Project Health, Safety, and Environmental Plan for the Former Satralloy Site

Jefferson County, Ohio

Submitted to:

Ohio Environmental Protection Agency

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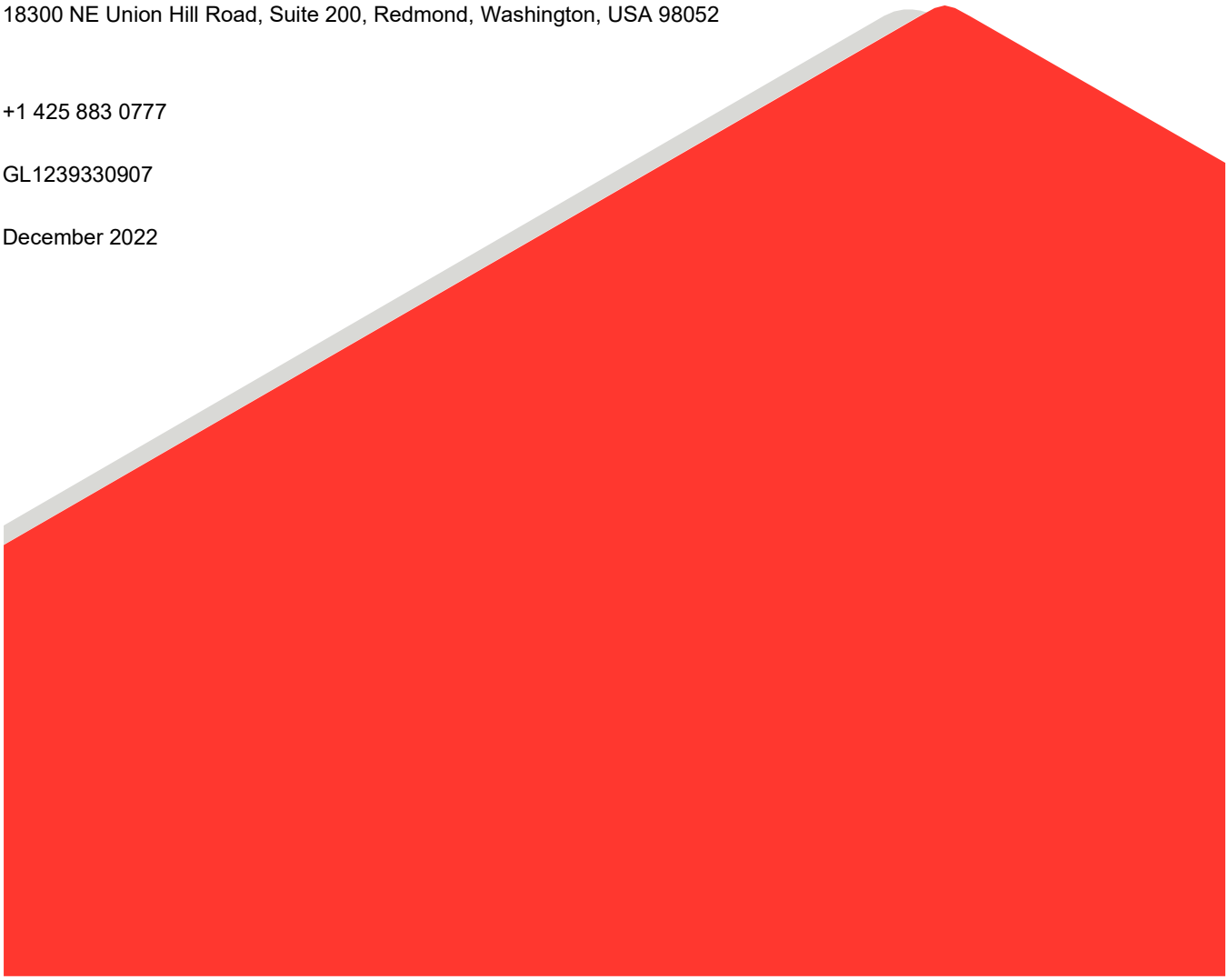

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LIST OF ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

ACGIH	American Conference of Governmental Industrial Hygienists
BMP	Best Management Practice – in this document they refer to stormwater management features
Breathing Zone	The worker's breathing zone is an imaginary sphere of 2-foot radius surrounding the head.
CAHSR	Cyprus Amax Health and Safety Representative
CAPM	Cyprus Amax Project Manager
CDL	Commercial Driver's License
Contractor Manual (Appendix F)	Cyprus Amax Contractor Health, Safety and Environmental Manual
COPC	Constituent of Potential Concern. Constituent at the Site that may present a potential significant risk to human health or the environment.
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone. The area designated for removal of contaminants from personnel and equipment. This area is adjacent to the Exclusion Zone.
Exclusion Zone	The area within which all personnel must be directly involved in the ongoing work, have designated personal protective equipment (PPE), and meet training and medical monitoring requirements.
HSE	Health, Safety and Environmental
HSEP	Health, Safety, and Environmental Plan
HSO	Project Health and Safety Officer (on-Site coordinator of contractor SSOs)
JHA	Job Hazard Analysis
LEL	Lower Explosive Limit
MRAP	Materials Request and Approval Process
NIOSH	National Institute of Occupational Safety and Health
OEPA	Ohio Environmental Protection Agency
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit (OSHA)
PID	Photoionization Detector
PPE	Personal Protective Equipment
SDS	Safety Data Sheets (formerly called Material Safety Data Sheets [MSDS]), which provide information on the physical, chemical, and hazardous properties of chemical compounds.
SOP	Standard Operating Procedure
SSO	Site Safety Officer (at least one for each contractor working on the Site)
Support Zone	The area outside the Exclusion Zone that is considered clean for the purpose of the HSEP. It is used for transfer of equipment and materials into the work Site (i.e., support), laydown and storage, parking, offices, and similar activities, as well as providing a location for communications between multiple Exclusion Zones.
TLV	Threshold Limit Value
WLER	Wheeling and Lake Erie Railroad

1.0 APPLICABILITY

This Project Health, Safety, and Environmental Plan (Project HSEP) has been prepared by Golder Associates USA Inc., a member of WSP USA Inc, (WSP Golder) on behalf of Cyprus Amax Minerals Company (Cyprus Amax), a wholly owned subsidiary of Freeport-McMoRan Inc., for use during field activities at the Former Satralloy Site located on 4243 County Road 74, Mingo Junction, Jefferson County, Ohio (the Site).

The purpose of this Project HSEP is to provide an overview of Site conditions and establish overall health, safety, and environmental (HSE) procedures and the minimum requirements to be implemented for protecting the health and safety of on-Site personnel and the environment when conducting field tasks. This Project HSEP incorporates the requirements and expectations according to the Cyprus Amax Contractor Health, Safety and Environmental Manual (Contractor Manual, Appendix F) along with all applicable Cyprus Amax SOPs/Policies (see appendices). A printed copy of this HSEP document will be maintained at the Site office.

This HSEP applies to all Site personnel. Generally, each contractor is responsible for developing its own HSEP (Contractor HSEP) that incorporates the elements presented in this overall Project HSEP and outlines the procedures which will be implemented during contractor's field tasks (see Section 5.1 of this HSEP). This Project HSEP is also the WSP Golder HSEP (i.e., for WSP Golder employees).

Contractors performing short duration/temporary activities at the Site may work under this Project HSEP under the direction of the Health and Safety Officer (HSO). Safety and environmental risk assessments must be prepared and submitted to the HSO for acceptance by Cyprus Amax. This alternative of using the Project HSEP must be approved by the HSO and Cyprus Amax Health and Safety Representative (CAHSR) before work is initiated and applies to activities such as surveying, fence repair and utility work (e.g., telephone and electricity installation for trailers, removal of power lines, etc.).

This Project HSEP was prepared in accordance with the Contractor Manual (Appendix F) and applicable requirements established by the Occupational Safety and Health Administration (OSHA), including but not limited to 29 CFR 1910.120.

2.0 PROJECT LOCATION/DESCRIPTION

2.1 Site Overview

Site Address	4243 County Road 74, Mingo Junction (Cross Creek Township), Jefferson County, Ohio 43938
Site Access Routes	Vehicle access from CR 74 is controlled by gates. Overland access to the property via foot or trail vehicles is uncontrolled. However, "No Trespassing signs" are posted along Site property fence lines and the Site is monitored 24/7 by security.
Site Size	333.5 acres, bordered on the east, west, and south by Cross Creek.
Site Topography	Site encompasses a ridge and ranges from approximately 700 ft MSL in the creek bed to approximately 1200 ft MSL at the northern end of the ridge.

Potable Water	The Site does not have a potable water supply. Bottled drinking water is available.
Land-based Telephone	No land-based phone lines are available at the Site. Cell coverage is available but can be unreliable at the Site. Internet is available at the Site office trailers, but there can be connectivity issues.
Restrooms	Facilities are located at the Site office trailers.

2.2 Site Description

The Site consists of approximately 333.5 acres of land and includes an abandoned ferrochromium alloy processing plant site. The Site is located on County Road 74 in Cross Creek Township, Jefferson County, Ohio, approximately four miles south of Steubenville (Figure 1). The Site is bordered on the west, south, and east by Cross Creek (Figure 2), a perennial stream which discharges into the Ohio River. Access to the Site is via County Road 74.

The topography of the Site rises about 500 feet above the lowland plain adjacent to Cross Creek to a plateau surface. The eastern portion of the Site consists of a relatively flat lowland area comprising the main plant area, while the western portion of the Site is an upland plateau used for process material disposal, primarily slag, from former chromium ore processing operations. In the north, the Site is largely an upland plateau and consists of heavily wooded areas. The northern portion of the Site includes abandoned coal mine workings from the wholly or partially collapsed underground room-and-pillar Kolmont No.1 Coal Mine formerly operated by the Wayne Coal Company, and also slag from former Site operations.

Immediately north of the Site is the Gould's Railroad tunnel. This currently operational tunnel, originally built in 1864, was enlarged to eliminate clearance restrictions in the 1950s. Much of the area surrounding the Site is rural, with a few residences and small businesses located along County Road 74. The nearby towns of Kolmont and New Alexandria consist of several residential properties and small businesses.

Former structures on the Site included two production mills ("Mill Buildings"), baghouses adjacent to the two Mill Buildings (for air pollution control during operation), bins used for unloading rail cars, an electrical building, pump house building and an "administration" building. The alloys produced in the Mill Buildings were made from chromium ores by smelting and refining in electric-arc furnaces. Four furnaces and two converters were housed in the Mill Buildings. In addition to these structures in the "Plant Area," piping, formerly used for transporting by-products from the processing operations to other on-Site locations, extended from the Mill Buildings to areas located in the upland areas north of the Mill Buildings. By-products were either pumped as slurry through this piping or were hauled in trucks to various areas of the Site.

The ore and other raw materials were brought into the Site via rail and road. Abandoned railroad headings and secondary access roads are also present across the Site. A rail spur was installed as part of interim action. Constituents of potential concern and known concentration ranges are listed in Tables 2 through 6.

3.0 SCOPE OF WORK

Activities under this Project HSEP are anticipated to include (but are not limited to):

- Regulated materials abatement and disposal
- Handling of remaining demolition materials
- Consolidation of materials at the site
- Improvements to Site roads
- General clean up and disposal of debris and trash
- Clearing and grubbing
- Earthwork
- Excavation
- Hauling

Site investigation activities:

- Site visits
- Drilling
- Surface soil sampling
- Subsurface soil sampling
- Surface water sampling
- Sediment sampling
- Groundwater sampling
- Biological sampling (aquatic and terrestrial)

4.0 ORGANIZATION AND COORDINATION

4.1 Site Health, Safety, and Environmental Personnel

Cyprus Amax and WSP Golder personnel are responsible for monitoring contractor activities including attending daily safety meetings and disseminating Site related safety information. Each contractor working on the Site shall designate its own Site Safety Officer (SSO) responsible for managing the health and safety of its personnel in accordance with Contractor Manual (Appendix F) along with any other applicable Cyprus Amax policies in addition to state, local, federal laws with the most stringent being followed.

For the work contractors perform at the Site, they are responsible for managing environmental protection in accordance with the Contractor Manual and any other applicable Cyprus Amax policies in addition to state, local, federal laws with the most stringent being followed.

Contact information for the personnel in this Section can be found in Appendix C.

4.1.1 Cyprus Amax Project Manager (CAPM)

The CAPM will have overall responsibility for the work being conducted at the Site. The CAPM will ensure that all project and regulatory requirements are met. The CAPM will be the official point of contact for all communications with Ohio Environmental Protection Agency (OEPA), although the CAPM may authorize direct contact by other members of the project team as appropriate.

4.1.2 Cyprus Amax Health and Safety Representative

The CAHSR will have responsibility for reviewing, auditing, and monitoring health and safety at the Site. The CAHSR will be the official point of contact with Cyprus Amax for safety related issues and incidents. The CAHSR will be available to assist and provide advice regarding the Contractor Manual (Appendix F) and other Cyprus Amax safety policies and practices.

4.1.3 Cyprus Amax Environmental Representative

The Cyprus Amax Environmental Representative will have responsibility for reviewing, auditing, and monitoring environmental protections at the Site. Depending on the phase of work, the Cyprus Amax Environmental Representative role may be combined with another project role (e.g., the CAPM), or it may be filled by a separate person.

4.1.4 WSP Golder Project Manager

The WSP Golder Project Manager has the overall responsibility for implementation of the project and has the authority to take whatever actions may be necessary to provide a working environment that is safe for project personnel and protects the environment. WSP Golder will, at times depending on the work, assign a project Task Manager reporting to the Project Manager and a Project Coordinator reporting to the Task Manager. This staffing structure would be implemented during the largest multi-month/ multi-phase projects being executed, e.g., full structure demolition, Mine Area Investigation, or the like.

4.1.5 WSP Golder Project Health and Safety Officer (HSO)

The HSO is the on-Site individual responsible for on-Site coordination of health and safety matters and has broad authority to assure that activities are conducted to protect human health and the environment.

The HSO will be available to assist in health and safety matters if a contractor's Site Safety Officer (Contractor SSO) is unavailable, and will have the authority to take whatever actions may be necessary to provide a safe working environment for project personnel. The HSO will support contractors by providing available Site information on request and will monitor their safety performance. The HSO will receive documentation of compliance with required health and safety training from contractor's working on the Site and will maintain the documentation in a central location. The HSO will also coordinate Cyprus Amax review of Contractor HSEPs and safety risk assessments (see Appendix D). The HSO will report to the CAHSR on health and safety matters.

4.1.6 Contractor Project Supervision

Contractor supervision is accountable for on-the-job HSE protection, and ensures all deficiencies found are corrected in a timely manner. Supervision must monitor employee actions and behaviors. Supervision will review and investigate incidents, ensure unsafe practices are corrected and file or assist in filing the incident reports. Supervisors must conduct regular HSE meetings, providing employees proper work instruction on related requirements. Supervisors must require conformance to HSE standards from subcontractors. Supervisors will instruct new employees and existing employees performing new tasks on safe work practices. Supervisors will

ensure personal protective equipment is available and used properly. Supervisors will secure prompt medical attention for any injured employees. Supervision will also ensure regular and thorough communication with the CAPM.

For health and safety, contractor supervision is supported by the Contractor Site Safety Officer (SSO; next subsection). On behalf of the contractor, supervision has the primary responsibility for the protection of the environment, although the CAPM in some instances may require the contractor to designate an individual responsible for environmental protection.

4.1.7 Contractor Site Safety Officer (SSO)

Each contractor working on the Site shall designate an SSO responsible for disseminating Site health and safety related information to its personnel and subcontractors, for example through daily Site meetings. The SSO will be responsible for assuring that the procedures and protocols of this Project HSEP, in addition to requirements specified by the Contractor Manual (Appendix F), are incorporated into their HSEP and implemented in the field by the contractor.

Each contractor's SSO shall be subject to acceptance by the CAPM and CAHSR and is responsible for implementing the procedures established in this Project HSEP and the contractor's site-specific HSEP. If a contractor's SSO is not able to be on-Site, he/she shall appoint an alternate on a case-by-case basis so that there is always a qualified SSO on-Site when that contractor's work is under way, with such delegation being subject to acceptance by the CAPM and CAHSR.

4.1.8 Ohio EPA Site Coordinator

The Ohio EPA Site Coordinator will provide regulatory oversight and be responsible for ensuring that Ohio EPA personnel who will be working on this project and have the potential for exposure to Site chemicals of potential concern (COPCs) have been provided a copy of this Project HSEP to review and comply with.

4.1.9 Contractor

A contractor is any company or entity under contract to Cyprus Amax or WSP Golder to perform work at the Site. The HSE responsibilities, at minimum, for all contract employees are presented in Section 1.0 of the Contractor Manual (Appendix F). These responsibilities apply to all subcontractors and their employees who perform services for Cyprus Amax.

5.0 EXPECTATIONS

5.1 Contractor HSEP

Each contractor is responsible for designating its own SSO and for fully implementing the requirements of this Project HSEP plus any additional requirements specific to the particular activities and/or tasks being performed by the contractor in its own HSEP. The contractor's supervisor is responsible for implementing environmental protections associated with their site work. Additionally, the CAPM may require the contractor to designate a different individual responsible for these protections.

Each contractor shall either have its subcontractors working under its Contractor HSEP, or have the subcontractors prepare their own HSEPs compliant with this Project HSEP and all requirements as provided in the Contractor Manual (Appendix F).

A Contractor HSEP must meet or exceed compliance with the requirements of this Project HSEP and the Contractor Manual (Appendix F). The HSEP is a written plan for conducting work in a safe manner that protects employees and the public. The HSEP must be project-specific and should be practical and concise. A HSEP should not include copies of HSE policies and programs, but should instead reference the policies and programs relevant to the work.

All HSEPs must be written in accordance with the Contractor Manual (Appendix F).

5.2 Contractor Reporting to Cyprus Amax

All contractors shall perform recordkeeping and reporting to Cyprus Amax per Section 3.0 of the Contractor Manual (Appendix F).

5.3 Standards of Conduct

Contractors are obligated to follow, at minimum, all responsibilities and expectations as outlined in the Contractor Manual (Appendix F); Cyprus Amax HSE policies, and this HSEP; and must remain in compliance with all applicable regulatory, state, and local agencies, with the most stringent standard being followed.

Failure of adherence to Cyprus Amax policies may result in immediate removal from Site, and/or other disciplinary actions up to and including removal from the Site. This includes the following Critical Safety Rules:

- Drug and Alcohol Policy (see Section 8.0 of the Contractor Manual in Appendix F for minimum requirements).
- Background Check and Site Access (see Section 9.0 of the Contractor Manual in Appendix F).
- Fighting or Physical Assault Rule (see Section 5.7 of this HSEP).
- Lockout/Tagout/Tryout Policy (Appendix N).
- Permit Required Activities (i.e., Confined Space Entry, Hot Work, Digging, Trenching or Utility Location, etc.) (see Appendices of this HSEP).
- Restricted Area Access/ Flagging Barricading Policy Fall Protection (Appendix I).
- Failure to follow safety procedures while operating equipment.
- Inappropriate removal, alteration, or bypass of a safety guard.
- Other Cyprus Amax HSE policies (see https://fcx.com/sites/fcx/files/documents/policies/envi_pol.pdf).

All contractors and subcontractors must adhere to the most stringent policy where differences in detail or requirements exist between Contractor Manual (Appendix F), site-specific requirements and trade standards/practices.

All contract personnel engaged in on-Site activities shall read and/or receive training on the applicable Contractor HSEP. Contractors will provide their employees and subcontractors (if they fall under the primary contractor HSEP) with applicable HSEP training ensuring all materials are discussed for employee understanding, including relevant supporting documents such as company policies and procedures and the Contractor Manual (Appendix F). All contract personnel must sign the HSEP Acknowledgement Form documenting they have received all information and understand it.

