioremediation pads, including proper reporting, clean-up, and disposal of any PCS found under the bioremediation pad liners, by December 29, 2011. This was completed upon receipt of the final report on December 30, 2011.

The three PCS temporary holding pads are to be constructed approximately 1,000 ft east of the north end of the Crofoot heap leach pad. From the bottom up, the liner system of each temporary holding pad consists of a compacted subgrade, a layer of geotextile, a single 80-mil HDPE liner, a layer of geotextile, and an 18-inch gravel drainage and protection layer. A minimum two-foot freeboard must be maintained above any fluid in the temporary holding pads.

C. Receiving Water Characteristics

An extensive program to characterize the hydrogeological conditions present in the vicinity of the Brimstone processing facilities was performed. Boreholes were drilled to depths between 300 and 880 feet. Groundwater was not encountered in any of the boreholes except for a trace (2 gal/min) amount of groundwater

encountered at a depth of 355 feet near the northern boundary of the project area. Further drilling indicated the zone was neither laterally nor vertically continuous. Analysis of a sample of the groundwater indicated occasional exceedances of the Profile I reference values for iron, lead and manganese.

In the area of the SHLF, groundwater was encountered at depths of less than 200 feet, and in the flat areas west of the SHLF, Crofoot heap leach pad, and North Waste Rock Facilities, groundwater was encountered at depths ranging from 136 feet to as low as 10.5 feet. In order to verify groundwater quality in these areas, a combination of existing wells and new wells will be monitored as follows:

Downgradient of the North Waste Rock Facility: H10HR-003 (existing) and WR-MW4 (new);

Downgradient of the NHLF: H10HR-001 (existing);

Downgradient of the South Waste Rock Facility: H10HR-018 (existing);

Downgradient of the West Waste Rock Facility: WR-MW1, WR-MW2, WR-MW3 (all new);

Upgradient of the SHLF: H10HR-023, H11HR-005 (both existing)

Downgradient of the SHLF: SH-MW1, SH-MW2 (both new).

Each of the above wells will be installed and monitored for water elevation and samples analyzed for Profile I constituent concentrations prior to construction of the facilities, and monitored quarterly thereafter.

The only perennial near-surface water occurrence that exists within the area is approximately two miles to the west of the Brimstone project, consisting of shallow ‘duck ponds’. Make-up water is supplied from the existing Crofoot Mine wells, which are located approximately two miles southwest of the historic town of Sulphur along the railroad right-of-way. Four of these wells were sampled to determine water quality. In general, groundwater quality meets NDEP Profile I reference values except for occasional exceedances of arsenic (up to 0.05 mg/L), chloride (up to 1,460 mg/L), TDS (up to 2,820 mg/L), and antimony (up to 0.033 mg/L), all from natural sources.

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** for publication. The Notice is being mailed to interested persons on our 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 Effluent Limitations, Schedule of Compliance, Special Conditions

See Part 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 primary method for identification of escaping process solution will be placed on required routine monitoring of leak detection systems, inspections of components, and analysis of monitoring well samples. Specific monitoring requirements can be found in the Water Pollution Control Permit.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S.C. 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 CFR 10, April 15, 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 (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:	Paul Eckert
Date:	August 2011
Revision 00:	Renewal 2011
Revision 01:	Updated to include description of PCS management plan per EDC approved on 8/31/11 [PE – 09/2011]
Revision 02:	Major Mod (Lewis HLP, event pond) [PE – 10/2011]
Revision 03:	EDC (solution pump rate increase) [PE – 05/2012]
Revision 04:	Major Modification (north and south process areas) [PE – 08/2012]