FACT SHEET
(pursuant to NAC 445A.401)

Permittee Name: **Ashdown Project LLC**

Facility Name: **Ashdown Mine and Morris Mill**

Permit Number: **NEV2005105**
Review Type/Year/Revision: **Renewal 2015, Fact Sheet Revision 01**

A. Location and General Description

Location: The Ashdown Mine and Morris Mill (Ashdown) is a molybdenum and gold mining (Ashdown Mine) and toll milling operation (Morris Mill) located on the west side of the Pine Forest Range in the historic Vicksburg-Alder Creek Mining District. The mine and mill site are approximately 110 miles northwest (by air) of Winnemucca and 14 miles south-southwest of Denio Junction, in Humboldt County, Nevada. The mill facility and mine are located within portions of Township 45 North (T45N), Range 28 East (R28E), Section 23, and T45N, R29E, Section 14, Mount Diablo Baseline and Meridian.

The Ashdown Mine is located on public land managed by the BLM-Winnemucca District, Black Rock Field Office. The Morris Mill is located on private land owned by the Claude E. Morris Estate, approximately 1 mile east of the mine site. In November 2009, the mine and mill entered into "Temporary Closure" and is currently under care and maintenance.

Access: To access the Ashdown Mine and Morris Mill sites, proceed north from Winnemucca approximately 31 miles on US-95 to the junction of SR-140. Proceed west on SR-140 a distance of 65 miles to Denio Junction. From Denio Junction, proceed west on SR-140 approximately 9 miles to its junction with the mine access road. Proceed southeast 2 miles then southwest 2 miles to the mill site. The mine is approximately 1 mile east of the mill site.

General Description: The Permittee is authorized to mine and process up to 36,500 tons of molybdenum ore as molybdenite (molybdenum sulfide) annually from two declines (Ashdown and Sylvia). In addition, the facility is also authorized to process off-site ores on a toll basis that have been characterized and approved by the Nevada Division of Environmental Protection-Bureau of Mining Regulation and Reclamation (the Division). Conventional milling and flotation are used to produce concentrates with tailings discharged to a lined impoundment. The Ashdown Mine and Morris Mill are designed to be 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.

Ashdown is separately permitted to construct, operate and close two Rapid Infiltration Basins (RIBs), located within an alluvial fan, south of the mill site and northwest of the mine site, for the purpose of managing and reintroducing dewatering water from the underground mine back into the local groundwater basin. Specific operation, monitoring, reporting and recordkeeping requirements are addressed in Water Pollution Control (WPC) Permit NEV2006101.

B. Synopsis

Background/History: Until it was ordered closed by the War Production Board in 1942, the Ashdown Mine operated intermittently as a small gold mine, producing an estimated 52,000 troy ounces of gold between 1880 and 1942. In the early 1970's, precious and base metal exploration activity returned to the Vicksburg--Alder Creek Mining District. In 1980, American Copper and Nickel Corporation (ACNC) discovered a highly concentrated molybdenum deposit near the Ashdown Mine site. In 1982, ACNC formed a joint venture with Outokumpu Mines, Inc. (OMI), the North American subsidiary of the Finnish mining company Outokumpu Oy, to develop the Sylvia decline. A collapse of the molybdenum market in 1983 resulted in ACNC and OMI switching their focus on the gold mineralization at the Ashdown Mine site.

Win-Eldrich Mines Ltd. (WEM) acquired the Ashdown property in 1987 and resumed exploration activities for gold and molybdenum. A rise in molybdenum and gold metal prices in 2003 brought about a renewed interest in the development of the Ashdown-Sylvia sites. In 2004, WEM and Golden Phoenix Minerals Inc. (GPMI) formed Ashdown Project LLC, as a joint venture (with GPMI as the managing operator) to develop the mineral resources located at the Ashdown Mine. Further delineation of the molybdenum deposits continued and pilot testing was performed to prove the project's viability. On April 27, 2005, GPMI submitted an application and fee for the *"Morris Mill Facility and Ashdown Molybdenum Project"*. The new permit was assigned Water Pollution Control Permit (WPC) Permit NEV2005105 and became effective October 28, 2005.

A collapse in the molybdenum market led to the "Temporary Closure" of both the Ashdown Mine and Morris Mill in November 2008. The facility remained under a care and maintenance mode until March 2009 when mining and processing resumed on a limited basis. In May, 2009, WEM purchased GPMI's interest in Ashdown and is now in the process of updating the most recent (1991) gold feasibility study for potential development of Ashdown's gold resource.