All contract personnel must also receive Site Orientation Training given by CAHSR or designate. All OSHA and other applicable training documentation (including any respirator fit testing, medical surveillance, etc., as applicable) must be verified as current by the contractor and then reviewed and approved by CAHSR prior to reporting to work. Personnel who have any questions or concerns regarding implementation of this program are encouraged to request clarification through their SSO.

If any employee feels unsafe due to a condition or situation, even if perceived, the employee is expected to use stop work authority with no reprisal. If review of concern with field supervision and SSO/HSO prove that all risks have been eliminated or mitigated as low as reasonably possible, work may resume. Any changes must be documented on the JHA (the Contractor SSO or HSO must update tasks on the approved Safety Risk Assessment, as applicable).

In situations where an unexpected hazard is found or a risk level increases, work must be immediately stopped. The affected SSO(s) and the HSO must conduct a field hazard and risk review with the field supervisor or delegate and ensure proper controls are implemented. Applicable documents (JHA, permits, etc.), must be updated and communication of changes must be given to all affected employees before work can resume.

Any revision of the Contractor's HSEP and/or procedures will be recorded in the Field Procedure Change Authorization Form (Appendix B) and will require authorization from the HSO with concurrence from the WSP Golder Project Manager, CAHSR, CAPM, and/or Cyprus Amax Environmental Representative.

At no time can a high-risk task be performed on site. The proper controls must be put in place to eliminate the hazard(s) or mitigate the hazard and risk level as low as reasonably possible, reducing the risk to a "medium" or "low" risk task.

Unsafe work practices or procedures are never justified by "extenuating circumstances" (e.g., budget, time constraints, equipment breakdown, changing or unexpected conditions). Under stressful circumstances all project personnel are expected to focus on safe production and using proper resources to avoid hasty and unsafe decisions. All Site personnel must place "safety first" at all times.

5.4 Site-Specific Responsibilities

These responsibilities are in addition to the Contractor Manual (Appendix F), all federal, state, and local regulatory regulations and Cyprus/Amax Policies.

- All personnel are expected to complete Site-specific training as outlined in Section 9.0 of this HSEP.
- Any incident (injury, near miss, property damage, environmental spill or release) must be immediately reported to the SSO (see Section 20.0 of this HSEP for incident reporting requirements).
- Fieldwork employees shall remain in teams of two or more people ("buddy system").
- Oversight personnel (e.g., OEPA Site Coordinator, Cyprus Amax representatives, WSP Golder Project Manager) and security personnel shall use the buddy system and must always have a second person in the line-of-sight or radio contact (or similar communication) with routine check-in to a specified contact. OEPA will be escorted by CAPM or designate when they are on-Site. Unaccompanied movement between work areas will be permitted if a.) Foot traffic between areas should be accomplished in no more than 10 minutes; b.) Individual informs security of departure location, direction of travel, and destination; c.) Individual informs security of arrival at destination.

- Site activities shall be performed during daylight hours unless adequate artificial lighting is provided. Artificial lighting must comply with 29 CFR 1926.65(m). Table 1 presents the minimum illumination intensities. The need for artificial lighting shall be determined using a light meter.
- All personnel (i.e., visitors, vendors, and contractors), are required to sign in and out of the property with Site security (see Appendix W FCX-07 Property Entry, Surface Mines North America Operations.).
- No unauthorized removal of materials.
- Decontamination areas must be maintained by the contractor. This includes proper disposal and change out of water, scrubbing/cleaning devices and other materials and tools (see Section 15.0 of this HSEP).
- Smoking allowed in designated areas only. Signage must be posted and in accordance with all applicable laws and standards. An appropriate receptacle must be in designated area(s) and must be maintained regularly. Cigarette butts must be properly disposed of.
- Weapons Policy must be followed (see Appendix R).
- Horseplay is not permitted (riding on buckets, jumping from equipment railing to ground, using equipment in a playful manner, rough housing with others, etc.).
- Wear cut-resistant gloves and heavy clothing when handling or working around sharp debris.
- Visitors must be 100% escorted while on Site and must receive Site Specific Training, comply with the Contractor Manual (Appendix F), and FCX-07 Property Entry, Surface Mines North America Operations (Appendix W). Cyprus Amax must be notified in advance of a visitor's arrival to provide approval. This does not include vendors or one-time delivery personnel.
- Prior to bringing any hazardous material to the Site, approval must be requested by using the Materials Request and Approval Process (MRAP), which is done electronically (see Appendix T). This process can take up to two weeks to complete; plan accordingly.
- The Project /Task Manager and each contractor has the responsibility and accountability for planning, leading, and controlling safety performance for their staff.
- A multi-purpose (ABC) dry chemical fire extinguisher shall be maintained in every field vehicle where required.
- Pay attention to your surroundings. Be alert to changes in exposure indicators, such as perceptible odors.
- Be alert to the symptoms of fatigue and heat/cold stress and their effects on the normal caution and judgment of personnel.

5.5 Fatigue Management

Each contractor shall establish a Fatigue Management Plan specific to their operational needs for the project. Refer to Appendix L for expectations and guidelines.

5.6 Drug and Alcohol Policy

The Site operates under the Cyprus Amax drug policy (see Contractor Manual (Appendix F)).

Contractors with drug and alcohol programs must have a written program that is consistent with federal, state, and local regulations. It must also meet or exceed the requirements of Contractor Manual (Appendix F). The program shall be made available to the HSO upon request and must be reviewed by CAHSR. Contractors without written programs shall notify the HSO in writing of their lack of a drug and alcohol program. Contractors without a drug and alcohol program shall work with the HSO to accomplish the objectives of a program. Contractor personnel shall be subject to an initial drug test prior to first visiting the Site. Drug testing (initial and random) shall cover, at a minimum, the drugs specified in Section 8.1 of the Contractor Manual (Appendix F).

Personnel coming on to the Site shall not be under the influence of any drug, including prescription medication that will adversely affect their working ability, alertness, or coordination (see Section 8.0 of the Contractor Manual (Appendix F)). All contractors shall train their supervisors how to conduct “fit for duty” checks to recognize signs of substance abuse, actions to take where reasonable suspicion of a drug or alcohol affected worker is seen and have resources to conduct drug or alcohol testing for cause or reasonable suspicion.

Workers producing positive test results will NOT be allowed to work at the Site for a period of three (3) years from the positive test date (see Section 8.1 of the Contractor Manual (Appendix F)). In addition to drug screening prior to work commencement, contractors shall maintain an ongoing drug and alcohol program to ensure a drug-free workforce and workplace, including random drug screening compliant with the Cyprus Amax Drug Policy (Section 8.1 of the Contractor Manual (Appendix F).

The following activities will not be tolerated:

- Being under the influence of drugs or alcohol while on the Site, including prescription drugs covered by the Cyprus Amax Drug Policy
- Use of illegal drugs or alcohol while on the Site
- Possession of illegal drugs or alcohol on the Site
- Distribution of illegal drugs or alcohol on the Site
- Presence of illegal drugs or alcohol in vehicles, Site offices or other Site locations

5.7 Fighting or Physical Assault Rule

No fighting or physically confronting or intimidating others is allowed at the Site. Individuals are not to physically retaliate against an assault. Individuals found in violation of this policy may be immediately escorted off the Site.

5.8 Covid-19 Pandemic Guidelines

Contractors shall include in their HSEP guidelines for mitigating risks due to Covid-19, consistent with Centers for Disease Control and Prevention guidance.

6.0 MANAGEMENT OF CHANGE

This Project HSEP must be reviewed annually and revised on an “as needed” basis, to include any planned future remediation activities, changes in site characterization, or site conditions. Table 8 summarizes past HSEP revisions. CAPM, and CAHSR will review and approve all revisions to this HSEP document.

7.0 COMMUNICATIONS

Prior to initiating field activities, all personnel shall become familiar with the communications equipment and procedures at the Site. There is no telephone land line at the Site. Cell phones often work at the Site, although service can be unreliable (especially in the hilly areas). Internet service is available in the Site office trailers and via Wi-Fi hotspots brought to the Site. Contact numbers for key Site personnel and emergency services will be available in the trailers at all times and is located in Appendix C of this HSEP.

7.1 Radio Communications

If a contractor uses radios to conduct fieldwork for the project, personnel shall be familiar with the radio channel to reach their SSO, the common emergency radio channel, and must also understand the limitations of cellphone service at the Site. Detailed radio communication expectations will be included in the contractor's HSEP.

English shall be used in FCC regulated radio communications. For crews with another primary language, they may have a dedicated radio/frequency that allows them to clearly communicate with another. If this condition exists, one or more members of the crew shall be able to communicate to “outside” crews in English on the Site radio channel(s). This is necessary in the event of emergencies, work coordination, and for general instructions.

Emergency radio communication procedures are provided in Section 21.2 of this HSEP.

7.2 Cell Phone Communications

If a contractor uses cellphones only to conduct fieldwork for the project, emergency numbers should be saved in the cellular device for the duration of the project and deleted once the contractor's project specific work has been completed. The contractor must also understand the limitations of cellphone service on-Site and in the Site office trailers. A hardcopy version of the contact and emergency phone numbers must be kept at the worksite for immediate reference. Detailed cell phone communication procedures must be included in the contractor's own HSEP. Each contractor shall communicate its Communication Plan with the HSO and site security upon mobilization to the Site.

7.3 Site Health, Safety and Environmental Meetings

The HSO and SSOs shall conduct HSE meetings as discussed in this section.

7.3.1 Daily Coordination Meeting

When multiple contractors are working on the Site, the HSO shall attend the daily safety and coordination meetings conducted by one or more representative of each contractor's (to include SSOs) and documented in the contractors’ daily notes. These meetings shall cover as appropriate:

- Safety share
- Weather-related safety issues
- Unusual Site conditions/areas
- Coverage of all work activities to be conducted by all contractors working at the Site
- Preparation of JHA for the tasks to be completed that day (if applicable) for the day
- Any changes that occurred while team was off rotation, including changes to task-specific Exclusion Zones, Contaminant Reduction Zones, and Support Zones

- Safety problems and issues
- Changes to materials being used by Site field investigation team or subcontractors (i.e., additional SDS available)
- Changes to this HSEP or the Contractor HSEP
- Discussion regarding Site communications
- Establishing muster areas for the day based on daily activities
- MRAP update
- Blue Stake update

7.3.2 Daily HSE Meeting

The HSO shall conduct a daily HSE meeting attended by all field personnel and contractor SSOs before beginning fieldwork. These meetings shall be documented in the field notes. The topics to be covered will be determined by the task activities in compliance with CAHSM (Appendix F) requirements.

7.3.3 Weekly HSE Meetings

At minimum, the contractor supervisor will hold a weekly HSE meeting with employees in their work areas. Pertinent information such as health and safety regulatory information, health and safety information provided by Cyprus Amax, communications of workplace incidents, environmental protections, etc. shall be discussed. These meetings must be documented and the records available to Cyprus Amax.

7.3.4 Monthly HSE Meetings

Each contractor will hold or attend a documented monthly HSE meeting for all supervisors and managers to review safety statistics, safety and environmental incidents, and to address any site-specific HSE concerns. The CAPM and their representatives shall be invited to attend.

8.0 RISK MANAGEMENT

Work Method Statements (WMS) and Job Safety & Environment Analysis (JSEA)s are administrative tools used to eliminate or mitigate, as low as reasonably possible, any injury, illness, property damages, or impacts to the environment. WMS require use of critical controls, which if not put into place would likely result in a fatality, serious injury, high-cost property damage or catastrophic event. All tasks and assessments must consider possible impacts on the public and must use proper controls to protect the public and environment from all hazards that can result from Site activities. JSEAs must be completed for each day of field activity.

All contractors will receive risk management training as part of the Contractor Orientation Training.

8.1 Risk Assessment

A contractor's Safety and Environmental Risk Assessment must be completed by each on-Site contractor describing hazards that are specific to their operations and must include all components set forth in Appendix F, pg. 17 – Risk Management.

Prior to the start of a project, workshop training is required for contractor leadership (including subs that do not fall under the primary Contractor's Risk Assessment). Once this training is received, the Safety and Environmental

Risk Assessment is completed by the contractor leadership and then approved by the CAHSR and Cyprus Amax Environmental Representative. The Safety and Environmental Risk Assessment is a “living” document that should be used to add additional tasks or revise existing tasks throughout the project.

The contractor’s Safety and Environmental Risk Assessment can also be done in table or text format so long as it meets the requirements of the Contractor Manual (Appendix F). An example of a Safety and Environmental Risk Assessment and JHA are provided in Appendix D. All relevant HSE hazards must be included in each contractor’s HSEP and the contractor’s approved Safety and Environmental Risk Assessment document. The Risk Assessment training and an electronic version of the contractor’s initial Safety and Environmental risk Assessment will be completed and approved before writing the HSEP.

All contractors must understand and consider this HSEP’s identified hazards, risk levels and implemented controls in addition to their own Safety and Environmental Risk Assessment and HSEP required for their own operations. A hard copy of the approved Safety and Environmental Risk Assessment related to this HSEP will be referenced in each contractor’s HSEP. The electronic copy of the Safety and Environmental Risk Assessment approved by Cyprus Amax will be maintained by the SSO for each contractor.

As a part of the Safety and Environmental Risk Assessment, all contractors will include the potential impacts to the environment (e.g., potential environmental impacts to surface water, groundwater, vegetation, and wildlife; air emissions; waste that will be generated, etc.) in addition to describing the hazards and risks associated with each operation or process conducted and how they will be managed. Additional requirements for the identification of and protection from environmental risks are found in Section 6.0 of the Contractor Manual (Appendix F).

8.2 JHA Process

The JHA process is a means of identifying and documenting the specific tasks required to accomplish a phase of work, the actual or potential hazards of each step, and measures for the elimination or control of those hazards.

Primary and subcontractor fieldwork will begin by reviewing the related task Risk Assessment and then filling out an accompanying Job Hazard Analysis (JHA) (Appendix D).

Guidelines for developing a JHA include the following:

- Project personnel who have the knowledge of the tasks and who will be performing the work should help the HSE personnel create the task-specific safety and environmental risk assessment.
- JHA’s are to be created in the field by all personnel who will be performing the work and reviewed in the field by the HSO and SSO.
- List information on the JHA that is directly applicable to the task, avoiding general information that addresses project-wide concerns that are already covered in this HSEP.
- All employees assigned to the task, or assigned later while the task is being performed, must be made knowledgeable of all JHA information, and then sign and date the document.
- Supervisors, HSO and the affected SSO are responsible for verifying the JHAs are complete, effective and being followed.

Once developed and accepted or updated, a safety and environmental risk assessment and associated JHA should be reviewed at the daily safety meeting or as part of the work plan review prior to initiating the specified

activity or task. The HSO and affected SSO are responsible for verifying in the field that the risk assessments and JHA's are being followed and are effective.

8.3 Site Work Zones

Site conditions will change over time (e.g., Site conditions have been significantly changed by interim actions). Each contractor shall establish work zones and access controls in its Contractor HSEP appropriate for the contractor's activities. The default Support Zone and Exclusion Zone are shown on Figure 4. In addition, task-specific Site Safety Zones shall be established in Contractor HSEPs as further discussed below. Contractors shall make each other aware of the various Site Safety Zones in use through the daily meetings (see Section 7.0 of this HSEP).

8.4 Invasive Activities

During invasive activities, Site Safety Zones will be established, if needed, by the appropriate SSO in consultation with the HSO to protect Site workers not involved in the invasive activity. At a minimum, the safety zones include an Exclusion Zone, Contaminant Reduction Zone (CRZ) and a Support Zone. An Exclusion Zone will generally be set to provide an approximate 25-foot buffer from the invasive activity. Exposed materials such as cuttings will be contained or covered, if necessary, based on Site conditions, to prevent dispersion by wind or water. The limits of the Exclusion Zone will be marked with fencing, high-visibility flagging tape, traffic cones, or similar devices.

Personnel will exit an Exclusion Zone through a CRZ. The CRZ will be used for decontamination of both personnel and equipment. It shall be configured to allow the decontamination of the field crew while upwind of the Exclusion Zone whenever practical. The SSO of each contractor will ensure that all personnel entering the Exclusion Zone wear the required protective equipment and that upgraded level of protection equipment is readily available.

8.5 Non-invasive Activities

All personnel conducting non-invasive activities must be mindful of and adhere to the safety zones established for other Site activities as well as their own.

8.6 Hazard Communications

Hazards at the Site, both physical and chemical, are communicated with all Site personnel in the following ways:

- **Site and Visitor Orientations** – prior to entering an Exclusion Zone at the Site, all personnel and visitors attend a Site Orientation that describes overall Site conditions and the contents of this Project HSEP.
- **Contractor Health, Safety, and Environmental Plans** – Each contractor must prepare a Contractor HSEP and train its personnel on the content of its HSEP.
- **Safety and Environmental Risk Assessments** – Safety and environmental risk assessments are used to evaluate each job and all non-routine tasks. During the development of a risk assessment, the health risks and chemical exposure hazards, including the signs and symptoms of overexposure, procedures to follow in the case of over-exposure to hazardous chemicals, and PPE to be worn during performance of each task is identified for each hazardous material involved in the task. Additionally, each task will be evaluated for its potential impact to the environment. All personnel who will perform the task will be trained on the risk

assessment and associated JHA prior to performing the task. For more information on risk assessments and JHAs see Sections 8.1 and 8.2.

- **Site Meetings** – Because the Site may have multiple contractors working together, daily safety and coordination meetings are held to ensure that all contractors are provided with an understanding of the hazards associated with planned Site activities. The required meetings and their content are described in Section 7.3.
- **Unidentified Hazards** - When a contractor identifies a new hazard, the SSO for the contractor shall immediately notify the HSO. The HSO will evaluate potential hazards and instruct the contractor to develop an appropriate safety and environmental risk assessment and JHA for the situation. When new hazards are identified, training will be conducted with affected personnel.

Each contractor shall establish a written hazard communication plan that is included in their HSEP that meets or exceeds the Cyprus Amax Resource Management Hazard Communication Program (Appendix AA). Contractors may also opt to implement Cyprus Amax's Hazard Communication Program by advising the SSO and CAHSR in writing that they will follow all requirements of that document (and must reference it in their HSEP).

At the time of initial assignment, or within one day of a new hazard being identified, all affected personnel will attend a safety meeting that is led by the SSO and includes the following information:

- Hazardous chemicals present at the work Site.
- Physical and health risks of the hazardous chemicals or unknown conditions.
- The signs and symptoms of overexposure.
- Procedures to follow in the case of over-exposure to hazardous chemicals.
- Location of the SDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the work area.
- How to read labels and review SDSs to obtain hazard information.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, non-routine tasks to be performed.
- How to handle unlabeled containers or piping.

8.7 Underground and Aboveground Utilities

Underground and aboveground (overhead) utilities (gas lines, electric lines, communication lines, process lines, etc.), including utilities that are confirmed to be de-energized or no-longer-in-service, shall be located and identified prior to any excavation, drilling, crane operation or other site activity where utilities may pose a work hazard. As the anticipated location of the utility is approached, manual means of excavation shall be used to determine the actual location of the utility. In addition to local and state law requirements, see SOP-01-20 Working Near Overhead Power Lines (Appendix G), FCX-13 Utility Location (Blue Stake) Policy (Appendix BB), and SOP-01-13 Resource Management Utility Locate (Appendix H).

Documentation of Permits and inspections must be retained in accordance with FCX-HS01 Administrative Requirements Policy.

