FACT SHEET
(pursuant to NAC 445A.401)

Permittee Name: **United Milling & Refining Corp** (formerly Noble Technologies Corp)

Project Name: **Noble Project**

Permit Number: **NEV2009113 (Major Mod 2012)**

A. Location and General Description

The facility is located in Storey County, Section 5, Township 19 North, Range 22 East, Mount Diablo Baseline and Meridian, in an industrial park in the town of McCarran, Nevada, approximately 14 miles east of Reno, Nevada.

The Noble Project is a beneficiation facility using physical separation and chemical (acid leaching) methods to produce gold and other precious metals from off-site mined material. The entire process is contained within an enclosed building.

To access the site, take Interstate Highway 80 east from Reno to Exit 28. Turn right at the end of the off-ramp onto Waltham Way. After approximately 1.5 miles turn right on Alexandria Court. The facility is located in the building with address 1280.

B. Synopsis

All ore for processing is obtained from off-site sources including outside of the State of Nevada. Prior to bringing ore on-site, the Permit requires analysis of leachate from a Meteoric Water Mobility Procedure for Profile I constituents (MWMP-Profile I) if the ore has not previously been subjected to a chemical process, or MWMP-Profile II if the ore has previously been subjected to a chemical process, along with Toxicity Characteristic Leaching Procedure (TCLP-8 metals), and Acid Generating Potential/Acid Neutralizing Potential (AGP/ANP) in order to characterize all sources prior to processing. Confirmation by a Certified Environmental Manager (CEM), or equivalent, that the material is not classified as hazardous waste in the state of origin is also required by the Permit. Ore obtained from sites within the State of Nevada will require that the Water Pollution Control Permit of the site of origin be identified as well.

Ore is transported to the site in closed 55-gal drums, super sacks, or other containers, on flatbed (or similar) trucks. The delivery trucks enter the building

completely for unloading within the area defined by the floor slab. Ramps are provided at entrances and exits to allow passage of vehicles but prevent both entry of meteoric runoff from outside, and exit of fugitive solution from the process. Ore containers are stored inside the building at all times prior to processing.

Physical Separation Circuit

The initial stage of physical separation processing includes two parallel crushing systems that can be fed from the same feed hopper separately or simultaneously. The first line takes material from the feed hopper through a single ball mill. The second line includes a primary crusher, secondary crusher, mix tank, agitator, and a dewatering screen. Both lines reduce the material to a minus 300 mesh size and empty into a storage hopper.

Crushed material is then heated in a Sunbeam gas-fired furnace. The dried material is re-wetted using water from the local supply, and then run though a magnetic separator to remove ferro-magnetic minerals. The reject is placed in containers for disposal off-site along with the spent ore.

Additional water is added to the concentrate from the magnetic separator in a slurry bin prior to initial concentration in two stages of Knudsen bowls (large and small) followed by final concentration on two shaker tables in series. The resulting product is then placed in sealed containers for shipment to an off-site facility for refining.

Process water from each stage is collected and diverted back to the storage tank, run through filters, and recycled into the process. Any water that is determined to be no longer suitable for reuse in the process will be collected and removed by a licensed liquid waste hauler for disposal off-site. Characterization of spent liquids (Profile II and TCLP-8 metals analyses) and a shipping manifest are required for each delivery. The reject from the filters is placed in barrels for disposal off-site along with the magnetic separator reject and spent ore.

The physical separation circuit is designed to process up to 10 tons of ore per hour. All fluids are contained within the process components which are designed to operate as a zero discharge system. Any fugitive solution will be contained within secondary containment curbs surrounding the process area within the building, and collected in floor sumps for removal and returned to the main water tank, if appropriate. The secondary containment curbs consist of both concrete and steel barriers anchored and sealed to the existing concrete floor. The volume of the secondary containment is in excess of 110% of the entire fluid capacity of the physical separation system. There will be no floor drains or other penetrations of the secondary containment.

Construction of the secondary containment was supervised by a Nevada-licensed professional engineer. All appropriate provisions of the containment, including construction of new components and repair and refurbishment of the existing concrete slab, were completed and inspected prior to operation of the physical separation plant. A list of components, a flow diagram showing the process components, and a drawing showing a plan view of the process layout are available in Division files.

Solid waste from the physical separation process, including solid reject from the filters, magnetic separator, Knudsen bowls, and shaker tables, are dried, collected, and deposited in 55-gal drums and stored temporarily in a separate area of the building. These drums are periodically loaded onto flatbed (or similar) trucks for transport off-site and disposal. Trucks are able to enter the building completely so that all loading takes place within the concrete containment. Characterization of all spent solids is required by the Permit prior to leaving the facility, including MWMP-Profile II, TCLP-8 metals, and ANP/AGP analyses. In addition, a shipping manifest is required for any receiving facility, along with the destination identification for any receiving facility within the State of Nevada.

Chemical Process

In May 2012, the Permittee submitted a major modification proposing to add a chemical process alongside the physical separation circuit. The proposed process includes an acid leach system for recovery of precious metals without the use of cyanide. The proposal was reviewed by the Division and approved in December 2012.