Geology and Mineralogy: Mineralization at the Ashdown site is found in two large quartz veins (the north-south trending and west dipping Sylvia Vein and the northwest-southeast trending and west dipping Main Vein) hosted in Jurassic metasediments and a Cretaceous quartz diorite.

The gold resource is contained in four shear zones, which range from 5 to 45 feet in width, strike in a north to northwesterly direction, and dip 35 to 45 degrees to the west-southwest. The molybdenum-bearing vein lies deeper and to the south of the gold

mineralization. It is from 5 to 15 feet in width, strikes in a northwesterly direction, and dips 40 to 60 degrees to the west. Molybdenum occurs as molybdenite (MoS_2) in veinlets, pods, and as gouge (e.g. soft material) along the contact between the quartz vein and the footwall. Drilling has detected molybdenite mineralization from 105 feet to 630 feet below the surface over an area 840 feet wide by 1,800 feet long.

Mining: Access to the orebody is via the Sylvia Decline. The Sylvia Decline Portal is collared at an elevation of 4,660 feet above mean sea level (amsl). A combination steel I-beam and timber structure has been constructed at the portal entrance to provide protection from potential rock falls from the highwall above. In addition, the soil embankment surrounding the portal entrance has been shotcreted to prevent erosion. No equipment, material storage, other structures, or devices are to be located at or in the immediate vicinity of the portal opening for anything more than a temporary period.

The decline is approximately 1,200 feet long with a final floor elevation of approximately 4,500 feet amsl. The first 775 feet of the decline excavation was driven east at a gradient of minus 7.5 percent. The remaining 425 feet of the decline was driven southeast at a gradient of minus 8.5 percent. The decline cross-section is a nominal 7 feet by 7 feet and ground control methods include rock bolts, wire mesh, steel sets, and shotcrete. Electrical service and fresh air ventilation are provided through the decline.

An escape portal and decline was constructed in 2008 to meet U.S. Department of Labor Mine Safety and Health Administration (MSHA) requirements. The decline was constructed at a 25 to 30 percent gradient over a length of approximately 710 feet. The portal elevation is at 4,910 feet amsl and intersects a vertical stub raise driven from the inclined raise in the existing Sylvia Decline at the 4,530 feet amsl elevation, continuing on to its completion at the 4,300 feet amsl elevation.

Ore and Waste Rock Stockpiles: Run-of-mine (ROM) molybdenite ore is temporarily stored in a cleared, un-lined area south of the mine maintenance building. Waste rock is stored in a cleared, un-lined area to the west of the maintenance building and near the Sylvia Decline portal at the mine site. Approximate capacity of the waste rock dump is 5,000 tons. The ore is loaded into dump trucks and hauled to the Morris Mill where it is stockpiled on a lined pad prior to processing. A small (less than 5,000 tons) waste rock storage site is located near the Sylvia Decline at the Ashdown Mine site.

Up to 200 tons of ore (about two days of ore feed) can be stockpiled at the mill facility adjacent to the crushing facility. The 60-foot by 60-foot stockpile pad is comprised of a 12-in soil base (compaction unknown), overlain by a 60-mil high-density polyethylene (HDPE) liner and a 24-inch layer of free draining gravel (specifications unknown). The pad drains to a concrete-lined sump and any solution collected is evacuated to the lined tailings impoundment.

Off-site ores approved by the Division and delivered to the Ashdown project site are stockpiled on the HDPE-lined pad. The ores are typically processed in a 7 to 10 day period to minimize the need for process circuit changes and reconfiguring. Each client's

ore is blended and processed separately for other client ores to provide a homogenous ore for the duration of the toll operations and reduce the need for repeated changes to the process circuit.

Ore and Waste Rock Characterization: MWMP (meteoric water mobility procedure) and ABA (acid base accounting) characterization results indicate that the Ashdown ore and waste rock have no potential for acid generation. However, analytical results indicate slightly elevated aluminum, arsenic, total dissolved solids, and sulfate.

The Permittee is selective in what off-site ores will be processed within the Morris Mill. Ores that are shown to be potentially acid generating or have the propensity to generate dissolved metals based on characterization tests results, are not processed.

Growth Media Stockpile: A 3,600 cubic yards (cu yd) growth media stockpile has been constructed near the mouth of the escape portal. Growth media consists of alluvium, Tertiary tuff, and weathered quartz diorite generated from the construction of the decline and approximately 2,700 cu yd of growth media currently located on the existing waste rock dump. The growth media is stockpiled adjacent to the above mentioned access road on approximately 0.19 acre of existing disturbance. Approximate stockpile dimensions are 207 feet long by 46 feet wide at the crown and starts at the constructed access road and extend northwards toward the existing dam. Growth material is dumped, stacked and graded to an approximate height of 33 feet at the face of the stockpile. The material will be left at the angle of repose until removal for reclamation activities. Since no material will remain at closure, an engineered base and stability analysis was not required.