Each contractor is responsible for identifying underground and overhead utilities following all Policy requirements before any excavation or other invasive work begins (see SOP-01-20 Working Near Overhead Power Lines in Appendix G; SOP-01-13 Resource Management Utility Locate in Appendix H, and FCX-13 Blue Stake in Appendix BB). Individuals found in violation of any Cyprus Amax HSE policy will be immediately escorted off the Site.

8.8 Vehicles and Heavy Equipment

Workers shall follow FCX-23 Interaction with Heavy Equipment Policy (Appendix M) and other requirements of the Contractor Manual (Appendix F) and applicable laws and regulations.

Equipment is not allowed to be used on Site without an initial Cyprus/Amax inspection and approval. The HSO and CAHSR must be notified when any additional equipment is added or changed after the project has started. Cyprus Amax reserves the right to inspect equipment prior to the acceptance onto the Site and any time during use of the equipment on property.

Other policies that may apply include (but are not limited to):

- FCX-HS04 Control of Hazardous Energy Policy (Appendix N)
- FCX-HS02 Working at Heights and Technical Supplement Policy and Technical Supplement (in Appendix I)

A pre-operational inspection of equipment must be conducted and documented by the operator prior to operation (see forms in Appendix E). Each contractor/subcontractor form must meet or exceed Appendix E forms or use them. This may be in addition to the contractor's corporate document requirements. Inspection documents must be filled out legibly, including the name of the operator, date, specific equipment identification number, etc.

8.9 Over-the-Road Vehicles

- Operators of over-the-road vehicles on the Site such as haul trucks and water trucks must possess a valid commercial driver's license (CDL) if a CDL is normally required when operating such vehicles on public roads.
- Over-the-road haul vehicles shall have documentation of annual inspections in accordance with Department of Transportation requirements given in 40 CFR 396, Subpart B, Appendix G (Minimum Periodic Inspection Standards).
- The contractor shall ensure that haul trucks are not loaded beyond the truck/trailer manufacturer's recommendations.

8.10 Utility Vehicles

- On-Site motorized equipment shall meet the requirements of all relevant OSHA standards, manufacturer's specifications, and any other standards that apply or exceed these standards:
- The vehicle must be equipped with a rollover protective structure, seatbelts, headlights, brake lights, side or rearview mirrors, and a high-visibility flag extending upwards a minimum of 4 feet above the roll bar.
- Operators must receive documented training prior to operating.

- Operators are required to read and follow the guidelines of the vehicle operator's manual and comply with the manufacturer's recommendations for operation.

8.11 Railroad Safety

All railroad safety rules must be followed. Contractors involved with the industrial railroad must receive training per the FCX Industrial Railroad Policy (Appendix S) and in accordance with all federal, state, and location laws and regulations. In addition, all requirements set forth by Wheeling & Lake Erie Railroad (WLER) must be strictly followed.

The rail spur from the main rail line to the plant area of the Site is used to transport heavy equipment and other materials (e.g., crushed rock, demolition debris and other waste for off-Site disposal and recycling) to and from the Site. Trains operating on the rail spur are expected to run at low speed, but will be ascending and descending a steep slope along a narrow, winding alignment. Equipment and materials will be loaded and unloaded at the spur terminus.

Equipment, material, and debris loading and unloading activities shall be conducted in accordance with the requirements (including required PPE) set forth by WLER and FCX-22 Industrial Railroad Policy (Appendix S); which will be included in the applicable contractor's Safety Risk Assessment and listed in Section 8.0 of this HSEP.

WLER shall be notified when it is necessary to operate the switches. Exclusion zones will be established near the switches to prevent rail cars or locomotive to set at these locations. WLER train operators will be familiar with these constraints as a matter of their normal job responsibility; this information will be provided to project workers to ensure that WLER operators are not directed to perform activities in contradiction to these responsibilities. A yellow-painted cross tie will be used to identify foul points. A white painted crosstie may be used to identify culvert locations.

A permanent derailer has been installed just outside of the loading area. The derail has a blue flag next to it, signaling train crews that there are personnel and/or equipment working on or near the track and railcars. This derail shall be locked out by the Qualified Person (WLER), who will be responsible for clearing the rail cars and track in the loading area prior to unlocking the derail and giving access to the WLER train crews. The derail shall be restored to the derailing position immediately following the departure of a train and before personnel and equipment are allowed back in the loading area.

8.12 Material Handling and Storage

All material shall be stored in a manner to prevent blowing, falling, sliding, or collapsing.

Housekeeping will be maintained at all times in accordance with all federal, state, and local regulations in addition to the FCX-HS29 Standard Safety Requirements Policy (Appendix V). This includes but is not limited to:

- Walkways and aisles kept clear.
- All trash must be discarded in proper receptacles. All indoor and outdoor trash receptacles will be maintained to ensure no overflowing. Site areas, including the parking lot must be routinely maintained (including cigarette butts). Trash must be cleared from truck beds/cabs and equipment on a daily basis.
- All project waste items will be properly disposed of (oil, filters, batteries, etc.).

- Laydown areas shall be orderly.
- Material shall be stored on level ground, and the boundaries of laydown areas shall be identified.
- Material shall not be stored within 6 feet of hoist ways or within 10 feet of roof edges.
- Poles, pipe, and other stock that may roll shall be managed in accordance with FCX-HS24 Round Stock Management Policy (Appendix U).
- Nails (screws, etc.) shall be removed from lumber that is to be reused. Nails in scrap lumber that will not be reused shall be bent back. Nails may be left as-is in lumber that will not be handled or to which personnel will not be exposed.
- No material, tools, or equipment shall be leaned against other objects or walls unless they are secured from movement.
- Personnel moving material by hand shall use proper lifting techniques and gloves.

8.13 Hand Tools

- All tools shall be kept clean and in good condition and properly stored.
- Tools shall not be altered, and they shall be used only for their intended purposes.
- Guards shall not be removed from tools, and all potential pinch points, open drums, and fly wheels shall be guarded.
- All tools shall be inspected before used with special attention to power cords and the condition of all operating parts.
- Any damage to a tool requires that the tool where repairs can be made under the manufacturer's specifications, must be removed from use until properly repaired.
- Instruction manuals (owner's manuals) shall be available, and personnel shall be trained in the safe operation of all tools they use.
- Power tools shall be equipped with constant pressure switches that will shut the tool off when the switch is released.
- All power tools and electrical equipment shall be double-insulated or be equipped with grounding plugs per the manufacturer's specifications. See OSHA regulations at 40 CFR 1926.404(b)(1)(ii).
- All bench-mounted and floor-mounted tools shall be secured.
- Tools that come equipped with handles shall be used with the handles installed.
- Cheater bars are not permitted.
- Impact tools shall be free of mushroomed heads and cracks.
- Work benches and sawhorses shall be provided by the contractor when needed.
- Defective tools (as well as materials and equipment) shall not be used. When a defective tool is found, it shall be taken out of service immediately by tagging it, destroying it, or removing it from the Site.

Hand-held equipment, both power and manual, presents a potential hazard to the operator. Types of equipment that may be used for demolition and construction activities include saws, drills, hammers, cutting torches, welding equipment, chain hoists, and the like. Safety requirements for using hand-held equipment will be established in the contractor's Safety Risk Assessment and HSEP for these activities and shall follow industry standards, manufacturer's recommendations, and good practice.

8.14 Burning and Welding

The FCX-HS06 Hot Work Policy (Appendix J), must be followed any time a process can be a source of ignition when flammable or combustible materials are present, or can be a fire hazard regardless of the presence of flammable/combustible materials in the workplace. Welding/thermal cutting fume exposures must be controlled by local exhaust ventilation and/or respiratory protection.

A hot work permit is required for hot work operations unless working in an area designated as "fire safe", such as a welding shop. A "fire safe" area can only be designated by the CAHSR or delegate. Hot work permits are valid only for one (1) work shift and one (1) task (Appendix J).

8.15 Compressed Cylinders

In addition to the FCX-HS29 Standard Safety Requirements Policy (Appendix V), and the FCX-HS06 Hot Work Policy (Appendix J), all other applicable Cyprus/Amax, federal, state, and local laws and regulations must be followed. Examples include FCX-HS05 Confined Space Policy (Appendix K), FCX-HS04 Control of Hazardous Energy Policy (Appendix N), etc.

8.16 Heat and Ignition Sources

Power tools and cutting torches are anticipated for use at the Site during interim action and may be used at other times. Any contractor using such equipment shall include a fire prevention plan in their Site-specific HSEP. Personnel with incidental use of such equipment shall ensure that the equipment is used away from potentially ignitable material. Cutting torches shall be used within a restricted area to protect other personnel. Hot work permits must be obtained from and approved by the contractor SSO.

8.17 Cranes

All applicable laws and standards in accordance with OSHA 1926 Subpart CC Crane and Derricks, American Society of Mechanical Engineers, or ASME, and all other federal, state, local and regulatory agencies apply to crane use on Site (i.e., Boom truck, Lattice boom, telescopic boom, etc.). See also OSHA 1926 Subpart CC – Crane and Derricks.

8.18 Confined Space

Each contractor shall have a Confined Space entry program available at the Site which meets or exceeds the requirements of this Project HSEP, the Contractor Manual (Appendix F), and Appendix K. Each contractor SSO is responsible for overseeing implementation of their program.

8.19 Potential Biological Hazards

In-depth information is provided in Site-specific training and Contractor Orientation Training for this project. Notify your SSO if medical attention is necessary and for any incident, no matter how minor.

8.19.1 Infection

Contact with solid waste, debris, or other materials can lead to infected cuts. When the skin is abraded or cut, personnel shall follow first aid procedures for disinfection of cuts and abrasions and notify their SSO immediately.

8.19.2 Ticks

The Site contains ticks, which can transmit Rocky Mountain Spotted Fever and Lyme Disease. Site workers should routinely check for ticks. Light colored clothing should be worn, and any openings (shirt and pant cuffs) should be secured to inhibit tick movement from clothing to skin. The use of insect repellents should be considered if its use will not interfere with sampling activities; check with your SSO in advance of using repellants for sample interference concerns.

8.19.3 Mosquitoes

Mosquito bites can be annoying, but more importantly, they can cause serious diseases, such as West Nile virus. In the U.S., West Nile virus is the most common disease spread by mosquitoes. West Nile virus can result in flu-like symptoms or cause serious illnesses that affect the brain, even resulting in coma and paralysis. In rare cases, it can even cause death. Wear long-sleeve shirts, long pants, and high boots. Tuck shirts into pants and pants into socks to cover gaps in your clothing where mosquitoes can get to your skin. Use an EPA-registered insect repellent containing 20% or more DEET on exposed skin. Consider treating items such as boots, pants and socks with products containing 0.5% permethrin or purchase permethrin-treated clothing and gear.

8.19.4 Poisonous Spiders

In Ohio two main groups of spiders pose a potential hazard to humans: the recluse spiders and the widow spiders. These species have been found in or near buildings. Though uncommon to find, the widow spiders occur primarily outdoors and are not aggressive unless confined or disturbed.

8.19.5 Poisonous Plants

Skin-sensitizing (poisonous) vegetation, such as poison ivy or poison sumac, produce a bumpy, swollen rash at the point of contact. Both poison ivy and poison sumac are common on the Site. This rash is easily spread by the plant's oils. All personnel shall be able to identify poisonous plants at the Site, and shall avoid contact with such plants. In the case of inadvertent or unavoidable contact, wash affected area(s) including tools and clothing as soon as possible. Avoid scratching the rash. Severe exposure may necessitate evaluation by a medical professional.

8.19.6 Venomous Snakes

Ohio has three species of venomous snakes, two of which have rattles at the end of the tail (Eastern Massauga & Timber Rattlesnake). The third species, which is more likely to be encountered at the Site, is the Copperhead, a pit viper that is not a rattlesnake. Characteristics of these venomous snakes are:

- Head is distinctly triangular.
- Pupils are elliptical (not round).
- Pits as well as nostrils are present on the head.
- Undivided scales are present on underside of tail.

If someone has been bitten by a snake, follow site emergency procedures per Section 21.0 of this HSEP. Contact your SSO and the HSO as soon as possible. Responding quickly in this type of emergency is crucial.

Personnel performing field operations, particularly in remote areas or adjacent to bodies of water, shall wear work boots that lace above the ankle.

8.19.7 Mammals

The Site may harbor mammals that are infected with rabies or the hanta virus. Wild animals most frequently infected with rabies include rodents, skunks, raccoons, foxes, and bats; however, any warm-blooded animal could be infected.

Personnel should be alert to these animals, particularly around holes in the ground. The best precaution is to observe all wild animals from a safe distance.

Anyone that has directly contacted a bat should consider being tested for rabies.

Deer and raccoon are seen regularly at the Site. Any personnel trash (especially food waste) that is stored outside needs to have a locking lid or the raccoons may get into it.

Bears may be present at the Site. If observed, notify your SSO immediately. The best precaution if somebody sees a bear is to avoid it. If you are nearby, slowly move away from it. If it approaches you, slowly back away, waving your arms and talking loudly. If the bear makes physical contact with you, fall to the ground, lie on your stomach, and cover your head and neck with your hands. If the bear bites you fight back.

8.19.8 Insect Bites and Stings

An insect bite or sting is usually a minor problem for most people. Such insects include bees, wasps, hornets, and yellow jackets and chiggers. On numerous occasions, hornet nests have been exterminated at this site. Usually there are no major effects. Some people, however, are especially sensitive to bee stings, or may even develop a life-threatening allergic reaction. Prompt emergency care may save their life.

People with previous reactions to bee, wasp, hornet, fire ant, or yellow jacket sting, should consider carrying a “bee-sting kit” (e.g., Epi-Pen or Ana-Kit) and inform their co-workers and their SSO. They should avoid scented toiletries when outside. If an Epi-Pen or similar device is used, call “Mayday” per Emergency Procedures in Section 21.2 of this HSEP as the victim must be immediately transported to an emergency medical facility as additional treatment may be required to control the allergic reaction.

Sodas and other sugary types of liquids should be sealable (i.e., screw on caps) and thrown away completely sealed.

8.20 Weather and Other Environmental

Be aware of the effect of inclement weather (e.g., rain, snow, ice, extreme heat/cold temps, lightning, etc.). Consider these hazards when developing the JHA and prepare to suspend activities and seek shelter as conditions warrant.

8.20.1 Heat Stress

Weather conditions affecting site personnel include high temperatures resulting in increased risk of heat stress. Frequent rest in a cool, shaded area with sufficient fluids, such as water or sports drinks, and appropriate clothing

(light-colored, lightweight clothing) will minimize the risk. Personnel should monitor fluid intake to avoid dehydration; and encourage co-workers to drink fluids.

The following three conditions of heat stress could occur during tasks in periods of high ambient temperature:

- ***Heat Syncope:*** If a person has been standing still for some time, a sudden fainting spell could occur. Recovery is typically instantaneous, but injury may occur from a fall. If these symptoms occur, remove outer clothing, provide cool (not cold) water to drink, and rest in a cool environment. Contact the SSO of the affected contractor immediately. Any person who loses consciousness should be evaluated by a medical professional.
- ***Heat Exhaustion***: Heat exhaustion is characterized by profuse sweating, clammy skin, dizziness, confusion, and lightheadedness. If these symptoms occur, proceed to the nearest air-conditioned location, drink liquids (water and/or a sports drink), and rest until the symptoms pass. Contact the SSO of the affected contractor immediately. Any person who loses consciousness or has an altered mental status should be evaluated by a medical professional.
- ***Heat Stroke:*** Heat stroke is often a fatal condition. The individual stops sweating, and the core body temperature rises rapidly. The face and upper chest are bright red or bluish in color. Convulsions may occur as the body temperature rises. Disorientation, collapse, and unconsciousness also may occur. Note that sunburn and previous sweat may mask some of these symptoms. If heat stroke is suspected, follow emergency protocol per Section 21.0 of this HSEP immediately. Remove excess clothing and cool the person by sponging with cool or lukewarm water. Never place ice on the person or throw water on the individual. Contact the SSO of the affected contractor and the HSO as soon as possible.

Measures for preventing heat stress:

- Identify and evaluate all activities that may result in excess heat stress.
- Minimize heat disorders through the use of engineering controls, training, work practices, acclimatization, and other protection measures, such as providing plenty of fluids, limiting amount of time in direct sun or in respirators, taking frequent breaks, etc.
- Prepare for the hot weather season and use hot weather alert procedures.

Measures for reducing chances of heat stress:

- Increase the frequency and duration of rest breaks.
- Schedule tasks to avoid heavy physical activity during the hottest parts of the day.
- Provide cool drinking water or an electrolyte-replacement drink and encourage its consumption.
- Use additional workers for the job or slow down the pace of the work.

Everyone should understand the signs and symptoms of heat stress. If heat stress is suspected, the affected person shall be given a rest period. A rest period shall consist of a continuous time period of at least five minutes, preferably in a shaded area. The person shall not be assigned to other work during this rest period.

8.20.2 Cold Stress and Hypothermia

Personnel should protect themselves from the cold by wearing appropriate clothing, including an outer water and wind-proof protective shell. Dressing in layers allows the individual to adjust clothing as weather conditions change, or as physical activity warms the individual; such adjustments can prevent the person from getting wet from perspiration, and becoming more susceptible to hypothermia. Personnel should monitor fluid intake to avoid dehydration and encourage co-workers to drink fluids.

Hypothermia: Wind and wetness increase the chances of hypothermia because they lower body temperature faster than it can be generated. Signs of hypothermia include clumsiness, tiredness, reluctance to keep moving, irrationality, confusion, muscle stiffness, uncontrolled shivering (once shivering stops, the individual is critical and subject to collapse). Look for signs of hypothermia in your co-workers when weather conditions present a hazard, and retreat to a heated vehicle or building, as necessary. If hypothermia is suspected, call mayday and follow emergency procedures per Section 21.0 of this HSEP immediately. Contact the SSO of the affected contractor and the HSO as soon as time permits. Note: Hypothermia can occur during warm weather if personnel are exposed to water, wind, or other conditions that accelerate the loss of body heat.

Six main factors involved in causing cold stress:

- Temperature
- Humidity
- Movement of air
- Radiant temperature of the surroundings
- Clothing
- Level of physical activity

Measures for reducing chances of cold stress:

- Dress appropriately for expected weather conditions. Dress in a minimum of three layers (a skin layer to absorb moisture and keep the skin dry, an insulating layer, and an outer protective layer).
- Change into dry socks as necessary, because perspiration held by the socks prompts cooling of the feet. Should clothing become wet, it is imperative that the person change into dry clothes before resuming work.
- Avoid vasoconstrictors (constrict blood vessels), including tobacco products, which constrict blood vessels and can accelerate the onset of frostbite.
- Avoid touching cold metal with bare skin.
- Keep active.
- Use shelter where available.

8.20.3 Lightning

Lightning typically occurs during thunderstorms and similar intense rainfall events. Hazards associated with lightning include direct electrocution, burns, and flying debris in the vicinity of the lightning strike. Although lightning typically strikes the highest objects in the area and is preferentially attracted to good conductors (such as

metal poles), it is unpredictable. Consequently, **a potential lightning hazard shall be assumed whenever thunderstorms are occurring at, or in the vicinity of the Site**.

Procedures for personnel working out-of-doors when a potential lightning hazard exists:

- Notify your SSO when lightning or thunder is observed, because thunder may not be heard by personnel wearing hearing protection and lightning is obstructed by Site features such as trees or buildings.
- For drilling or excavation activities, stop work. Lower the mast of the drill rig, if possible. Move to an appropriate shelter, such as the administration building, or into a pickup truck or car until the hazard is no longer present.
- For investigation and sampling activities in remote areas accessible only by foot, immediately move to lower ground to the extent possible and proceed to a suitable shelter or vehicle. Avoid traversing along high points, such as ridges, and open areas.
- For abatement, demolition, or other construction activities, stop work in accordance with the Contractor HSEP covering the specified activity.
- Seek safe shelter when you first hear thunder, see dark threatening clouds developing overhead or see lightning. Count the seconds between the time you see lightning and hear the thunder. Stay in safe shelter if that time is less than 30 seconds.
- Do not resume work activities until 30 minutes after you last hear thunder or see lightning and you are authorized by the SSO.
- Always consider weather conditions and possible changes before starting work and throughout the day.