Ore is received at the facility in sealed super sacks or similar and will be ¼-inch minus with some passing a No. 100 screen, with any crushing required to achieve this gradation done at the source. Characterization requirements prior to receiving the ore on site are the same as those for the ore used in the physical separation circuit. However, ore that has previously been subjected to chemical processing or flotation may be used in the chemical circuit if desired as long as the Permittee demonstrates, and the Division concurs, that the chemical process will neutralize any potentially harmful constituents.

The ore is mixed with the acid leach solution in the 500 gallon (gal) mix tank and then pumped to one of two (2) Pfaudler glass-lined reaction tanks. The mixture is circulated for a specific time, oxidizer added (less than 6%), and then agitated for a time specific to the type of ore until the leaching process is complete. The second Pfaudler reaction tank is then loaded just before completion of the reaction in the first, alternating thereafter as the process continues. A complete list of chemicals approved for use can be found in the Division-approved operating plan submitted with the application. The approved list includes, but is not necessarily limited to, nitric acid, hydrochloric acid, sodium hydroxide, caustic soda, sulfuric

acid, and potassium nitrate. The addition of chemicals not already approved will require Permit modification and submittal of appropriate fees.

The leached solids are separated from the pregnant solution by a hydro-cyclone and the clear leach solution sent to the Pregnant Liquor Tank. The solids are washed, refiltered, and sent to the solids trailer for repacking in preparation for disposal. Samples are taken at this point for characterization (MWMP-Profile II, ANP/AGP, and TCLP-8 metals). The Permit requires that all shipments off-site for disposal of solids or liquids be to an authorized facility licensed to receive such material, and that all such shipments be documented in the quarterly reports. Liquids from the wash process are recycled back into the process. Final moisture content of the solids after filtering will be approximately 15-25% by weight.

Pregnant solution is sent to either the electrowinning station, or to the SuperLig recovery system for precious metal recovery. The electrowinning station uses cylindrical cells containing carbon-felt cathodes upon which the precious metals are plated. Pregnant solution is cycled through the system until metal concentrations are reduced to target levels. The cathodes are then removed and placed in an oven to burn away the carbon, leaving the precious metal product to be melted into doré.

If not pumped to the electrowinning station, the pregnant solution is first transferred to the liquid/liquid solvent extraction area where gold is extracted from the aqua regia by the butyl diglyme. The solution continues to the SuperLig bank where silver and platinum group metals are separated and recovered as purified metal powders. Gold is recovered from the butyl diglyme using hot oxalic acid solution and is also recovered as a purified metal powder.

Barren solution is transferred to the recovery tanks where it is treated with sodium hydroxide to pH 6, precipitating out the remaining base metal oxides. These are removed by a slurry pump and disposed of with the spent ore as described previously. The solution is then re-acidified and recycled into the process. Any solution which becomes unusable will be characterized (Profile II and TCLP-8 metals analyses) and removed by a licensed waste disposal contractor. No discharge of treated liquid waste is allowed without prior written authorization from the Division, and from all local authorities having jurisdiction.

The entire chemical circuit, including storage tanks for chemicals, is enclosed in a secondary containment structure consisting of a 4-inch high continuous curb constructed of angle steel anchored to the concrete base and sealed to the floor. All surfaces of the secondary containment are coated with acid-resistant epoxy. The ends of each adjacent section are welded to form a continuous barrier. A 12-foot wide concrete ramp over the curb provides vehicle ingress/egress. The total volume enclosed exceeds 110% of the largest vessel in the process.

All process tanks and vessels are anchored to the floor using epoxy grouted anchor bolts. The larger tanks and piping are elevated above the floor, with some smaller tanks sitting directly on the concrete slab. In either case, presence of leaks, should they occur, will be readily visible on the floor.

Construction of the secondary containment will be supervised by a Nevada-licensed professional engineer. All appropriate provisions for the containment, including construction of new components and repair and refurbishment of the existing concrete slab, will be completed and inspected prior to operation of the chemical process plant. A list of components, a flow diagram showing the process components, and a drawing showing a plan view of the process layout are available in Division files.

C. Receiving Water Characteristics

The facility is located in the Truckee River Canyon east of Sparks, Nevada. Groundwater at the site is approximately 80 feet below ground surface (bgs) according to well drilling records in the same area. Small ephemeral drainages are located immediately upgradient of the site, and the Truckee River is less than a mile downgradient. However, the entire project is located within an enclosed building with appropriate stormwater controls to prevent entry of meteoric water into the process area.

Process water is provided by the TRI Water and Sewer Company, a private water service in the Tahoe Reno Industrial Park. No water will be discharged in the course of the beneficiation process. Groundwater will be monitored by sampling of one downgradient well (MW-1) located west of the process building.

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 **Reno Gazette Journal** 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 Effluent Limitations, Schedule of Compliance, 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 method for identification of escaping process solution will be placed on required routine inspection of secondary containment to detect evidence of leaking equipment and sampling of the downgradient monitoring well. 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
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Revision:	New Permit 2010
Revision 01:	Major Mod – added chemical process [PE – 12/2012]