

Appendix H
Work Risk Assessment

Project Risk Assessment

Document Control No.: RA-07	Date Assessment Completed: 6/9/2010	Location: Yerington Mine Site	 
Project Name: Evaporation Pond Removal Action	Project Description: Placement of engineered cap design on the Thumb Pond, SubArea A of the Sulfide Tailings, Lined Evaporation Pond (LEP), and the Unlined Evaporation Pond (UEP). Includes excavation of cover material on site, haul material to ponds, dump and spread cover material, and level cap to designed grade.	Risk Assessment Leader: Penny Bassett Risk Assessment Team: Rich Mattucci SIMOPS: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Designated PIC: To Be Determined	

Work Plan (List Project Steps) <small>List the jobs required to complete the project scope in the sequence they are carried out.</small>	Any tools or heavy equipment needed? <small>If YES, What Type</small>	Is this a SIMOP? <small>If YES, Include in Mitigation Plan.</small>	Do any of the Golden Rules of Safety apply? <small>If YES, Which of the 8?</small>	Which of the 8 energy or biological root sources could possibly be involved in this job?	What would be the result of exposure to a biological or energy source? (e.g., Bites, Slips, trips, falls, exposures, electrocution, injury, death, etc.); and How, where, or when could an uncontrolled release or unwanted contact with a biological or energy source occur? <small>Note: Humans are biological sources, and their physical abilities, competency, and training should also be considered here.</small>	Environmental Impacts <small>Could there be a release to the air, soil or water, and/or, will a waste be generated? If YES, What?</small>	Pre-Mitigation Risk Evaluation				Permit(s) Required? <small>If YES, What kind?</small>	Energy / Biological / Waste Management Plan <small>List control measures required to eliminate, control, or protect against unwanted contact with an uncontrolled biological or energy source to minimize the risk of injury or environmental impact. Hierarchy of Controls: Elimination, Substitution, Isolation, Engineering/ Administrative, PPE</small>	Who is responsible for Hazard Mitigation? <small>Name or Title</small>	Post-Mitigation Risk Evaluation			
							Frequency	Consequence	Likelihood	Risk Score				Frequency	Consequence	Likelihood	Risk Score
Project Area Preliminary Survey. X,Y,Z survey of existing elevations pond areas to be capped. Consists of walking a grid across the work area and around perimeter.	No	No	No	Motion Chemical	Motion - Walking on uneven ground surface and steep slopes with potential to fall or twist ankle. Areas of pond surface may be soft, wet, or muddy could cause a slip. Chemical - Potential for exposure to low pH water in wet areas of ponds.	No	Very Rare Exposure	Serious Consequence	Unusual but possible	Minimal Risk	No	Surveyor	Very Rare Exposure	Important Consequence	Conceivable but unlikely	Minimal Risk	
Geotechnical Investigation. Preliminary sampling and geotechnical testing to determine material characteristics. Includes excavation of test pits in the VLT source area and shear tests in the pond areas to determine strength of sediments to support heavy equipment.	Yes Excavator	No	Yes Ground Disturbance	Motion Gravity Chemical	Motion - Excavator will be used to collect samples at various depths, hazards associated with heavy equipment include bucket swing or moving/backing equipment that could strike worker on ground. Gravity - Open excavation potential for falling into hole or slipping while walking on pond surface. Chemical - Shear tests will be conducted on pond surfaces, potential for exposure to low pH water and high metal sediments.	No	Unusual Exposure	Very Serious Consequence	Unusual but possible	Substantial Risk	Yes Ground Disturbance	Geotech Technician	Unusual Exposure	Very Serious Consequence	Remotely possible	Low Risk	
Existing haul road improvements. Existing roadways may need to be disturbed in order to modify grade, widen road, or install protective berms. There may be underground installations (wells, piping, electrical) and stormwater drainage that could be affected.	Yes Dozer, excavator	Yes	Yes Ground Disturbance	Motion Gravity Chemical Electrical	Motion - Vehicle traffic for other SIMOP activities through road improvement areas, potential for collision, rough terrain, limited visibility. Gravity - Open excavations create potential fall, collapse and confined space hazards if entered. Chemical - Sewage line may occur in areas of excavation, contact with raw sewage could transmit pathogens and cause illness. Electrical - Buried electrical lines are possible though none are known in the planned work areas. Contact with live electrical line could result in electrocution.	Yes Release of raw sewage to soil if line is broken	Frequent Exposure	Very Serious Consequence	Unusual but possible	High Risk	Ground Disturbance	Construction Contractor project manager	Frequent Exposure	Serious Consequence	Unusual but possible	Substantial Risk	