When a safe location is not nearby:

- Do NOT seek shelter under tall, isolated trees. The tree may help you stay dry but will significantly increase your risk of being struck by lightning.
- Do NOT seek shelter under partially enclosed buildings.
- Stay away from tall, isolated objects. Lightning typically strikes the tallest object. That could be you in an open field or clearing.
- Know the weather patterns of the area and know the daily weather forecast. If there is a high chance of thunderstorms, curtail your outdoor activities.
- Wet ropes can make excellent conductors. Do NOT keep ropes attached to you; the electrical current can travel along the rope, especially if it is wet.
- Stay away from metal objects, such as fences, poles, and backpacks. Metal is an excellent conductor. The current from a lightning flash will easily travel for long distance.

8.21 Off-Site Transportation

Travel to and from the Site for personnel and certain equipment, materials, and waste products requires use of public roadways. The roads to the Site are narrow, winding, steep, can be in poor condition, and cross several bridges that are in poor, and deteriorating, condition. Cyprus Amax has determined that all heavy and large loads

to and from the Site shall be transported via rail; the public roads shall only be used for personnel transport and shipment of selected equipment and materials (wastewater from portable toilets, and small tools, consumables, and parts needed on an emergency basis). Any loads proposed for transport on public roadways in excess of these limitations shall be subject to review by the HSO; an engineering evaluation of the load weight and vehicle configuration may be conducted by the project team under certain circumstances.

Potential public roadway routes to the Site from Steubenville include (Figure 3):

- County Road 74 (CR74): South on State Route 7 (SR7) from Steubenville to Mingo Junction, then west on CR74 from Mingo Junction to the Site.
- Scott Featner Road: South on SR7 from Steubenville to the intersection with State Route 151 (SR151), then west on SR151 to the east side of New Alexandria, north on Scott Featner Road to the intersection with SR74 in Kolmont, then west to the Site.
- Chappel Hill Road: South on SR7 from Steubenville to the intersection with State Route 151 (SR151), then west on SR151 to New Alexandria, north on Chappel Hill Road to the intersection with SR74, then east to the Site.
- County Road 28 (CR28): South on SR7 from Steubenville to the intersection with Lincoln Avenue, then south on Coal Hill Road and CR28 to the intersection with CR74 in Gould, then west to the Site.

The CR74 route from Steubenville is the most direct and the road is in fair condition, but crosses two bridges with physical constraints. Bridge #1, over Cross Creek near Gould, is a new, one-lane temporary structure with tight approaches. Bridge #2, over Cross Creek near Kolmont has been replaced. The Scott Featner Road route is less direct, includes road segments that are narrow, winding, steep, and in poor condition, and utilizes Bridge #2 over Cross Creek near Kolmont described above.

The Chappel Hill Road route is the least direct, includes road segments that are narrow, winding, steep, and in poor condition, utilizes bridges over Cross Creek (Bridge #3) and McIntyre Creek (Bridge #4) that are in unknown condition, and passes through a tunnel with constrained approaches. If there are signs of ice on SR151 when approaching Chappel Hill Road, do not to take this route to the Site. Do not drive on Chappel Hill Road if there is a potential for encountering ice on this roadway.

8.22 Safety Risk Assessment

8.22.1 General Site Safety

- Inclement weather
  - Hazards: struck by lightning, flash flood, icy conditions, cold weather
  - Critical controls: monitoring via radio and weather apps
  - Administrative controls: JHA, SWP-07
  - PPE: Level D
- Wildlife/vegetative hazards
  - Hazards: snakes, spiders, poison ivy/oak, ticks, flies, mosquitos, bears, big cats, coyotes, deer
  - Administrative controls: JHA, SWP-04, appropriate clothing, insect repellent
  - PPE: Level D
- Heat stress
  - Hazards: heat stroke, heat cramps, heat exhaustion, dehydration

- Critical controls: rotation of personnel in severely hot weather
- Administrative controls: JHA, SWP-04, water/fluids, rest, breaks, appropriate clothing
- PPE: Level D

- Cold Weather
  - Hazards: frostbite, dehydration, hypothermia
  - Critical controls: rotation of personnel in severely cold weather
  - Administrative controls: JHA, appropriate clothing, SWP-05
  - PPE: Level D
- Biological Hazards:
  - Hazards: bee stings, insects/bugs, poisonous snakes, wild animals
  - Administrative controls: JHA, SWP-07, competency/training, insect repellent, appropriate clothing
  - PPE: Level D
- Driving to/from site:
  - Hazards: collision, icy road conditions, snowy/wet road conditions
  - Fatal risk: vehicle collision or rollover
  - Critical controls: headlights, braking system, seatbelts, training
  - Elimination/substitution/engineering controls: seatbelts, headlights, brake system
  - Administrative controls: JHA, SWP-24
- Decontamination of personnel/equipment
  - Hazards: exposure to COC's at the worksite
  - Fatal risk: poisonous chemicals
  - Critical controls: decontamination
  - Administrative controls: JHA, medical monitoring, visual monitoring
  - PPE: Level D

8.22.2 Seep Instrumentation and Monitoring

- Working around vehicle/traversing site:
  - Hazards: struck by, slips/trips/falls, pinch points, strains
  - Fatal risk: vehicle impact on person
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, communication
  - PPE: Level D
- Operating vehicle/mobilizing vehicle
  - Hazards: vehicle collision, struck by
  - Fatal risk: vehicle collision or rollover
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, competency/training, communication, certifications
  - PPE: Level D

- Walking/working along slopes
    - Hazards: slips/trips/falls, strains
    - Administrative controls: JHA, equipment inspections, communication, fatigue management, certifications, SWP-14
    - PPE: Level D, appropriate footwear
- Ground disturbance
    - Hazards: underground utility strikes, contact
    - Fatal risk: contact with electricity
    - Critical controls: Blue Stake permit, utility locate
    - Administrative controls: JHA, site map drawings, SWP-10, SWP-17
    - PPE: Level D
- Hand Tools
    - Hazards: pinch points, cuts, struck by, strain/sprain
    - Administrative controls: JHA, inspection of tools, PPE, SWP-22, SWP-10
    - PPE: Level D, work gloves

8.22.3 Air Monitoring

- Working around vehicle/traversing site
    - Hazards: struck by, slips/trips/falls, pinch points, strains
    - Fatal risk: Vehicle impact on person
    - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
    - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
    - Administrative controls: JHA, equipment inspections, communication
    - PPE: Level D
- Operating/mobilizing vehicle
    - Hazards: vehicle collision, struck by
    - Fatal risk: vehicle collision or rollover
    - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
    - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
    - Administrative controls: JHA, equipment inspections, competency/training, communication, certifications
    - PPE: Level D
- Lifting
    - Hazards: pinch points, strains/sprains, cuts
    - Critical controls: proper lifting techniques
    - Administrative controls: JHA, proper lifting techniques
    - PPE: Level D, gloves
- Electrical
    - Hazards: electrical shock from 12-volt system
    - Fatal risk: fire, contact with electricity
    - Critical controls: equipment inspection

- Administrative controls: JHA, equipment inspection
- Level D, gloves

8.22.4 Creek Water Sampling

- Working around vehicle/traversing site
  - Hazards: struck by, slips/trips/falls, pinch points, strains
  - Fatal risk: vehicle impact on person
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, communication
  - PPE: Level D
- Operating/mobilizing vehicle
  - Hazards: vehicle collision, struck by
  - Fatal risk: vehicle collision or rollover
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, competency/training, communication, certifications
  - PPE: Level D
- Vehicle traffic, public
  - Hazards: struck by, slips/trips/falls, pinch points, strains
  - Fatal risk: vehicle impact on person, vehicle collision or rollover
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, competency/training, communication, certifications, equipment inspection, security escort, hazard lights, safety cones, fatigue management, proper training
  - PPE: Level D
- Flowing creek water
  - Hazards: drowning, slips/trips/falls
  - Fatal risk: drowning
  - Critical controls: creek height assessment
  - Elimination/substitution/engineering controls: PFDs, throw bag
  - Administrative controls: JHA, waders
  - PPE: Level D, PFDs
- Sample Bottle Preservatives
  - Hazards: acid sample preservatives
  - Administrative controls: JHA, First Aid training, eye wash bottle
  - PPE: Level D

8.22.5 Other Environmental Investigations

- Working around vehicle/traversing site
  - Hazards: struck by, slips/trips/falls, pinch points, strains
  - Fatal risk: Vehicle impact on person
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, communication
  - PPE: Level D
- Operating/mobilizing vehicle
  - Hazards: vehicle collision, struck by
  - Fatal risk: vehicle collision or rollover
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, competency/training, communication, certifications
  - PPE: Level D
- Lifting
  - Hazards: pinch points, strains/sprains, cuts
  - Critical controls: proper lifting techniques
  - Administrative controls: JHA, proper lifting techniques
  - PPE: Level D, gloves
- Ground disturbance
  - Hazards: underground utility strikes, contact
  - Fatal risk: contact with electricity
  - Critical controls: Blue Stake permit, utility locate
  - Administrative controls: JHA, site map drawings, SWP-10, SWP-17
  - PPE: Level D
- Observing subcontractor performing vegetation clearing
  - Hazards: struck by flying or falling debris or equipment
  - Fatal risk: vehicle collision or rollover, falling objects, vehicle impact on person
  - Critical controls: qualified/competent trained subcontractors, staging/maintaining distance of equipment, communication
  - Elimination/substitution/engineering controls: following of subcontractor barriers and alarms
  - Administrative controls: JHA, competency/training, communication, certifications
  - PPE: Level D

8.22.6 BMP Inspection

- Working around vehicle/traversing site
  - Hazards: struck by, slips/trips/falls, pinch points, strains
  - Fatal risk: vehicle impact on person

  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, communication
  - PPE: Level D
- Operating/mobilizing vehicle
  - Hazards: vehicle collision, struck by
  - Fatal risk: vehicle collision or rollover
  - Critical controls: fatigue management, certifications, braking systems, seatbelts, wheel chocks, communication
  - Elimination/substitution/engineering controls: braking systems, seatbelts, backup alarms, wheel chocks, fatigue management
  - Administrative controls: JHA, equipment inspections, competency/training, communication, certifications
  - PPE: Level D

8.22.7 Environmental Risks

- Chemical product (fuel) – aboveground tank
  - Hazards: surface impact from spilled fuel
  - Critical controls: spill kit
  - Elimination/substitution/engineering controls: automatic filling device shutoff, secondary containment. Administrative controls: training, SOPs
- Equipment operation
  - Hazards: hydraulic leak
  - Critical controls: spill kit
  - Elimination/substitution/engineering controls: secondary containment, dedicated vehicle maintenance areas
  - Administrative controls: equipment inspections, preventative maintenance checks
- Equipment operation, driving
  - Hazards: emissions – dust generation
  - Critical controls: spraying water for dust suppression
  - Elimination/substitution/engineering controls: vehicle speed restrictions, road maintenance
  - Administrative controls: air monitoring program

9.0 TRAINING

Contractors shall submit documentation to the HSO that all of their Site personnel (including subcontractors) have the required HSE training and certifications. Training will include environmental review, spill response, and regular Emergency Plan rehearsal. Each contractor must specify in its HSEP where training documentation will be stored and made available upon request.

The contractor is responsible to review the HSEP with all employees and subcontractors. This review will be documented and submitted to the Cyprus AMAX Project Manager and HSE Representatives.

9.1 General

Personnel conducting work activities with the potential for contact with impacted soil (including slag and other processed byproducts), water, and/or air will be trained in accordance with 29 CFR 1910.120, including respiratory protection, personal protective equipment, decontamination, hazard recognition, construction site safety, and the proper calibration and use of the field monitoring instruments required for the particular task(s). Previously trained personnel shall have completed appropriate refresher courses as detailed in 29 CFR 1910.120(e).

Contractors working at the Site shall have at least one person trained in basic or advanced first aid and CPR (including AED operation).

Personnel who operate specialized equipment (e.g., drill rigs, backhoes) shall be qualified and trained by their employer(s) to operate such equipment. Documentation (certificates) of current training shall be stored on-Site and made available to the HSO on request.

Some non-invasive activities (e.g., Site meetings, supply delivery, surveying activities) will not involve personnel exposure or the reasonable possibility of personnel exposure to chemical hazards, and in these cases, 40-hour HAZWOPER training may not be required. After consultation with CAHSR, the HSO may allow exceptions to 40-hour HAZWOPER training requirements on a case-by-case basis.

9.2 Site Health, Safety, and Environment Training

9.2.1 Visitors

A visitor is someone coming to the Site who does not perform work, such as regulating agency representatives or others who have been approved by Cyprus Amax to come as a one-time or occasional visit. All visitors, including regulating agency representatives require an escort at all times.

A vendor is defined as delivery personnel (such as UPS/Fed Ex, beverage vendors, paper product vendors). Vendors do not perform any work outside of what has been authorized by Cyprus Amax. Vendors are never allowed in the exclusion zone unless an emergency exemption by Cyprus Amax has been made.

Both visitors and vendors are required to sign in and out with Site security on every visit. They must also receive initial Site-Specific Hazard Training. This training provides a review of Site hazards, Site-specific safety rules, and other important topics that each person must know and understand to be at the Site. Site Hazardous Training is required on an annual basis, and will be documented with a signed and dated roster. Personnel receiving this training will be given a training card and hardhat sticker.

All visitors and vendors are required to sign in with Site security.

9.2.2 Site Workers

Contractor Orientation Training is provided to all personnel prior to working on the property. This one-time training includes Cyprus Amax health and safety culture and expectations, provided by Cyprus Amax or an approved representative. In addition, Site-Specific Hazard Training and a HSEP review shall be provided by the respective contractor. This training provides a review of Site hazards, Site-specific safety rules, and other important topics that each person must know and understand to be at the Site. Site Hazard Training is required on an annual basis, and will be documented with a signed and dated roster. Personnel receiving this training will

be given a training card and hardhat sticker. The HSEP Acknowledgement Form (Appendix A) must be signed and dated by each employee and retained by the respective contractor.

This training provides a review of Site hazards, Site-specific safety rules, and other important topics that each person must know and understand to be at the Site. Site Hazard Training is required on an annual basis, and will be documented with a signed and dated roster. Personnel receiving this training will be given a training card and hardhat sticker. Personnel are expected to place their sticker on their hard hat and carry the signed training card whenever working on-Site.

Other applicable training, such as OSHA “HAZWOPER” training, must be verified by Cyprus Amax for all personnel prior to performing any work on property.

10.0 PERSONAL PROTECTIVE EQUIPMENT

The following sections discuss minimum personal protective equipment (PPE) requirements and apply to all Site personnel.

The following PPE scheme will be used to designate the required level(s) of PPE. The alphabetical designations “B”, “C”, and “D” refer specifically to varying levels of protection. The required levels of protective equipment and upgrade criteria for each work task are specified below. The wearer shall inspect all equipment and clothing prior to use. Damaged or faulty protective equipment will be rejected and disposed of properly (anticipated to be non-contaminated waste).

Each contractor shall specify the PPE level required for each task in accordance with their Safety Risk Assessment and field situations identified on JHA (see Section 8.2 of this HSEP).

Each individual is responsible for ensuring appropriate inspection and upkeep of his/her equipment.

10.1 Standard Protection Levels

10.1.1 Level D

- Standard work clothes (long pants and shirt)
- No sleeveless shirts
- Safety-toed boots
- Safety glasses with side shields
- High visibility and reflective safety vest or equivalent shirt
- Hard hat
- Hearing protection (during drilling and other noise producing activities)
- Other protective clothing as required for the task.

10.1.2 Level C

- Level D plus items below
- Full or half-face air-purifying respirator with appropriate cartridges for the task

- Chemical protective clothing as necessary

10.1.3 Level B

- Positive pressure, full-face, self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA.
- Chemical-resistant clothing as appropriate
- Safety-toed boots
- Safety glasses with side shields
- High-visibility reflective safety vest or equivalent shirt
- Hard hat
- Hearing protection (during drilling and other noise producing activities)

10.1.4 Level A

Level A (maximum protection) is not expected to be needed at this site.

10.2 Minimal PPE Requirements for Tasks

The minimum level of PPE required for non-invasive Site activities outside the Support Zone, including Site reconnaissance, will be Level D. The need for further upgrading will be determined on the Safety Risk Assessment for each task and the field JHA. This includes personal air monitoring as needed. Personnel should make sound task-specific judgments during the implementation of the work and use higher degree of clothing protection if needed to improve personal hygiene (use gloves or Tyvek in dirty conditions).

If sampling of materials which may contain asbestos is to be performed, all work must be conducted in Level C. Once asbestos abatement begins, then air monitoring must commence per applicable regulations.

10.3 Respirator Fit Test Requirements

Written respirator medical clearance and fit test documentation for all Site personnel using respirators shall be maintained at the Site by the contractor's SSO. Respirator fit testing shall meet the requirements of OSHA 1910.134 Appendix A.

For respirator use, any facial hair that would interfere with the proper fit of such equipment must be removed.

10.4 Hearing Protection

Use hearing protection in situations where noise could pose a health hazard. A good rule of thumb is that if it is necessary to shout to communicate at a distance of 3 feet over continuous noise, hearing protection should be worn. Likewise, impact noises from activities that are loud enough to cause discomfort indicate the need for hearing protection. Notify the SSO for noise level concerns, in or around work areas or equipment, where noise monitoring may be needed.

10.5 High Visibility and Reflective Vests

Employees and contractors are required to wear high visibility (brightly colored) and reflective vests (or equivalent as approved by the HSO), when on the ground around heavy equipment or light vehicles. Areas such as shops,

parking lots for personal vehicles, secured perimeters and other designated areas may be excluded depending on a task Risk Assessment and JHA.

- Safety vest material must be non-flammable.
- Must not be loose enough to get caught or entangled in machinery or equipment.
- Must maintain visibility and reflectiveness or must be replaced.

11.0 MEDICAL SURVEILLANCE

Personnel who engaged in activities on the Site AND:

- may wear a respirator for 30 days or more a year, OR
- may be exposed to arsenic, asbestos, chromium, lead, respirable crystalline silica, or other health hazardous substances at or above an action level of ½ the American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Value (TLV), without regard to the use of respirators, for 30 days or more a year

shall meet, the medical surveillance requirements of 29 CFR 1926.65(f) and all other applicable OSHA standards (e.g., 29 CFR 1910.1018, 29 CFR 1926.1101, 29 CFR 1926.1126, 29 CFR 1926.62, 29 CFR 1926.1153).

Supplemental tests may be conducted as part of the worker's medical surveillance based on exposure and determined by a licensed medical professional (see below). Frequency of testing may include a baseline examination with subsequent follow-up exams.

Supplemental Tests (where applicable based on anticipated or measured exposures)	
Type of Surveillance	Surveillance Method
Arsenic – elemental and soluble	Per 29 CFR 1910.1018
Asbestos	Per 29 CFR 1926.1101
Chromium (VI)	Per 29 CFR 1910.1026
Lead and ZPP	Per 29 CFR 1910.1025
Respirable Crystalline Silica	Per 29 CFR 1926.1053

Personnel working on the Site who will never enter the Exclusion Zone are exempt from the medical surveillance requirement without prior authorization by Cyprus Amax (e.g., supply or mail delivery).