Crushing and Grinding: The dry crushing and grinding operations are performed in closed circuit, outside the 100-ton per day Morris Mill facility. Stockpiled ROM ore is transferred via front-end-loader to a stationary grizzly for removal of the oversize material; the undersize material is discharged to a feed hopper where it is fed to a 25-ton per hour (tph) jaw crusher and crushed to 100 percent passing, minus 2-inch.

The minus 2-inch ore is conveyed to a ½-inch vibrating screen. The screen oversize is discharged to a cone crusher and crushed to 100 percent minus ½-inch; the screen undersize is conveyed and then discharged directly to the covered, 100-ton capacity fine ore bin. Ore from the ore bin is discharged onto conveyor and fed at a rate of 4 tph to a wet ball mill, where it is ground to 80-percent passing, minus 100-mesh. A wet cyclone recirculates oversize material back to the ball mill for regrinding; the undersize material is conveyed to the flotation circuit.

Flotation Circuit: The flotation circuit is located within containment inside the process building. The containment area is designed to contain 110 percent of all process fluid present in the milling and flotation circuit. Containment consists of a 40-foot by 50-foot by 11-inch thick concrete floor slab with a continuous 13-inch high stem wall. The floor is graded to a concrete-lined sump and a dedicated pump, the collected solution is pumped to the tailings storage facility (TSF). Total containment volume is approximately 15,000 gallons. In an emergency situation, all process fluid in the

containment system could be discharged to the tailings impoundment, which is designed to contain 10,000 tons of tailings, plus the 25-year, 24-hour storm event, in addition to 1 foot of freeboard.

The Ashdown flotation circuit consists of two, four-cell rougher flotation circuits, both operated counter-current. Minus 100-mesh ore slurry from the grinding circuit is fed to the flotation circuit where depending on the type of ore processed, various reagents are added to either enhance sulfide flotation or depress sulfides. Cyanide may also be introduced to the circuit to depress sulfide minerals and solubilize any gold or silver present.

The flotation concentrate slurry is pumped to a thickener for dewatering and then to a disk filter for additional water removal. A non-ionic flocculant and hydrated lime may be added to improve solids settling rate. Thickener overflow will then be pumped back to the mill process water make-up tank, where it will be joined by reclaim water from the tailings facility; the flotation tails slurry is pumped to the TSF.

The filter cake (moisture content approximately 25 percent by weight) is conveyed via a pair of screw augers to the Holo-Flite™ dryer, where heated oil is circulated through a series of tubes to reduce filter cake moisture content to approximately five percent and volatilize residual fuel oil utilized as a collector for the rougher flotation circuit. The Holo-Flite™ dryer utilizes oil heated by an external radiator and circulated through a series of tubes for filter cake drying. The final, dried concentrate is placed in totes for shipment to the end user.

In the flotation circuit's current configuration, the grade of the concentrates produced and the metals recovered has been problematic. In an effort to improve grade and recovery and provide more flexibility to the Morris Mill, the Permittee proposed an Engineering Design Change (EDC) to reconfigure portions of the flotation circuit and add specific process components (hydrocyclone, conditioning tank, and jig) and expand containment (for the conditioning tank) to increase the flexibility of the mill facility. The permitted process rate remained unchanged. The EDC was authorized by the Division on 4 May 2012.

Engineering Design Change: In the EDC, the existing mill arrangement was modified by adding or reconfiguring the following components:

- 8-inch diameter hydrocyclone;
- 36-inch coarse material jig;
- 72-inch diameter conditioning tank with agitator, structure and containment;
- 7-foot by 7-foot secure enclosure with 2-foot by 2-foot hopper;
- 1½-inch slurry pump for the regrind mill product;
- Associated piping and electrical components; and
- Reactivate the existing 3-foot diameter grinding mill to regrind product from the rougher/scavenger flotation cells.

The existing crushing and grinding circuits will remain unchanged. All off-site ores are currently characterized for MWMP-Profile I constituents prior to delivery. In addition, bench scale testing is performed on the ores to determine optimize recoveries and minimize the need for field experimentation.

Recovery and retention of concentrate will depend on the ore. Process water and entrained reagents will be recycled or pumped to the tailing ponds for evaporation or later recycling.