Road construction in pond areas. New roadways will be constructed in the pond areas and will be the primary driving surface except when trucks must exit to dump at specific location.	Yes Dozer, haul trucks, road grader, water truck	No	No	Chemical Gravity Motion	Chemical - Some pond areas may have low pH water or mud that could cause skin & eye injury. Inhalation of pond sediment dust could cause lung irritation or ingestion of high concentrations of metals. Gravity - Heavy equipment on saturated or unconsolidated sediments could sink into mud, become stuck, be exposed to chemicals. There is no significant amount of standing water, there is no drowning hazard. Motion - Haul trucks have limitations on width of area needed to turn around, a narrow road could create hazards and potential to drive off edge during turns.	No	Frequent Exposure	Very Serious Consequence	Unusual but possible	High Risk	No	Construction Contractor project manager	Occasional Exposure	Serious Consequence	Unusual but possible	Low Risk	
Excavation of cover material from borrow areas. From two designated borrow areas in the vat leach tailings pile (VLT). VLT material will be pushed to the loader using a dozer and loaded into haul trucks.	Yes Dozer, front-end loader, haul trucks	No	Yes Ground Disturbance	Motion Gravity Chemical	Motion - Heavy equipment has limited visibility and blind spots which can result in collisions with other vehicles or persons on the ground. Bucket lifting a load of rock can become unstable and lose the load. Gravity - Undercut embankments can fall and engulf equipment at ground level or cause person or equipment near top to fall. Steep unprotected cut walls could allow vehicles or persons access to unstable edge. Chemical - Dust could impact site workers or off-site receptors (residents). Some areas of VLT may be unacceptable (high metal or radiochem) for use as cap material.	Yes Dust	Frequent Exposure	Disastrous Consequence	Unusual but possible	Very High Risk	Other (Specify below) Ground disturbance MOC	Construction Contractor project manager	Frequent Exposure	Serious Consequence	Unusual but possible	Substantial Risk	
Haul VLT to pond areas. Haul trucks will transport VLT material to designated pond area using existing or newly constructed roadways.	Yes Haul trucks	Yes	Yes Driving Safety	Motion Gravity	Motion - Haul trucks may lose control if driving too fast or other conflicting traffic on site roads, sharp corners, steep ramps or unprotected embankments resulting in collision, property damage, overturned truck. Potential for collision with other site vehicles on shared roadways or areas of narrow roads. Gravity - Some existing roads have steep embankments with short berms that may not be protective for large equipment, trucks could fall over embankment.	Yes Dust	Frequent Exposure	Disastrous Consequence	Unusual but possible	Very High Risk	No	Construction Contractor project manager	Frequent Exposure	Serious Consequence	Unusual but possible	Substantial Risk	
Backfill capping of pond surface. Dump VLT loads and push into place with dozer to a total depth of ~18 inches.	Yes Dozer, haul trucks, road grader, water truck	No	No	Motion	Motion - Operation of mobile equipment (dozer, haul trucks) on potentially soft sediments could cause equipment to become mired in generally shallow sediment ~1-4 ft thick.	No	Frequent Exposure	Serious Consequence	Unusual but possible	Substantial Risk	No	Construction Contractor project manager	Occasional Exposure	Serious Consequence	Remotely possible	Low Risk	
Construction of project water supply. It is expected that a water supply tank may need to be installed in the Evap Pond area or water may be available from an off-site source which would require driving on public roadways. Installation of a tank would require trenching and installation of a pipeline from the supply source.	Yes Excavator	Yes	Yes Ground Disturbance	Gravity Chemical Electrical Motion	Gravity - Open excavations create potential fall, collapse and confined space hazards if entered. Chemical - Sewage line may occur in areas of excavation, contact with raw sewage could transmit pathogens and cause illness. Electrical - Buried electrical lines are possible though none are known in the planned work areas. Contact with live electrical line could result in electrocution. Motion - Driving on public roadways introduces hazards with other drivers who may try to pass in unsafe locations, follow too close or drive unsafely.	No Release of raw sewage to soil if line is broken	Occasional Exposure	Very Serious Consequence	Unusual but possible	Substantial Risk	Ground Disturbance	Construction Contractor project manager	Occasional Exposure	Serious Consequence	Remotely possible	Low Risk	
Drill and install monitor well in SubArea A after cap is complete. Mobilize drill rig to completed cap and drill and install well for continued water quality monitoring.	Yes Drill rig	No	Yes Ground Disturbance	Motion Gravity Chemical Pressure	Motion - Rotating and up/down motion of drill head, rod handler or winch line could strike or entangle nearby workers. Use of support vehicles (pipe truck, fork lift, skid loader) at ground level could strike workers or equipment and cause property damage. Gravity - Potential for objects to fall from drill mast on to workers below; potential for workers to fall off elevated drill deck. Chemical - Sediments and groundwater encountered during drilling may be acidic and contain elevated metals. Pressure - Potential for sudden release of pressurized hydraulic lines, air hose, water lines; noise issue when drill is running.	No	Frequent Exposure	Very Serious Consequence	Unusual but possible	High Risk	Yes Ground Disturbance	Driller	Frequent Exposure	Serious Consequence	Unusual but possible	Substantial Risk	