12.0 PERSONAL AND ENVIRONMENTAL MONITORING

12.1 Site Monitoring and Action Levels

Potential inhalation exposures will be evaluated by air monitoring for anticipated Site COPCs (see Tables 4 through 6), and additional parameters as determined by the contractor's SSO, when performing various construction or investigation activities.

Practices used to minimize potential airborne exposure when performing these activities shall include:

- Standing upwind of the field activity.
- Minimize generation of dust.
- Standing away from visible aerosols (e.g., water spray or gases from boreholes) until they have dissipated, and air monitoring confirms that conditions have stabilized.
- Recognizing potential warning properties of contaminants and of dust that may be present during field activities (e.g., odor, irritation, nausea, etc.).
- Wearing appropriate PPE such as half-face respirators fitted with P100 replaceable filter cartridges.

12.2 Air Monitoring

Air monitoring may be required during invasive work. With the concurrence of the HSO, exposure monitoring may be discontinued after representative initial monitoring is conducted and worker exposures are shown to be adequately controlled through the use of engineering, work procedures, and/or PPE. If work activities change so that the initial monitoring is no longer representative of worker exposure, monitoring must be reinitiated. Exposure monitoring activities must be detailed in the safety risk assessments and associated JHAs (see Appendix D).

Personnel air monitoring will be conducted by contractors as specified in their Contractor HSEP and JHAs. Invasive activities have the potential for exposures to metals and particulates. Specific exposure limits must be defined in each contractor HSEP.

Perimeter air monitoring will be conducted by WSP Golder during abatement and demolition activities to determine if there are unacceptable off-Site impacts. Constituents routinely monitored will include particulate (PM10), asbestos, arsenic, total chromium, lead, and silica. Hexavalent Chromium may be monitored based on total chromium concentration data. These data will be available to Site personnel on request.

Visual observations will be used to evaluate the effectiveness of the dust controls. Decisions to implement more aggressive controls or stop work will be based on the visual dust action levels. Visible dust observations and actions will be documented at least two times per day in each active work area – once in the morning and once in the afternoon, and whenever increased dust controls or stop work are warranted. An estimate of wind speed and direction, and time and initials of the observer will be recorded with each documented, visible dust observation.

Visual Dust Action Levels

Condition	Action
No visible dust OR Brief visual dust isolated to immediate vicinity of work	No additional dust controls are required Periodically document observations and controls in place (at least two times/day per work area – once in the morning and once in the afternoon)
Lingering visual dust isolated to immediate vicinity of work OR Lingering dust clouds isolated to site	Increase dust controls Document observations and actions taken and re-assess
Dust clouds leaving site	Stop work Document observations and actions taken before continuing and reassessing
Sustained wind speeds exceed 25 miles per hour	Stop work

12.3 Personal Air Monitoring

Personal air monitoring is the preferred method to determine a worker's exposure. In this method the air sample is collected within the breathing zone of worker. The breathing zone is defined as being within a 30 cm radius of nose and mouth.

Personal air monitoring shall be conducted any time there is a significant potential for worker exposure to site COCs and other health hazards (e.g., during invasive and high energy activities such as asbestos abatement, demolition, waste removal, thermal cutting). Initial monitoring will be conducted to determine compliance with the lesser of the appropriate 8-hour time-weighted average (TWA), TLV from the American Conference of Governmental Industrial Hygienists (ACGIH), or the Occupational Safety and Health (OSHA) action level or permissible exposure limit (PEL), and will represent worst-case, full-shift personal exposures. Monitoring may be limited to a representative sample of exposed workers who the employer reasonably believes could be exposed to the greatest airborne concentrations of dust in the workplace (e.g., open-cab equipment operators) and at least one sample for each other job classification in each work area with the highest exposure level.

Monitoring will be conducted and interpreted by a Certified Industrial Hygienist (CIH) or under the direction of a CIH. Samples will be collected using sound industrial hygiene practices and appropriate OSHA or NIOSH analytical methods and analyzed by an AIHA-accredited laboratory.

During non-invasive activities of short duration, personal air monitoring is not required. Field personnel shall make themselves aware of any conditions that would indicate potential airborne chemical exposure (e.g., odor, visible plume or smoke, non-aqueous liquids) and other activities that may be underway at the Site that may affect conditions. If such indicators are encountered, discontinue work and contact the SSO of the affected contractor.

12.4 Combustible Ground-Releasing Gases

Under certain conditions coal seams can generate large volumes of methane gas, which may exist in the subsurface. Digging or drilling can pose asphyxiation, fire, and explosion hazards. If drilling in coal strata is performed, an MSA Passport multi-gas meter (oxygen, combustible gas, and hydrogen sulfide detector) or an equivalent direct reading instrument shall be used to monitor combustible gas concentrations in the work zone 12 inches above ground surface and in the borehole during drilling. The instrument calibration shall be checked daily. A TLV PEL have not been established for methane, although NIOSH and OSHA consider 10 percent of the Lower Explosive Limit (LEL) to be an action level in a confined space; this value shall be used to trigger action for this project unless approved otherwise by the SSO of the affected contractor and the HSO. No hot work shall be performed if the combustible gas concentration is 10 percent or greater of the LEL.

13.0 PROJECT ACCESS AND CONTROL

The Site boundaries have been established using a variety of methods, including signage, installation of fencing, and guard rails. The Site is patrolled 24 hours/day, seven days/week by security personnel.

Site Security Personnel

The Site security personnel are under contract to Cyprus Amax, and are special-duty police officers from the Jefferson County Sherriff's Office and the Cross Creek Township Police Department. All these officers have training in first aid, emergency response coordination, and law enforcement.

All visitors are required to sign in with Site security. All visitors shall be escorted around the Site by the HSO, the CAHSR, CAPM, or their designee. OEPA personnel will be escorted by the CAPM or designate. Visitors shall park in the Support Zone parking lot (Figure 4).

All contractor personnel shall also sign in with Site security. Contractors and subcontractors will park in the designated area of the Support Zone parking lot and enter and leave the site through the security checkpoint where a guard will obtain name and arrival time for each person entering the Site. The system works in reverse when a person leaves the Site. The purpose of this procedure is to allow rapid identification of the personnel on the Site in an emergency and for verifying all personnel are authorized to be on site for overall security. The only exception to this policy is when WSP Golder, contractors, and subcontractors are required to bring a vehicle into the Exclusion Zone to complete required work tasks.

14.0 SANITATION

14.1 Facilities

Restrooms are located in one of the Site office trailers. For major activities at the Site, the contractor will provide portable toilets and washing facilities at suitable locations.

14.2 Personal Hygiene

Personnel shall thoroughly wash hands and, if necessary, face before eating, smoking, or putting anything in their mouth, and before leaving the Site.

Eating, drinking, chewing gum or tobacco, and smoking are permitted only in areas designated by the SSO. Under no circumstances will these activities be permitted in the immediate vicinity of any invasive activities (i.e., in the Exclusion Zone or Contaminant Reduction Zone).

15.0 DECONTAMINATION PROCEDURES

Decontamination will involve two phases.

- The first phase will consist of gross decontamination of personnel and equipment (e.g., removal of mud by dry brushing or scraping), and will take place adjacent to the location of each invasive activity.
- The second phase will be completed prior to leaving the Exclusion Zone and entering the Support Zone, and shall include any necessary additional decontamination.

Final decontamination areas will typically have the following materials and tools:

- A general wash water source
- 2 wash tubs (1 wash, 1 rinse)
- Scrub brushes
- Disposable towels and plastic bags
- Seating to facilitate boot removal
- Decontamination solution (e.g., Alconox)
- Hand soap
- A portable water source for skin wash
- Receptacle to dispose of used cleaning materials and disposable products

Heavy equipment leaving the Site shall be decontaminated by dry methods or washing on a decontamination pad to remove visible soil, mud, and other debris that could otherwise leave the site. Loose soil shall be removed by dry or wet brushing, HEPA vacuuming, wiping, scraping, shaking, patting, water washing, or other physical means.

Monitoring equipment, sampling tools, and hand tools shall be decontaminated as needed using methods appropriate for the type of equipment. Potentially contaminated equipment shall be wrapped in plastic during on-Site transport to avoid the potential for spreading contamination.

Disposable PPE shall be placed in an appropriate container. These containers shall be labeled and placed in a secure area of the Site for temporary storage, and ultimately disposed of at a suitable permitted facility in compliance with applicable regulations.

Decontamination liquids are normally disposed in the Exclusion Zone or in the vehicle decontamination area. However, obtain permission of the HSO before doing so.

Clothing that is visually free of loose soil may be worn off-Site. It is recommended that personnel have a change of clothing and shoes for wearing off-Site.

Any laundries or cleaning facilities handling protective clothing shall be informed of the potentially harmful effects of exposure.

See Section 8.4 of this HSEP for maintaining decontamination area, materials, and tools.

16.0 STANDARD OPERATING PROCEDURES (SOPS)

Contractors are obligated to follow this HSEP, including referenced documents such as the Contractor Manual (Appendix F). In addition, contractors shall follow all applicable federal, state, and local laws and regulations. the Contractor Manual (Appendix F), all applicable Cyprus Amax Policies and SOPs (see appendices, listed in Table of Contents), this HSEP, applicable contractor SOP's, and state and local laws and regulations.

17.0 PERMIT/AUDITS/INSPECTIONS

Permits for this project include but are not limited to:

- Blue Stake
- Hot Work
- Confined Space
- Environmental Permitting
- Energized Work (LOTOTO)

Inspections for this project include but are not limited to:

- Daily Workplace Examinations
- Daily Vehicle/Equipment Inspections
- Annual Inspections (cranes, transport equipment, etc.)

Contractors must conduct audits and inspections to identify deficiencies and positive elements in HSE performance. These assessments must be documented with corrective actions assigned to correct any deficiencies. These are also used to track trends and evaluate the effectiveness of training and HSE procedures, as well as ensuring regulatory compliance. During major contractor activities, the required audits/inspections are listed below (see Section 4.0 of the Contractor Manual (Appendix F)):

- Daily Workplace Examinations
- Monthly Project Audits
- Daily Equipment and Facilities Inspections
- Weekly OSHA Compliance Audits must also be electronically sent to CAHSR.
- Stormwater Pollution Prevention Plan Inspections

18.0 SPILL CONTAINMENT PROGRAM

Each contractor must include a task-specific Spill Containment Program complying with all applicable regulatory requirements.

19.0 WASTE MANAGEMENT

Certain waste materials present at the Site (e.g., slag and other mill wastes related to historical site activities) are being managed on-Site under a consent order with OEPA. In addition to these historical Site-related wastes that

are being managed on-Site, other types of waste materials (e.g., hazardous chemicals, petroleum-related products, solid waste) will be disposed of off-Site. Off-Site waste disposal will be performed as directed by Cyprus Amax's Environmental Waste Department. Waste materials for off-Site disposal, including used spill kit materials, will be properly labeled, accumulated, and disposed of in accordance with applicable federal, state, and local regulations. Contractors will coordinate disposal activities with the CAPM.

Contractors will provide and maintain adequate secondary containment for hazardous chemicals, petroleum related products, and process solutions that could damage the environment. Contractors will provide and maintain appropriate spill kits in work areas where petroleum products or hazardous materials are used. Contractors will prevent discharges to drains and sewers and not add, disturb, or modify stormwater controls or outfalls without prior written approval.

20.0 INCIDENT NOTIFICATION, REPORTING, AND INVESTIGATION

Each contractor's project HSEP must reference applicable sections in the Contractor Manual (Appendix F) for incident notification, reporting, and investigation.

If an incident occurs (i.e., occupational injury/illness, near miss, property damage, or environmental spill or release), the HSO shall be notified and the appropriate action shall be completed as determined by the WSP Golder Project Manager, HSO, and contractor SSO in consultation with each other. This must also be reported to the CAHSR and the CAPM immediately. If the incident exceeds reportable quantities, the appropriate regulatory agency must also be notified within the required reporting period.

For any incident, Cyprus Amax Incident Report and supporting documentation (see paragraphs below) will be provided to the CAHSR within the timeline provided in this HSEP. If there are questions as to what is considered an "incident" the HSO, SSO and or WSP Golder Project Manager will contact the CAHSR or the Cyprus Amax Environmental Representative for further guidance.

A Witness Statement Form (see Appendix Z) must be legibly filled out by eyewitnesses (includes all possible witnesses, regardless of Site role).

Witness documents, along with incident photos will be gathered by the affected SSO and submitted with the initial Incident Report (see Appendix Z) to the CAHSR no later than the end of shift on the day the incident occurred. The report will be forwarded to the HSO as soon as possible for further investigation or follow up.

A final report will be provided to the CAHSR within 24 hours of the incident, unless otherwise approved by the CAHSR due to extenuating circumstances.

Any company requiring use of its own internal reporting documentation must also complete and submit Cyprus Amax reporting documents (See Appendix Z). Contractor companies are only required to submit Cyprus Amax reporting documents and photos to the CAHSR.

The HSO will coordinate incident reporting to Cyprus Amax. The HSO shall notify the CAHSR verbally as early as possible with a subsequent confirming email. A final report will be provided to the CAHSR within 24 hours of the incident, unless otherwise approved by the CAHSR due to extenuating circumstances.

For environmental incidents and releases, the contractor will notify the Cyprus Amax Environmental Representative and WSP Golder Project Manager. The contractor will follow the same incident notification, reporting, and investigation procedures previously in this section.

At minimum, incident reporting must be conducted according to the applicable regulatory agency and Cyprus Amax requirements (See OSHA Regulated Sites and Incident Investigation of Contractor Manual (Appendix F)).

21.0 EMERGENCY PLAN

21.1 General

Prior to starting work on the Site, all personnel shall familiarize themselves with the Emergency Plan (this section), Communications (Section 7.0 of this HSEP), the Contractor Manual (Appendix F), and emergency provisions in accordance with the Contractor's HSEP. All Site personnel must also know where to locate emergency phone numbers for medical facilities as well as any other applicable contact numbers (See Appendix C).

Each contractor has the responsibility to develop and maintain a current Emergency Response Plan consistent with the emergency response requirements of this section and the Contractor Manual (Appendix F). Each contractor shall coordinate its Emergency Response Plan with the HSO upon mobilization to the Site. Upon declaration of a Site-wide emergency such as weather, fire, or chemical release, the alarm and assembly procedures shall be implemented immediately. Muster stations shall be established by each contractor during tail-gate safety meetings for work locations associated with that day's activity.

Contractor shall conduct regular rehearsals of its Emergency Response Plan at a frequency specified in contractor's Emergency Response Plan.

The Site security personnel under contract to Cyprus Amax are special-duty police officers from the Jefferson County Sherriff's Office and the Cross Creek Township Police Department. All these officers have training in first aid, emergency response coordination, and law enforcement.

If an accident occurs or an unanticipated, potentially hazardous situation arises such as explosion, vapor release, unusual or excessive odors, Site personnel shall cease operations, move away to a safe area, and contact their SSO.

Prior to starting work on the Site, personnel shall familiarize themselves with the communications plan (see Section 7.0). If radios are in use, personnel shall be familiar with the radio channel to reach their SSO, the common emergency radio channel, the location of the telephones in Site trailers, and phone numbers for medical facilities. In the event of a serious emergency (e.g., medical problems beyond routine first aid and fire), contact local Emergency Services (Site security or 9-1-1) to inform them of the nature of the emergency. When help arrives, Site personnel shall defer all emergency response authority to appropriate responding agency personnel. Site personnel shall provide all necessary assistance to emergency personnel.

As soon as time permits, the HSO shall notify the following about the emergency: the CAHSR, CAPM, and the WSP Golder Project Manager.

The HSO will act as the Emergency Response Coordinator for all emergencies on the Site, assisted by other Site personnel as appropriate. Site security will coordinate Site access for off-Site emergency authorities arriving at the Site and help direct them safely to the incident scene.

21.2 Emergency Communications

Emergency notification information is provided in Appendix C.

Radio communication channels are discussed in Section 7.1. The dedicated emergency radio channel (Channel 3) shall be used during emergencies, and communications on other channels shall be minimized.

Emergency notification shall be as follows:

1) The individual discovering the emergency shall immediately radio security "Mayday! Mayday! Mayday!" and inform them that there is an emergency, and provide the following information:
    - Your name
    - Nature of the emergency (hazardous materials spill, fire, etc.)
    - Exact location of the emergency
    - Nature of any injuries (under no circumstances identity of the victim over the radio).
    - Additional personnel needed
2) The security personnel will then announce that there is an emergency over all other active radio channels, starting with “Mayday! Mayday! Mayday”.
3) Where a call to 9-1-1 is necessary, the call will be made by security personnel (who have direct radio communications with the 9-1-1 center).
    - For Fire: First response will come from Hillndale Fire Department; second response will come from New Alexandria Fire Department.
    - For EMS: First response will come from Hillndale Fire Department; second response will come from Mingo Junction Fire Department.
    - Wintersville and Brilliant fire departments will be the next to serve if Hillndale, New Alexandria and Mingo Junction not available.

The Site address to provide to first responders (first aid, law enforcement, fire department, or other rescue organizations) is:

- The Former Satralloy Site is located in Mingo Junction on County Road 74 south of the Kolmont Community Church.
- The mailing address for the Site is 4243 County Road 74, Mingo Junction, OH 43938.

Prior to taking a WSP Golder employee to a medical facility, TriageNow should be contacted at 877-311-0038, except when transported by emergency responders.

21.3 Medical Emergency Response Plan

Other than removal of outer protective garments and gross contamination (e.g., mud), immediate emergency treatment of injuries should take precedence over personal decontamination. Should any person on the Site be injured or become ill, initiate the following emergency response actions, and notify the HSO and their SSO as soon as possible:

1. If able, the injured person should proceed to the nearest available source of first aid. If the injured party is extremely muddy, remove outer garments and, if necessary, wash the injured area with soap and water. If the “injury” involves a potential overexposure to hazardous gases or vapors (headache, dizziness, nausea, disorientation), get the victim to fresh air and take him or her to the local hospital as soon as possible.

If the injury involves foreign material in the eyes, immediately flush the eyes with emergency eye wash solution and/or rinse with copious amounts of potable water for at least 15 minutes. Obtain or administer first aid as required. If further medical treatment is required, seek professional medical assistance as discussed below in item 3.

2. If EMS or a hospital is involved in the medical response, notify them of any potential contamination from the Site.
3. If the victim is unconscious or unable to move, or if there is any evidence of spinal injury, do not move the injured person, unless absolutely necessary to save his or her life, until the nature of the injury has been determined. If necessary, administer rescue breathing and/or CPR, control severe bleeding, and immediately seek medical assistance.
4. If further medical treatment is required and:
   a. the injury is not severe, take the injured party to the hospital by private automobile. TriageNow should be contacted at 877-311-0038 before taking a WSP Golder employee to a medical facility (i.e., when an injury is not severe).
   b. the injury is severe, immediately call Site security or 9-1-1.

   In both cases, if decontamination is not undertaken, appropriate precautions should be taken to avoid transfer of contaminants to vehicles and other facilities. This can be done by covering the vehicle's interior with plastic sheeting or the exposure blanket contained in the first aid kit. A victim should never be wrapped in plastic sheeting.
5. An individual designated by the SSO of the affected contractor shall accompany any injured person taken to the hospital to ensure prompt and proper medical attention. The accompanying person should notify the hospital or medical facility of the potential contaminates that may be on the injured person. After proper medical treatment has been obtained, the designated companion should notify the SSO of the affected contractor and prepare a written report.

   In the event that any personnel are injured at the Site, all available technical information and supporting documentation needed shall be provided to any treating physicians, health care workers, or health care facilities.