Tailings Storage Facility (TSF): Tailings from the rougher and cleaner flotation circuits are conveyed to the TSF via an above-ground 8-in diameter HDPE pipeline within an open steel channel. Tailings are discharged into the facility from multiple spigot points around the perimeter of the impoundment to permit consolidation of the solids and optimize water management. A solution collection sump installed at the south end of the impoundment, collects reclaim water that is used in the grinding and flotation circuits. The reclaim water line shares the same lined channel as the tailings discharge line, and prior to its reuse in the process facility; the reclaim water is pumped to the reclaim water tank, which is placed on containment within the process facility.

In its current configuration, the Ashdown Mine and Morris Mill Tailings Storage Facility (TSF), is comprised of two, geosynthetic-lined tailings impoundments (TSF-1 and TSF-2), each with a capacity of 40,000 tons. As of May 2012, TSF-1 had reached its design freeboard capacity and based on a maximum authorized discharge rate of 100 tpd, TSF-2 is expected to reach its design freeboard capacity during late 2012.

Both impoundments occupy a footprint of approximately 420 feet by 250 feet and have a depth of 12 feet with 1.5 feet of freeboard. A perimeter berm with a 15-foot crest width surrounds both impoundments which are lined with 60-mil HDPE over a prepared base; moisture conditioned and compacted to 95 percent Proctor (American Society for Testing and Materials [ASTM] Method D-1557).

A collection sump is installed in both TSF-1 and TSF-2. The sumps consist of a single vertical 36-inch diameter corrugated metal pipe (CMP), slotted and wrapped with geotextile. The CMP is held vertical by a concrete base constructed with steel reinforcing. The concrete foundation pad is placed on a 60-mil HDPE rub sheet, which is placed on the 60-mil liner. The top of the CMP is secured by a steel grate walkway.

Under current operating practices, tailings from the rougher and cleaner flotation circuits are conveyed to the TSF via an above-ground HDPE pipeline within an open, steel-lined channel. Tailings are discharged into the facility from multiple spigot points around the perimeter of the impoundment to permit consolidation of the solids and optimize water management. A solution collection sump installed at the north end of the impoundment, collects reclaim water where it is used in the grinding and flotation circuits. The reclaim water line shares the same lined channel as the tailings discharge line and prior to its reuse in the process facility; the reclaim water is pumped through a series of carbon

columns and then the reclaim water tank, which are placed on containment within the process facility.

In an effort to expand the existing tailings impoundment storage capacity, the Permittee was authorized by the Division (Minor Modification approved on 31 May 2012) to construct a third and fourth tailings impoundments (TSF-3 and TSF-4), to be located on the south side of the existing TSF-1 and TSF-2. The entire area was previously characterized in 2005 in conjunction with the new Permit application and in anticipation of construction of a single large TSF. The Permittee opted for the construction of 2 smaller, more manageable, TSFs. To date, these have not been constructed.

TSF-3 and TSF-4 are nearly identical in size and shape to TSF-1 and TSF-2 and will be constructed in a similar manner. The berms of the new ponds will be constructed of compacted excavated material taken from the interior of the pond. The floor of the proposed tailings pond will be approximately 4 feet below existing ground and approximately 8 feet above the groundwater table, comparable to that of TSF-1 and TSF-2. The soil base will be compacted in two, 6-inch lifts compacted to 95 percent of standard Proctor (ASTM Method D-1557) overlain by 60-mil HDPE. The liner will be continuous over the berms of the proposed ponds and between the two existing ponds.

TSF-4 will occupy a footprint of approximately 420 feet by 250 feet and a capacity of 40,000 tons (at 1.5 feet of freeboard). TSF-3 will require a slight taper on the long side to accommodate the fence line, with a length of 420 feet and a width varying from 250 feet to 230 feet and a capacity of 38,000 tons (at 1.5 feet of freeboard). The tailings ponds will be 12 feet deep (including 1.5 feet of freeboard). The proposed perimeter berms around both TSF-3 and TSF-4 will have a 15-foot crest width along the south, east and west sides, similar to that for TSF-1 and TSF-2. The berm width along the north side (common berm with the existing tailings ponds) and the common berm between proposed TSF-3 and TSF- 4 will be 25 feet wide, and will be lined with the 60-mil HDPE. The proposed TSF is designed to contain all process solution in the processing circuit at any given time, plus the 24-hour, 100-year design storm falling in the area.

The tailings will be discharged into TSF-3 and TSF-4 from multiple spigot points along the north perimeter berm of the ponds. Through managed discharge from the various spigot points, the tailings will be placed in thin lifts with maximization of water recovery and evaporation thus minimization of water retention and maximization of density. The discharge from the spigots in the tailings pond can be adjusted to equalize the load and direct reclaim water to the sump on the south end of the facility. An 8-foot high deer fence will be constructed around the tailings pond to limit wildlife access.