When emergency first responders arrive at the Site, security personnel will guide them to the location of the incident as directed by the HSO.

For a medical emergency, the first responder will likely be from the Hillndale Fire Department Emergency Medical Services (EMS) located at 2709 Wilson Ave Steubenville, OH 43952. Emergency Services (fire/rescue, EMS, and law enforcement) are managed by the Jefferson County 9-1-1 Center who will dispatch the appropriate responders. Note the non-emergency telephone number listed for the local fire department and EMS in Appendix C may not be answered 24/7, therefore all emergency calls are to be placed directly to 9-1-1 or the 10-digit phone number for the 9-1-1 center (740) 266-4252. EMS personnel will make the decision on Site if an airlift medical evacuation is required. The EMS personnel have radio and phone contact with the medevac service located at the Life Line Hospital in Wintersville.

21.4 Fire and Explosions

Dry chemical (ABC) fire extinguishers are effective for fires involving ordinary combustibles such as wood, grass, flammable liquids, and electrical equipment. They are also appropriate for fires in their incipient stages and small, localized fires such as a drum of burning refuse, a small burning gasoline spill, a vehicle engine fire, etc. No attempt should be made to use these extinguishers for well-established fires or large areas or volumes of flammable liquids.

In the case of fire, prevention is the best contingency plan. There shall be no smoking on the Site except in pre-designated areas. In the event of a fire during intrusive tasks, personnel shall attempt to extinguish the fire only if it is in an incipient stage with on-Site fire extinguishers. If a fire cannot be controlled in this manner, personnel shall notify their SSO and follow the procedure outlined below.

Catalytic converters on the underside of vehicles can be sufficiently hot to ignite dry grass. Personnel should avoid driving over dry grass that is higher than the ground clearance of the vehicle, and be aware of the potential fire hazard posed by the catalytic converter, at all times. Never allow a running vehicle to sit in a stationary position or park a vehicle over dry grass or other combustible materials.

In the event of a fire or explosion:

1. If the situation can be readily controlled with available resources without jeopardizing the health and safety of Site personnel, take immediate action to do so. If not:
2. Isolate the fire to prevent spreading, if possible.
3. Clear the area of all personnel working in the immediate vicinity.
4. Immediately notify SSO and Site Security (or the Fire Department by calling 9-1-1).

21.5 Chemical Exposure First Aid

In an event of exposure to chemicals through inhalation:

1. Move the victim to an up-wind location for fresh air.
2. Initiate CPR to revive the victim, if necessary.
3. Contact EMS, if necessary

For exposure through dermal route (including eyes):

1. Wash the affected area with copious fluids for at least fifteen (15) minutes.
2. If irritation persists, seek professional medical care.

For ingestion:

1. Contact the National Poison Control Center for advice.
2. Contact Site security, EMS (9-1-1), or transport the victim to the hospital immediately. Take a copy of this HSEP to the hospital, if readily available.

Notify your SSO as soon as possible of any exposure incidents. Check the SDS of the chemical for additional first aid measures.

21.6 Unforeseen Circumstances

The HSE procedures specified in this plan are based on the best information available at the time. Unknown conditions may exist, and known conditions may change. This plan cannot account for every unknown or anticipate every contingency. Should personnel suspect or encounter areas of substantially higher levels of contamination, or should any situation arise which is obviously beyond the scope of the safety procedures specified herein, work activities shall be halted pending discussions with the SSO of the affected contractor(s) and the HSO, and implementation of appropriate protective measures.

21.7 Accident and Incident Reports

If an incident or accident occurs (including “near misses”), the HSO shall be notified and the appropriate action shall be completed as determined by the WSP Golder Project Manager, HSO, and contractor SSO in consultation with each other. A summary report should be completed by eyewitnesses (if possible) along with assistance from the affected SSO. The report will be forwarded to the HSO as soon as possible for further investigation or follow up.

The HSO will coordinate incident reporting to Cyprus Amax. The HSO shall notify the CAHSR verbally within 24 hours with a subsequent confirming email. A completed “Incident Reporting Form” must be provided to the CAHSR within 24 hours.

21.8 Directions to Hospital

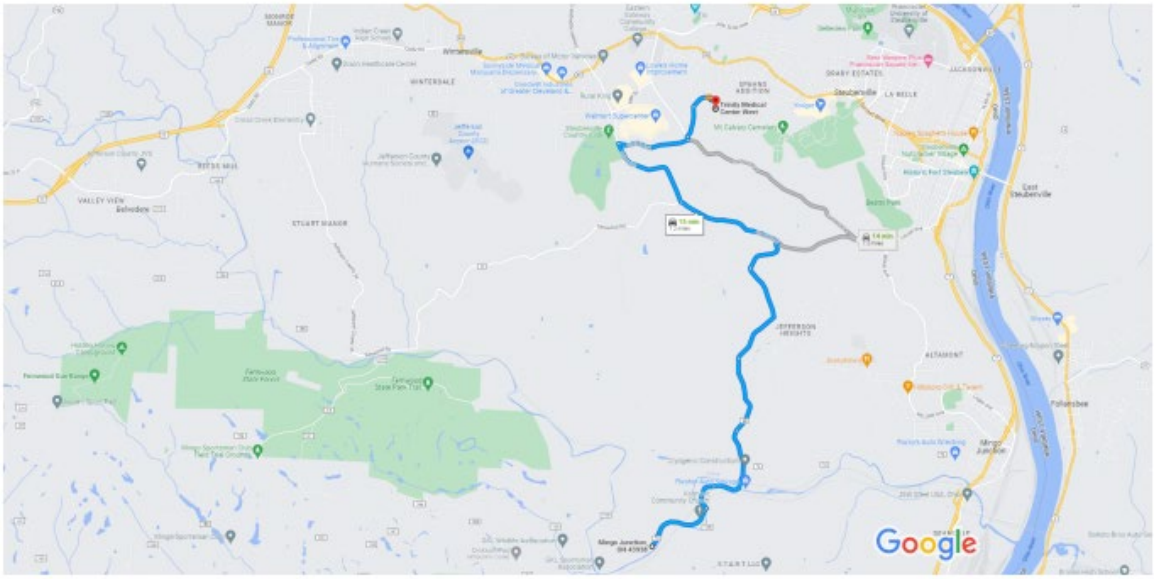
The nearest hospital is the Trinity Medical Center West at 4000 Johnson Road, phone (740) 264-8000.

Directions (closest route):

When leaving the Site turn left onto County Road 74 to the #2 Bridge – 0.5 miles
Turn left after the bridge staying on County Road 74 – 0.8 miles
At the T-intersection go straight onto County Road 28/Goulds Road – 2.6 miles
At the end of County Road 28/Goulds Road, turn left on Coal Hill Road – 1 mile
At the stop sign, turn right on Lovers Lane – 0.9 miles
Turn right on Sinclair Avenue – 0.7 miles
Turn left onto John Scott Highway – 0.1 miles
Turn right onto Lauretta Drive – 0.3 miles
Turn slight right onto St. Charles Drive – 0.2 miles
Turn right onto Johnson Road (stay on Johnson Road) – 0.2 miles
Follow signs to the Emergency Room

9/29/22, 4:26 PM Mingo Junction, Ohio 43938 to Trinity Medical Center West - Google Maps

Google Maps Mingo Junction, Ohio 43938 to Trinity Medical Center West, 4000 Johnson Rd, Steubenville, OH 43952 Drive 7.2 miles, 15 min



Map data ©2022 2000 ft

21.9 Additional Medical Facilities

Additional medical facilities closer to the Site than the Trinity Medical Center available for less serious injuries are listed below. TriageNow should be contacted at 877-311-0038 prior to taking a WSP Golder employee to one of these facilities.

Trinity Express Care
150 Main Street
Steubenville, OH 43953
740-346-3702

MedExpress
218 Three Springs Drive
Weirton, WV 26062
304-723-3627

22.0 ACKNOWLEDGEMENT

All personnel who work at this Site must demonstrate that they have read and understand this Project HSEP by signing the acknowledgement form in Appendix A.

TABLES

TABLE 1
MINIMUM ILLUMINATION LEVELS IN FOOT-CANDLES

FOOT-CANDLES	AREA OR OPERATIONS
5	General site areas.
3	Excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exit ways.
5	Tunnels, shafts, and general underground work areas; (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms.
30	First aid stations, infirmaries, and offices.

TABLE 2
EXPOSURE LIMITS FOR CONSTITUENTS OF POTENTIAL CONCERN

SUBSTANCE (CAS No.)	EXPOSURE LIMIT (8-hour TWA unless noted)		NIOSH IDLH	SUBSTANCES ON SITE
	OSHA PEL	ACGIH TLV		
Aluminum (7429-90-5)	5.0 mg/m^3 (respirable dust)	1.0 mg/m^3 (R)	---	Slag Baghouse Dust Soil Surface Water
PCB (42%: 53469-21-9) (54%: 11097-69-1)	1.0 mg/m^3 (42% chlorine)	1.0 mg/m^3 (42% chlorine)	5 mg/m^3 Ca	See Table 3
	0.5 mg/m^3 (54% chlorine)	0.5 mg/m^3 (54% chlorine)		
Arsenic (7440-38-2)	0.01 mg/m^3	0.01 mg/m^3	5 mg/m^3 Ca	Slag Baghouse Dust Soil
Asbestos (1332-21-4)	0.1 $fiber/cm^3$	0.1 $fiber/cm^3$	---	See Table 3
Barium (7440-39-3)	0.5 mg/m^3	0.5 mg/m^3	50 mg/m^3	Railroad ties
Chromium (III) (7440-47-3)	Use OSHA value per FMI policy: 0.5 mg/m^3	0.003 mg/m^3	25 mg/m^3	Slag Baghouse Dust Soil Surface or Groundwater
Chromium (VI) (18540-29-9)	Use OSHA value per FMI policy: 0.005 mg/m^3	0.0002 mg/m^3	15 mg/m^3 Ca	Slag Baghouse Dust Soil Surface or Groundwater

TABLE 2
EXPOSURE LIMITS FOR CONSTITUENTS OF POTENTIAL CONCERN

SUBSTANCE (CAS No.)	EXPOSURE LIMIT (8-hour TWA unless noted)		NIOSH IDLH	SUBSTANCES ON SITE
	OSHA PEL	ACGIH TLV		
Cobalt (7440-48-4)	0.1 mg/m^3	0.02 mg/m^3 - (I)	20 mg/m^3	Slag Baghouse Dust Soil
Iron Oxide (1309-37-1)	10.0 mg/m^3	5.0 mg/m^3- (R)	2500 mg/m^3	Building debris
Lead (7439-92-1)	0.05 mg/m^3	0.05 mg/m^3	100 mg/m^3	Painted surfaces
Manganese (7439-96-5)	5.0 mg/m^3	0.02 mg/m^3- (R) 0.01 mg/m^3 - (I)	500 mg/m^3	Slag Baghouse Dust Soil
Methane	---	---	---	Possibly Sub-Surface (due to coal seams)
Mercury (7439-97-6)	0.1 mg/m^3	0.025 mg/m^3- TWA (skin)	10 mg/m^3	See Table 3
Nickel (7440-02-0)	1.0 mg/m^3	0.1 mg/m3 - (I) (soluble inorganic compounds) 0.2 mg/m3 - (I) (insoluble inorganic compounds) 1.5 mg/m3 (elemental)	10 mg/m^3 Ca	Surface Water
Silica (as respirable dust) (14808-60-7)	0.05 mg/m^3	0.025 mg/m^3	25 mg/m^3 (cristobalite) Ca	Intrusive Activities and Demolition

TABLE 2
EXPOSURE LIMITS FOR CONSTITUENTS OF POTENTIAL CONCERN

SUBSTANCE (CAS No.)	EXPOSURE LIMIT (8-hour TWA unless noted)		NIOSH IDLH	SUBSTANCES ON SITE
	OSHA PEL	ACGIH TLV		
Thallium (7440-28-0)	0.1 mg/m^3 (None-solids/dust)	0.02 mg/m3- TWA (skin)	15 mg/m^3 (None-solids/dust)	Slag Surface Waters Cross Creek
Respirable Particulates	5 mg/m^3	3 mg/m^3	---	Intrusive Activities and Demolition

Notes:
ACGIH = American Conference of Governmental Industrial Hygienists

TABLE 3
POTENTIAL REGULATED MATERIALS IN BUILDINGS

MATERIAL	POTENTIAL CONSTITUENT EXPOSURE ISSUES
Electrical Duct Banks	Asbestos
Brick	Metals
High Voltage Cable	Asbestos (wrap)
	PCBs (insulation)
Hydraulic/Equipment Oil & USTs	PCBs and Petreoleum Hydrocarbons
Electrical Equipment Oil (transformers, capacitors, switches)	PCBs and Petreoleum Hydrocarbons
Fluorescent Light Ballasts	PCBs and Mercury
Painted Surfaces	Lead
Track Ballast	PCBs, Metals
Thermal System Insulation – piping, ducts, elbows/tees/fittings, gaskets, expansion joint, etc.	Asbestos
Surfacing Materials – ceiling tile, plaster, exterior siding, transite, ceiling “blanket” insulation, textured ceiling, etc.	Asbestos
Floor Tile & Mastic, Carpet Mastic	Asbestos
Roof Flashing	Asbestos
Roofing	Asbestos & Lead
Underground Piping	Asbestos
Other Building Materials – fire doors, control panel backing, lamp ballast backing, radiator lining, insulated wood panels and doors, cooling tower slats, etc.	Asbestos and Metals
Window Caulk	Asbestos and PCBs

TABLE 4
SLAG AND SOIL COPC CONCENTRATIONS

PARAMETER	EPA RSL (mg/kg)		SLAG AND SOIL SAMPLES (mg/kg) (a-b)		
	RESIDENTIAL	INDUSTRIAL	LOW	AVERAGE	HIGH
Arsenic	0.68	3	**0.76**	***11.4***	***490***
Chromium, total - excluding slag piles (c)	0.3 (d)	6.3 (d)	***1.3***	***1,404***	***70,600 (e)***
Chromium, total - slag piles	0.3 (d)	6.3 (d)	***127***	***1,970***	***18,000***
Chromium, hexavalent	0.3	6.3	0.01	***11.6***	***270***
Iron	55,000	820,000	127	20,700	83,000
Lead	400	800	<0.24	49.9	***2,020***
Manganese	1,800	26,000	13	2,000	***61,900***
Vanadium	390	5,800	<0.47	24.5	170

Notes:

Data from Remedial Investigation, Golder 2006-2015

USEPA November 2015 Regional Screening Levels (RSL) for direct contact with soils for a residential or industrial property.

Footnotes:

a. Bold and shaded = exceeds USEPA Residential Direct Contact RSL.
b. Bold, shaded, and italics = exceeds USEPA Industrial Direct Contact RSL.
c. Total Chromium Results from all soil, dust and surface slag samples except slag piles sampled during mineralogy study.
d. RSLs are for hexavalent chromium; values are total chromium (primarily trivalent).
e. One total chromium detection (70,600 mg/kg in N. Mill Building Floor); all others less than 10,000 mg/kg.
f. Slag sample hexavalent chromium detection limits elevated due to matrix interference; highest RL listed.

TABLE 5
SITE SURFACE WATER COPC CONCENTRATIONS

PARAMETER	EPA RSL (ug/L)	SITE SURFACE WATER SAMPLES (ug/L) (a)		
		LOW	AVERAGE	HIGH
Aluminum	20,000	ND	7,590	**67,800**
Arsenic	10 (MCL)	ND	4.46	**14.7**
Chromium, total	100 (MCL)	ND	65.3	**696**
Chromium, hexavalent	0.035	ND	45	**830**
Iron	14,000	ND	5,040	**83,100**
Lead	15 (MCL)	ND	2.77	**35.3**
Manganese	430	ND	**4,550**	**47,600**
Nickel	390	ND	113	**796**
Thallium	2 (MCL)	ND	4.22	**55.0**
Bis(2-ethylhexyl)phthalte	6 (MCL)	ND	1.4	**6.9**

Notes:
Data from Remedial Investigation, Golder 2006-2015
USEPA November 2015 Regional Screening Levels (RSL) for potable tap water; Maximum Contaminant Limit (MCL) where noted.
Footnotes:
a. Bold, shaded = exceeds USEPA RSL or MCL.

TABLE 6
CROSS CREEK COPC DATA

PARAMETER NAME	EPA RSL (ug/L)	SITE SURFACE WATER SAMPLES (ug/L) (a)		
		LOW	AVERAGE	HIGH
Outfall Locations (GC- and SC- Locations)				
Arsenic	10.0 (MCL)	<0.4	2.1	**13**
Chromium, hexavalent	0.035	<2.0	**282**	**2600 (b)**
Thallium	2.0 (MCL)	<0.14	0.44	<2.0
In-Stream Locations (CCW Locations)				
Arsenic	10.0 (MCL)	<0.4	3.1	5.4
Chromium, hexavalent	0.035	<1.9	**2.2**	**11**
Thallium	2.0 (MCL)	<0.14	1.6	**6.4**

Notes:
Data from Remedial Investigation, Golder 2006-2015
USEPA November 2015 Regional Screening Levels (RSL) for potable tap water; Maximum Contaminant Limit (MCL) where noted.
Footnotes:
a. Bold, shaded = exceeds USEPA RSL.
b. Hexavalent chromium result during a stormwater event

TABLE 7
EXPOSURE INFORMATION

SUBSTANCE	SYMPTOMS OF ACUTE EXPOSURE
Polychlorinated Biphenyls (PCBs)	Irritation of eyes, skin
Aluminum	Irritation to eyes, skin and respiratory system.
Arsenic	Ulceration of septum, dermatitis, gastrointestinal distress, peripheral neuropathy, Respiratory irritation, hyperpigmentation of skin.
Chromium (most common in trivalent form, but also can be in more toxic hexavalent form)	Eye irritation, sensitization dermatitis. Hexavalent chromium (Cr+6) is considered a known lung carcinogen. Irritation of the nose, throat and lungs to damage to the mucous membranes of the nasal passage, damage to eyes and skin if in high concentrations.
Iron	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis). Respiratory problems.
Lead	Weakness, lassitude, insomnia, facial pallor, tremor, constipation, abdominal pain.
Manganese	Affects respiratory system, CNS, blood and kidneys. Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dysp, rales, flu-like
Mercury	Irritation of eyes, skin, cough, chest pain, Inhalation difficulty, tremor, insomnia, irritability, headache, fatigue, weakness.
Nickel	Dermatitis, allergic asthma, pneumonia, nasal cavities, lungs, skin. Lung and nasal cancer.
Petroleum Hydrocarbons	Eye, skin, respiratory system irritation
Thallium	Nausea, diarrhea, abdominal pain, vomiting, ptosis, strabismus; peri neuritis, tremor; rester tight, chest pain, pulmonary edema; covulsions, chorea, psychosis; liver, kidney damage; alopecia; pares legs. Affects eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

TABLE 7
EXPOSURE INFORMATION

SUBSTANCE	SYMPTOMS OF ACUTE EXPOSURE
Vanadium	Irritation of eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheez, bronchitis, dyspnea.
Cement	Eye and skin, irritation, chemical burns.
Elevated pH	Severe irritation or burning of the eyes. Severe irritation of the skin especially in the presence of moisture. Severe irritation of gastrointestinal tract if swallowed. Severe irritation of the respiratory system. Long-term exposure can cause permanent damage. May aggravate existing disorders of the eyes, skin, gastrointestinal tract.