Part of the process water is recycled back into the process mill, thereby limiting amount of water in the TSF-3 and TSF-4 at any given time. This helps minimize the available ponding, and associated wildlife attraction. Water will be reclaimed from the tailings pond for reuse at the mill via a floating pump system.

Monitoring: There are 5 monitoring wells in the vicinity of the existing TSF-1 and TSF-2. One is located at the northeast corner of TSF 1 (MW 1); the second well is located at the southeast corner of TSF-2 (MW-2); the third is located at the northwest corner of TSF-2 (MW-5). None of the existing monitoring wells will be impacted by the construction of the proposed (but not yet constructed) TSF-3 and TSF-4. Two monitoring wells (MW-6 and MW-7) have been drilled and installed to the south and southwest of the proposed locations of TSF-3 and TSF-4, respectively.

Sylvia Mine Diversion Structures: V-shaped diversion ditches, with a minimum depth of 40 inches, side slopes of 1.3H:1V and a nominal width of 10.9 feet at the top surface. Ditch flow capacity is greater than 217 cu ft per second, not including 1 ft of freeboard. Drive-through water bars, approximately 24 feet wide by 15 inches deep (with 1 foot of freeboard) are installed at two points along the diversion ditch. The waterbars are constructed with 4H:1V slopes and an average floor width of five feet to accommodate light vehicle traffic. The waterbars have an estimated flow capacity of 214 cu ft per second, not including 1 foot of freeboard.

Morris Mill Diversion Structures: Stormwater drainage is routed around the Morris Mill facility in a channel constructed and sized to accommodate the 100-year, 24-hour storm event. The diversion ditches are V-shaped with a minimum depth of 2 feet. Design capacity is 24 cu ft per second and an additional 1 foot of freeboard has been added to the design channel depth.

Ancillary Facilities: A 10,000-gallon diesel storage tank is located above ground at the plant site within a bermed and HDPE-lined containment area. The containment area is sized to contain an accidental spill of all the contents of the tank, plus the 3-inch depth design storm event. The Permittee will maintain an adequate supply of oil-absorbing material at the processing site.

An administration/office trailer on site serves as storage for supplies and contains a washroom, wet lab, and concentrate weighing room. Laboratory wastes are collected in a sealed carboy and sent off site to an approved waste management facility for disposal.

Chemical reagents (including cyanide) are transported to the site in sealed steel drums, stored inside the mill building in the southeast corner of the containment area, and physically separated where not chemically compatible. About one month's supply is maintained at any given time. Flotation chemicals and cyanide are mixed on a batch basis inside the building.

C. Receiving Water Characteristics

Site Hydrology/Hydrogeology and Background Groundwater Quality: Groundwater depth at the Morris Mill is extremely shallow with the shallowest encountered at a depth of 8 feet. Analytical results from groundwater monitoring wells indicate that the water quality continues to meet Profile I reference values.

There are two agricultural and two domestic water supply wells within a 1,600-foot radius of the mill facility. Groundwater depth at these well sites ranges between 50 and 100 feet below ground surface (bgs) and the wells meet their respective water quality standards. A domestic water supply well ("Bunk House Well"), located 1,200 feet downgradient of the Sylvia Portal, has a depth to water of approximately 100 feet and also meets drinking water standards.

Alder Creek, a seasonal intermittent stream that flows out of Alder Creek Canyon in the Pine Forest Range to the south, terminates approximately one-half mile north of the Morris Mill Facility. An elevation divide separates the mill site from the terminus of the stream. No other springs, seeps or waterways are known to exist within one-half mile of the site.

The 100-year, 24-hour storm flow from the upgradient Cherry Gulch drainage basin will be diverted around components (e.g. tailings impoundment), which have been designed to contain meteoric water resulting from the 25-year, 24-hour storm event.

D. Procedures for Public Comment

The Notice of the Division's intent to issue a renewal permit authorizing the Permittee to construct, operate, and close, subject to the conditions contained within the permit, is being sent to the **Humboldt Sun** in Winnemucca for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed renewal permit can do so in writing within a period of 30 days following the date of the 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 facility 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 proposed 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 primary emphasis for identification of any discharge will be placed on required routine monitoring, inspections, and other actions deemed necessary by the Division in accordance with permit conditions and the Mining Regulations (NAC 445A.350-447).

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:	*Rob Kuczynski, P.E.*
Date:	*XX Month 2015*
Fact Sheet Revision 00: *(Permit Revision 00)*	*Renewal 2015*