TABLE 8
HSEP REVISION SUMMARY

DATE	REVISION
August 3, 2012	Final HASP submitted to OEPA
June 2014 - May 2019	Multiple updates to match procedural changes and/or Cyprus Amax policy changes and/or personnel changes
October 2020	HASP rewritten to conform to 2020 Cyprus Amax HASP template
November 2022	Health, Safety, and Environmental Plan (HSEP) renamed and updated to conform to 2022 Cyprus Amax Contractor Health, Safety and Environmental Manual, in particular adding futher clarification about environmental responsibilities

FIGURES

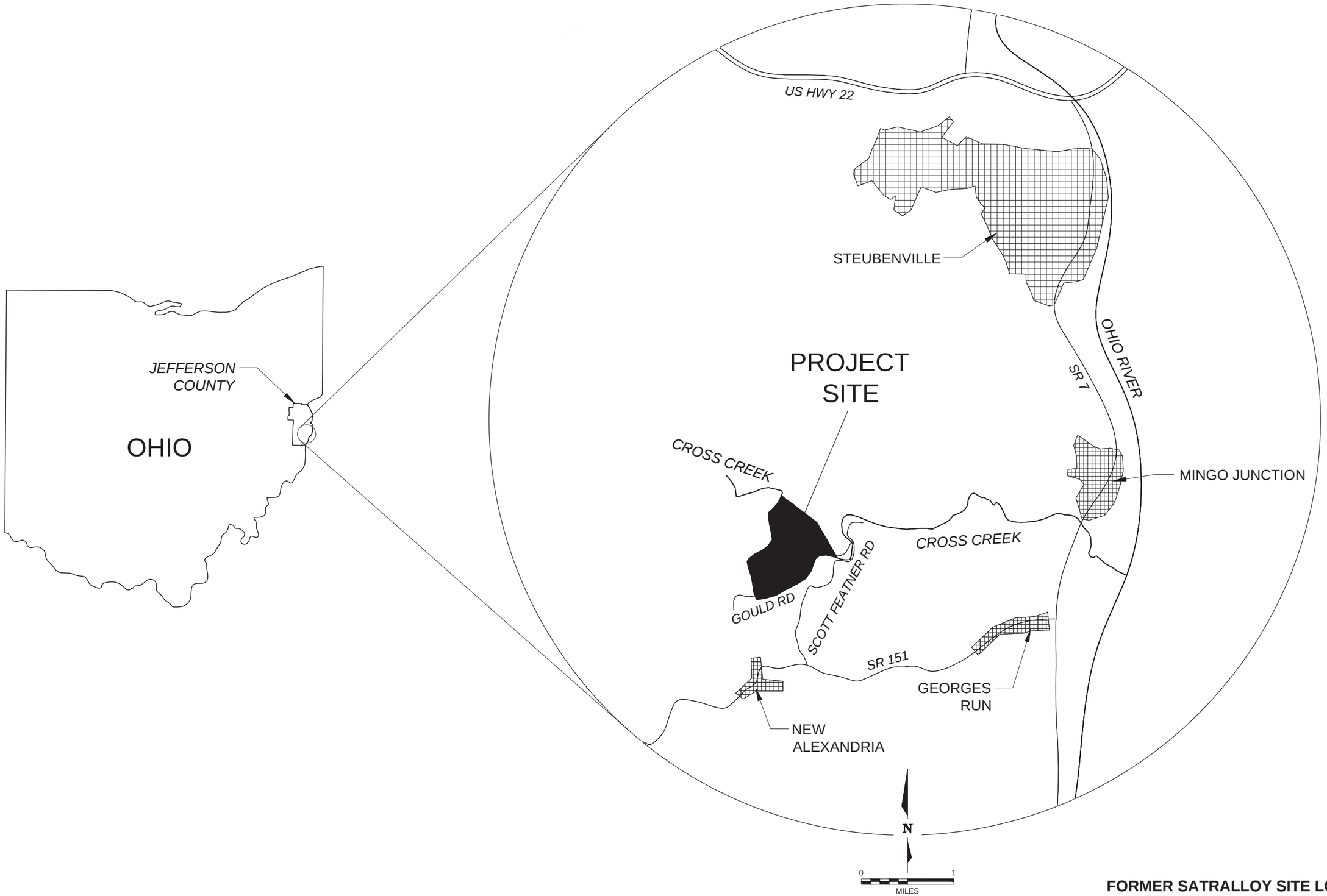


FIGURE **1**

FORMER SATRALLOY SITE LOCATION

CYPRUS AMAX / FORMER SATRALLOY SITE RI\FS / OH

Golder Associates

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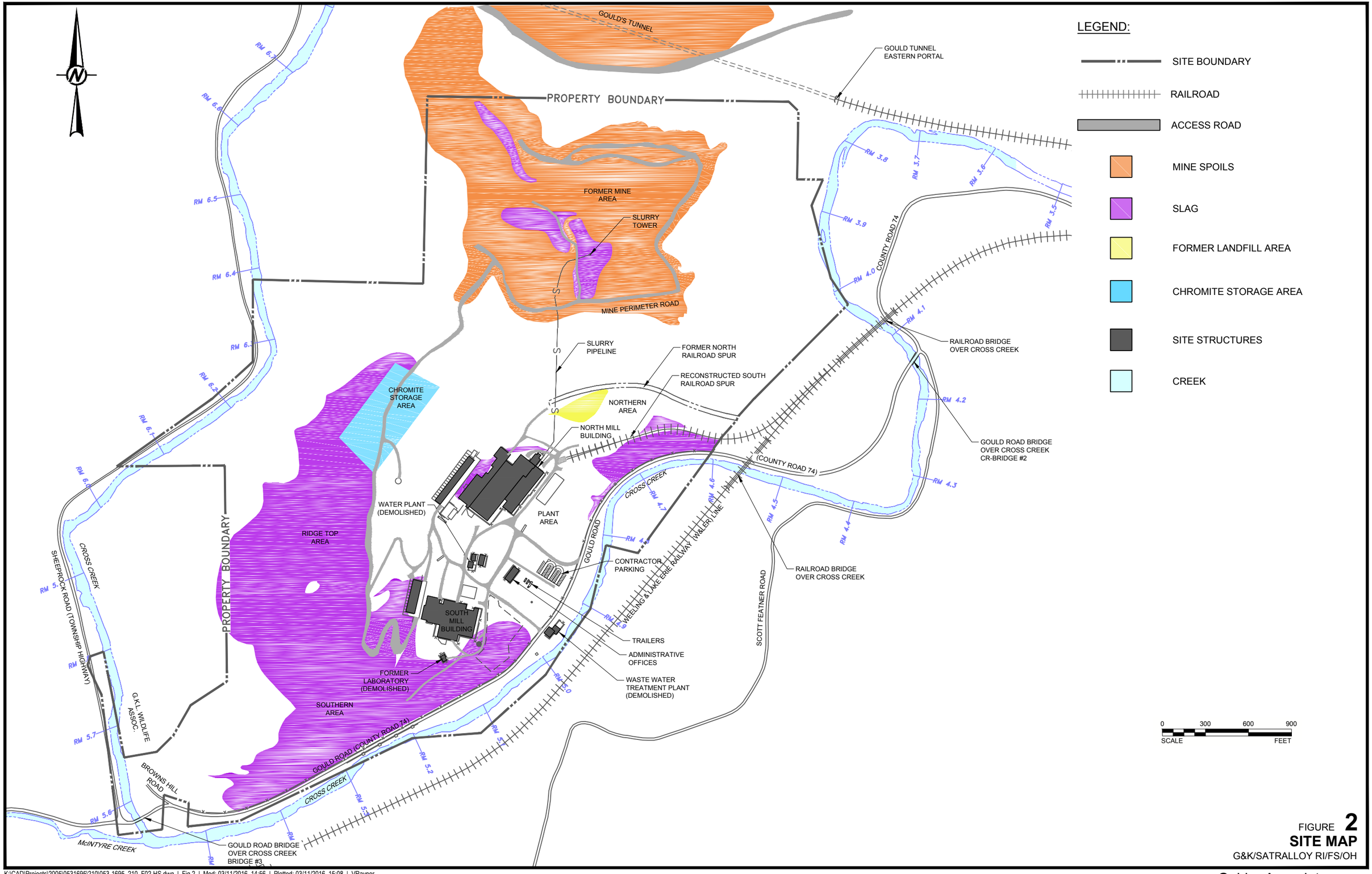
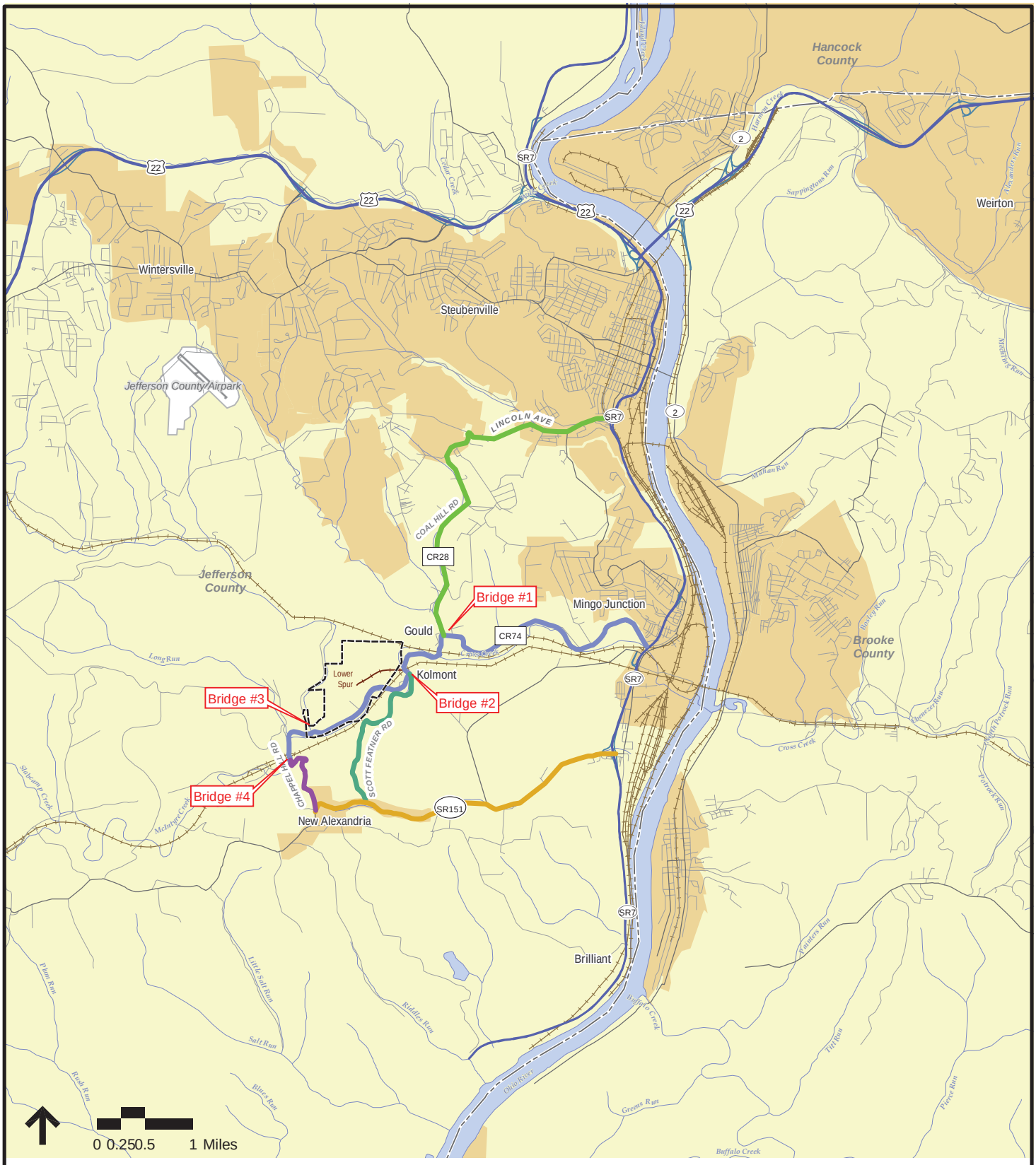


FIGURE **2**

SITE MAP

G&K/SATRALLOY RI/FS/OH



Legend

- Site

Access Routes

Route

- County Road 74
- Scott Featner Rd
- State Route 151
- Chappel Hill Road
- County Road 28
- Primary Limited Access
- Primary US & State Highways
- Cnty Bnds (detailed, named)
- Secondary State & County
- Freeway Ramp
- Other Ramp
- Local, Neighborhood, Rural
- Cul-de-sac, Traffic Circle
- Other minor access roads
- 4WD
- Pedestrian Way
- Ferry
- Railroad, Lower Spur
- Railroads (Local)
- Water (Local)
- Rivers (Detailed)
- Places (Local)

State Bnds (detailed)

Description

- Coast
- International
- Shore
- State
- Runway
- Airport Area

Vanasse Hangen Brustlin, Inc.

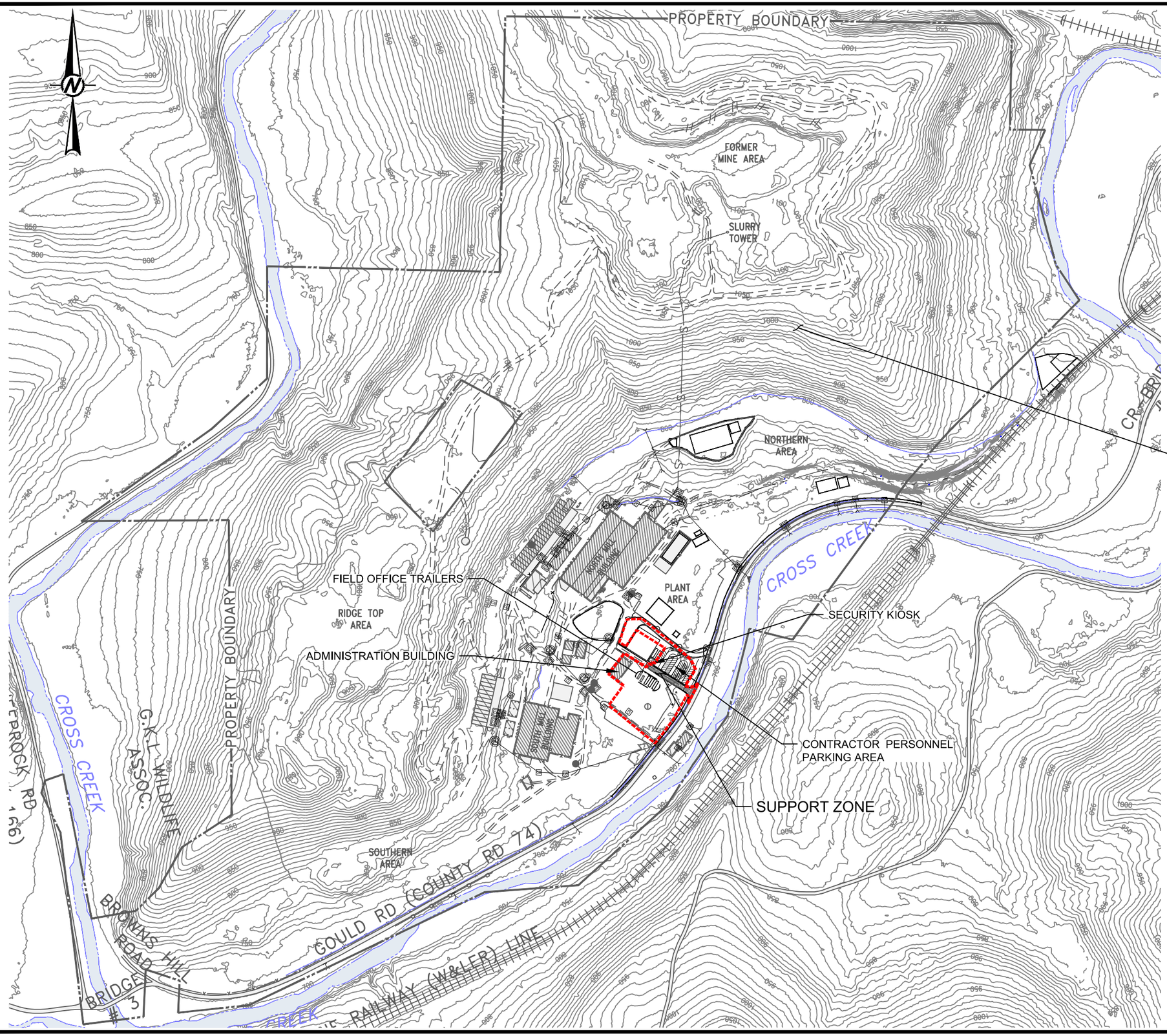
PROJECT

FORMER SATRALLOY SITE

TITLE

ALTERNATIVE SURFACE ROUTES TO THE SITE

PROJECT NO.			FILE No. Fig-1_Alt_Routes_to_Site.mxd	
DESIGN	JW	2013-06-18	SCALE: AS SHOWN	REV.
GIS	JLL	2013-06-18		
CHECK			**FIGURE 3**	
REVIEW				



LEGEND

- SUPPORT ZONE LIMITS

0 250 500 750

SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

PROJECT

FORMER SATRALLOY SITE
INTERIM ACTION
ABATEMENT & DEMOLITION

TITLE

SITE SAFETY ZONES

	PROJECT No. 053-1695-210	FILE No. 053-1695_210_Site Safety Zones
		SCALE 1" = 500'
		FIGURE **4**

K:\CAD\Projects\2006\053\1695\210\053-1695_210_Site Safety Zones.dwg | Layout: FIGURE 4 - SITE SAFETY ZONES AFTER CONSTRUCTION OF NEW ENTRANCE | Modified: VRayner 03/11/2016 4:25 PM | Plotted: VRayner 03/11/2016 4:25 PM

APPENDICES

APPENDIX A

Site Health, Safety, and Environment Plan Acknowledgement Form

Health, Safety, and Environmental Plan Acknowledgement Form

By signing this form, you acknowledge that you have read, understand, and will follow the provisions of the project Health, Safety, and Environmental Plan (HSEP) for the Former Satralloy Site (Jefferson County, Ohio). A copy of signed acknowledgment forms shall be kept in the project file.

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

Signature : _____ Date : _____

APPENDIX B

Field Procedure Change Authorization Form

Field Safety Procedures Change Authorization

This Safety Procedures Change Authorization Form will be completed and signed before any safety procedures identified in this Site Safety Plan can be modified by the Field Team. All revisions to safety procedures must be approved by the WSP Golder Project Manager.

Instruction Number_____

Duration of Authorization Requested _____Date:

to be changed ☐ Today only

☐ Duration of Task

Description of Procedures Modification:

Justification:

Person Requesting Change:	**Verbal Authorization Received From:**
_____	_____
Name	Name Time
_____	_____
Title	Title
_____	_____
Signature	Approved By (Signature of person named above to be obtained within 48 hours of verbal authorization)

APPENDIX C

List of Emergency Contact Numbers

LIST OF EMERGENCY CONTACT INFORMATION
Former Satralloy Site (Jefferson County, Ohio)

Name	Address	Phone
Police, Fire or Medical Emergency		911
National Poison Control Center		800-222-1222
Trinity Medical Center West	4000 Johnson Road Steubenville, OH 43952	740-264-8000
Hillndale Fire Department and EMS	2709 Wilson Avenue Steubenville, OH 43952	740-283-1141
New Alexandria		740-598-1141
Mingo Junction Fire Department	501 Commercial Street Mingo Junction, OH 43938	740-535-9165
Ohio EPA Emergency Response Hotline		800-282-9378

Name	Title	Address	Phone	E-Mail
WSP Golder				
Steve Anderson	WSP Golder Project Manager	10 Lake Center Drive Suite 205 Marlton, NJ 08053	856-793-2005 (0) 856-357-6665 (c)	steve.anderson3@wsp.com
TBD	Construction Manager			
TBD	HSO			
Cyprus Amax Minerals Company				
Barbara Nielsen	Cyprus Amax Project Manager	333 North Central Ave. Phoenix, AZ 85004	602-366-8270 (o) 480-313-2895 (c)	bnielsen@fmi.com
Jason Pingel	Cyprus Amax H&S Representative	800 E Pima Mine Road Sahaurita, AZ 85737	480-637-1846 (c)	jpingel@fmi.com
Jill Schultz	Cyprus Amax H&S Manager	800 E Pima Mine Road Sahaurita, AZ 85737	520-305-5404	jschultz@fmi.com
Ohio EPA				
Kevin O'Hara	OEPA Site Coordinator	2195 Front Street Logan, OH 43138	740-380-5244 (o)	kevin.ohara@epa.ohio.gov

APPENDIX D

Safety Risk Assessment and Job Hazard Analysis Forms

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Job Hazard Analysis (JHA)

Managing Risk

Title of the Job or Operation:	**Location/Project:**	**Date:**
General Description of the Work to be Performed [2]**:**	**JHA Completed By:** _____ **Type of Work:** ____ **Routine** ____ **Non-Routine** **Permit(s) Required :** ____**YES** _____**NO**	

*All employees have the right and responsibility to "STOP WORK" anytime there is an unsafe act or condition. If conditions or task(s) changes, stop and update/review the JHA.

Task(s)	Job Task or Activity	Potential Hazards	Recommended Control(s)
1			
2			
3			
4			
5			

Employee Signature(s)			
Supervisor's Approval Signature and Date:			

Note: (1) Use additional pages of this form if additional space is needed to evaluate additional tasks & hazards.
(2) Work to be performed as described in this JHA shall not begin without Supervisory review & approval.

RISK ASSESSMENT

RISK ASSESSMENT TEAM			RISK ASSESSMENT TEAM			SITE - PROJECT NAME	DATE
Name	Company	Position	Name	Company	Position		
						LOCATION	REVIEWED BY
						ACTIVITY	ACCEPTED BY
							Date Accepted

TASK	ACTIVITY / EXPOSURES	HAZARDS	TYPE OF EVALUATION	PERSONNEL EXPOSED	FATAL RISK MANAGEMENT (What are the fatal risks)	FATAL RISK MANAGEMENT (What are additional fatal risks)	FATAL RISK MANAGEMENT (What are additional fatal risks)	LIKELIHOOD OF OCCURRENCE (no controls present)	CONSEQUENCE (no controls present)	PURE RISK	Controls Implemented								LIKELIHOOD OF OCCURRENCE (with controls present)	CONSEQUENCE (with controls present)	CONTROLLED RISK
											CRITICAL CONTROLS (List all)	ELIMINATION, SUBSTITUTION and ENGINEERING CONTROLS (Protection Devices - Hard Barriers - Alarms / Sensors)	% EFFECT	ADMINISTRATIVE CONTROLS (Competencies - Regulations / Procedures - Job Safety Analysis - Signage)	PROCEDURE ASSOCIATED WITH THE ADMINISTRATIVE CONTROL	% EFFECT	PERSONAL PROTECTIVE EQUIPMENT (Specific or Basic PPE)	% EFFECT			
EXAMPLE - Light vehicle fueling	Chemical Product (fuel)	Flammable - Fire (Burns)	Safety	16	Fire			4	3	12	Grounding;automatic shut off; fire extinguisher	Spill protection system (secondary containment), Hoses grounded and emergency shut off. Fire exstinguisher	80	Signs "No Smoking", "Turn Off Engine", "Do not use cell phone during fueling"; NFPA regulations on grounding	xyz procedure	60	Basic PPE	20	2	3	6
	Chemical Product (fuel)- aboveground tank	Surface impact from spilled fuel	Environmental	16				3	2	6	Automatic filling device shutoff; spill kit; secondary containment	Automatice filling device shutoff; spill kit; secondary containment	80	Training on pumping fuel, SOP	xyz procedure	70	Basic PPE	20	1	2	2
	Movement of Vehicle	Collision with structure or personnel	Safety	16	Vehicle Impact on Person	Vehicle Collision or Rollover		3	3	9	parking brake, established traffic pattern/bay; speed	Parking brake, chocks, bollards;speed bumps, design	80	Signage, body position, spotter/flagman training	xyz procedure	70	Basic PPE	20	1	3	3
EXAMPLE - Equipment Operation	Mounting / Dismounting equipment	pinch points, falling from heights, slips trips falls, burns, rotating equipment-caught in or struck by	Safety	4	Fall from Heights			3	3	9	railings	Grab irons, ladders, railings,	90	Training, workplace exam, SOP, JHA, signage, work instruction, operators manual, annual assessment process (operating competencies)	Mounting/Dismounting equipment	70	Fall Protection, basic PPE, vest	40	1	3	3
	Movement of Equipment	collision with other equipment or rollover, impact with personnel	Safety	8	Vehicle Collision or Rollover	Vehicle Impact on Person		3	4	12	road design - separation of small vehicles / pedestrians from heavy equipment	Minimization of heavy equipment interaction with small vehicles or personnel thru road design or berms; readylines, rest area designs	90	escorts for equipment; manufacturer guidelines; SOPs; equipment inspections; PMs; training and competency assessments; radios/communications; speed limits	"Equipment Operation" SOP	70	Basic PPE, vest	40	1	4	4
		collision with other equipment or rollover	Property Damage		Vehicle Collision or Rollover			3	3	9	terrain-ground stability; spotter	ROPS; seat belts, Minimization of heavy equipment interaction with small vehicles thru road design or berms; readylines; compaction, outriggers, back up alarms, cameras, barriers (i.e. fencing, concrete, etc.)	80	escorts for equipment; manufacturer guidelines; SOPs; equipment inspections; PMs; training and competency assessments; radios/communications, speed limits	"Equipment Operation" SOP	70	Basic PPE, vest	30	1	3	3
		Occupational Health Exposure (Noise, Dust-Silica)	Health		Hazardous Substances - Chronic			3	3	9	enclosed cabs with filters; watering	enclosed cabs with filters, air conditioners,	90	SOP; medical surveillance; air and noise monitoring; inspections and PMs on seals and cabs	Hearing Conservation, Watering of Roadways	70	Basic PPE, vest, hearing protection	40	1	3	3
		Hydraulic leak	Environmental					4	2	8	Equipment inspections; Preventive Maintenance Checks; Spill kits	Spill kits	70	Equipment inspections, preventive maintenance checks		50	Basic PPE	20	2	2	4
EXAMPLE - Mobilization	Offloading equipment	Struck by, pinch points, caught in or between	Safety	3	Lifting Operations	Falling Objects	Vehicle Impact on Person	3	3	9	Secured load (rigging), rigging equipment, proper mechanical equipment (i.e. forklift)	Forklift, rigging (ie. spreader bars), ground stability, chocking, backup alarms	80	operator training, rigging training, spotters, signal person, communications (i.e. radio, air horn, hand signals, etc.), traffic design/flow/movement, equipment & rigging inspections, separation of pedestrians from high equipment use areas, restricted access	chocking procedures	70	Basic PPE, vest	30	1	3	3
EXAMPLE - Large Excavation	Inhalation of dust	COCs-metals, DPM, silica, loss of hearing	Health	15	Hazardous Substances - Chronic			4	3	12	Water-dust suppression; enclosed cab	Enclosed cab, water/chemical additive, air filters. Upwind or crosswind of work activities	80	Good hygiene practices, housekeeping, Training (HAZWOPER, etc.), written silica control exposure plan, SOP, Regs, noise	Housekeeping, spotting	70	Basic PPE, vest, hearing protection	20	1	3	3
	Operating Equipment	Struck by, falling, caught in	Safety	10	Ground Failure	Vehicle Impact on Person	Entanglement and Crushing	3	3	9	Exclusion zone/ visible zones; ensuring proper spacing between equipment accounting for swing radius	Back up alarms, barriers, positioning of equipment, spotters	70	Spotters, radios and communications, training, SOPs, JSA, work area designation/ signage	Spotting, Job Zone Control, Heavy Equipment, Ground Disturbance, Blue Stake	70	Basic, vest	20	1	3	3
		Emissions - Dust generation	Environmental	10				4	3	12	Water application; Monitoring	water application; monitoring	80	Road inspections, SOP, Training for speed control		70	Basic	20	1	3	3

APPENDIX E

FCX RM Equipment Inspection Forms and Emergency Drill/Event Evaluation Form

Resource Management
Contractor Equipment Safety Inspection

Inspection Date_____ Unit #_____

Equipment Type_____ Company:_____

What to look for	OK	B/O*	NA	Comments
Cab Glass and Mirrors - No cracks or damage that effect operators vision				
Lights and backup alarm - All lights functioning and backup alarm (if equipped) working				
Steering Linkage - No visible damage, cotter pins in place, nuts tight				
Suspension - No visible damage that effects safe operation				
Tires, wheels and lug nuts - Overall good condition of tires, appropriate tread remaining, wheels in good condition, no broken, loose or missing lug nuts. DOT Tire requirements 4/32nd inch tread depth steering tires, 2/32nd for any other wheel position, does not apply to heavy equipment.				
Tracks - Overall good condition, appropriate tightness and not excessively worn				
Undercarriage - No visible damage that effects operation				
Frame - No visible damage that effects operation				
Engine Compartment - No visible damage, loose wires, fluid caps in place and tight, appropriate guarding in place				
Fluid levels/Leaks - No substantial fluid leaks				
Exhaust System - no exhaust leaks or visible damage that effects safe operation				
Handrails and steps - Secure, appropriate heights				

Fire Extinguisher - Mounted, Inspected, Operational				
What to look for	**OK**	**B/O**	**NA**	**Comments**
Fire Suppression system - Inspected, no visible damage				
Blade/Boom/Ripper Assembly - No visible damage that effects safe operation				
Outriggers - No visible damage that effects safe operation, pads/cribbing available as needed				
Hydraulic Hoses - No leaks or damage, whip checks where needed				
Safety Decals - Present, legible condition				
ROPS Certification - Present, Legible Condition				
Housekeeping - Cab clean and free of debri or obstructions				
Seat - Functional and no damage that effects safe operation				
Seatbelt - No frays, cuts or damage, functioning condition, Cat Seatbelts expire afte 3 years of installation date, 5 years after manufacture date.				
Controls Function/Labeled - Functional and no damage that effects operation				
Gauges and warning lights - Functional and no damage that effects safe operation				
Steering Function - Functional and no damage that effects safe operation				
Brake Test (Air Brakes 7 Step) - Brake test according to manufacture instructions				
Parking Brake - Brake test according to manufacture instructions				
Operators Manual - Present, legible condition, correct to specific machine				
Operator Qualification - Documented				
Certifications - DOT Certified or Crane/Lift Inspections if required.				

***Equipment marked B/O will be taken out of service until proper repairs are made.**

Inspector Signature_____ Date_____

Drill Rig Inspection Checklist

Date:_____ Model:_____

Inspector(s)_____ Company:_____

Does the Drill Rig Pass Inspection? YES NO (Circle one)

OK/BO/NA	Pipe Rack Area
	End properly chocked
	Layers of pipe chocked
	Pipe rack level and even with catwalk
	Pipe tubs in good condition
	Derrick stand in good condition and provided with ladder
	Sufficient lighting
	Housekeeping
OK/BO/NA	**Floors, Stairs and Handrails**
	Floor holes covered
	Stair level and secured with bolts
	Stair step treads non-skid
	Stair free of obstruction
	Rails on stairs and rig floor, toe boards present
	Housekeeping
OK/BO/NA	**Electrical and Generator**
	All wires off the ground and properly secured or buried
	Receptacles and plugs in good condition
	all lights equipped with globe guards
	Generators grounded
	Electrical controls marked
	Control box covered in place
	Generator skid door props open properly
	Electrical tools ground
	Cords ground check and in good condition
	High voltage signs present and legible
	Housekeeping
	No splices in electrical wiring less than 12 gauge
OK/BO/NA	**Rig Floor and Engine Area**
	Guards in Place
	Slip dies sharp; keepers used
	Housekeeping
	Engine area free of grease and oil
OK/BO/NA	**Cathead, Drum and Hoist**
	Sufficient Lighting
	Hoist line in good condition and spooled with line guide

OK/BO/NA	Tongs
	Handle safety pin in place; not bolts or nuts
	Dies sharp and keepers installed
	Tong body and jaws in good condition
OK/BO/NA	**Personal Protective Equipment**
	Safety goggles and face shield provided
	Hard hats serviceable and being used
	Hearing protection available and being used
	Fall Protection
	Hard hats used by visitors
	Safety shoes being worn
OK/BO/NA	**Safety Equipment and Warning Signs**
	Emergency Stops Functional
	Fire extinguisher charged, tagged and at proper location, inspection current
	Warning signs on fuel tanks
	Vessels labeled including HAZCOM
	High voltage signs present
	No smoking signs present
	PPE signs present
	Authorized personnel signs present
	Hearing protection signs present
	All signs legible
OK/BO/NA	**Hand Tools**
	Tools stored correctly, clean and serviceable
	Driving face of hammers, chisels, etc free of broken faces and mushroomed heads
	Wooden handles sound and secure
	Wooden handles free of tape and paint
OK/BO/NA	**Miscellaneous**
	All ladders Inspected and stored safely
	U-Bolts of all clamps installed correctly
	LPG storage tanks located safe distance from rig and lines buried
	Unsafe acts observed, are they being discussed with supervision and crew?
	Did consultant request a safety meeting or safety training conducted?

Comments:

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Emergency Drill/Event Evaluation Form

*For actual incidents and drills

Date of Evaluation: _____ Time (Start): _____

Event time span (Start to Finish): _____

Location: _____

Type of Drill/Event (Fire, Tailings Dam Failure, Chemical Spill, etc.): _____

Emergency Response Organizations Involved: _____

Was this Drill/Event announced or unannounced?_____

Group Involved: _____

Number of Persons Involved (document individual names on next page roster): _____

Was the Drill/Event safe and efficient? (Did everyone get out in a reasonable amount of time)?

_____

_____

Brief Summary:

_____

_____

_____

_____

_____

_____

Recommendations for Improvement:

_____

_____

_____

_____

*Must have documentation to support follow-up of all action items

Roster:

Name	Payroll #
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

FREEPORT-McMoRan

LIGHT DUTY VEHICLE
Pre-Operation Inspection

THIS FORM IS FOR THE FOLLOWING VEHICLES ONLY:
1 ton and below, non-air brake equipment.

OPERATOR NAME (print)	
EMPLOYEE ID	
DATE	**SHIFT: DAY ☐ NIGHT ☐**
VEHICLE #	**MILEAGE**

Before commencing your inspection, ensure the vehicle is in a safe place:
Check for traffic, wildlife, uneven ground, and other unsafe conditions.

NOTE: If any items in BOLD CAPITAL LETTERS are found to be defective, the vehicle cannot be operated.

GENERAL	**OK**	**BO**	**N/A**
Housekeeping			
Secure Cargo			
INTERIOR	**OK**	**BO**	**N/A**
A/C / HEATER / DEFROSTER			
BRAKES (INCLUDING PARKING BRAKE)			
Grab Handles			
HORN			
PANELS, GAUGES AND KNOBS			
SEATBELTS			
STEERING			
EXTERIOR	**OK**	**BO**	**N/A**
Overall Condition (Dents, Cracks, Damage, Visible Leakage)			
DOORS			
Grab Irons and Steps			
GLASS			
BRAKE LIGHTS, HEAD LIGHTS, REVERSE LIGHTS, TAIL LIGHTS, TURN SIGNALS			
MIRRORS			
TIRE AND WHEEL COMPONENTS			
WINDSHIELD WIPERS			
AS NEEDED* / IF INSTALLED**	**OK**	**BO**	**N/A**
2 Way Radio*			
BACK UP ALARM*			
BUGGY WHIP*			
Fire Extinguisher**			
FLASHING LIGHTS / AMBER LIGHTS**			
Wheel Chocks*			

COMMENTS / OBSERVATIONS

APPENDIX F

Cyprus Amax Contractor Health, Safety and Environmental Manual

FREEPORT-McMoRan

CONTRACTOR HEALTH, SAFETY AND ENVIRONMENTAL MANUAL

July 2022

Table of Contents

Statement of Policy

The goal of Freeport-McMoRan (FCX), and thereby the goal of all Contractors and visitors to any FCX property, is to manage risks to prevent fatalities and other occupational health, safety and environmental incidents and to commit to a safe and healthy work environment. All Contractor employees are responsible to work safely and immediately resolve any unsafe conditions or observed at-risk behaviors.

All Contractors, suppliers, vendors, and visitors will comply with the provisions of this manual and the FCX Health Safety Policies which may be obtained from the "Suppliers" section at FCX.com. Where differences in detail or requirements exist between this manual and a site-specific requirement, the more stringent policy will prevail. Non-compliance with health, safety and environmental requirements may result in work stoppage or removal of Contractor or its employee(s) from FCX property. Any willful or repeated non-compliance could result in Contractor dismissal.

Regulatory compliance is the responsibility of each Contractor. This manual is not to be construed as superseding national, regional, federal, state and/or local regulations, nor is it a definitive or comprehensive listing or description of the applicable rules and regulations.

1.0 Roles and Responsibilities

1.1 Contractor

A Contractor is the party that executes the agreement supplement on behalf of FCX. This includes its employees and all its subcontractors and their employees, who perform services for FCX and its subsidiaries. Visitors, consultants, delivery personnel and others may be excluded (at the sole discretion of FCX) on a case-by-case basis based on risk and exposure.

1.2 Sub-Contractor

A person that has a direct contract with Contractor, to perform any of Contractor's obligations under the Contract Documents. The FCX Contractor Health, Safety and Environmental Manual, applies to the subcontractor and all their employees. For the purposes of this manual subcontractor is considered a "Contractor".

1.3 Project Manager / FCX Responsible Party

Project Manager or FCX Responsible Party is the FCX employee who has oversight for the services being performed and/or responsibility for managing the project on behalf of FCX. Responsibilities include the oversight of health, safety and environmental performance of the Contractor(s), the provisions of this manual and any changes or revisions, FCX policies and procedures and safety advisories to include Potential Fatal Risk Event(s) (PFE), and to communicate project-relevant health, safety, and environmental information in a timely manner. The Project Manager is responsible for ensuring all deliverables have been received and reviewed prior to project commencement and ongoing deliverables are submitted (e.g., manhours, incident reports, etc.).

1.4 Contract Controls Specialist and/or Contract Administrator

Contract Controls Specialist and/or Contract Administrator is the FCX Global Supply Chain employee who manages the contract with the Contractor on behalf of FCX. They manage the Contractor relationship as well as conformance with, and adherence to the contract documents.

1.5 FCX Health, Safety and Environmental Departments

The FCX Health and Safety Department and site Environmental Representatives periodically audit Contractor performance and adherence to the provisions of this manual, project specific Health, Safety and Environmental Plan (HSEP), and company policies and regulations. In collaboration with the Project Manager, Contract Controls Specialist

and Contractor, FCX Health and Safety and site Environmental Representatives may present and/or provide project-relevant health, safety, and environmental topics for discussion. FCX Health and Safety and site Environmental Representatives may also provide technical support to the FCX Project Manager as requested or needed.

1.6 Contractor Responsibilities for Health, Safety and Environment (HS&E)

Contractors are responsible for establishing, implementing, and maintaining their health, safety, and environmental programs to meet the safe production goals and objectives as stated by FCX. They are also responsible for monitoring the programs of their subcontractors to ensure compliance with FCX expectations.

Contractors have the obligation to:

- Abide by all national, regional, federal, state, local regulations and FCX policies and procedures.
- Protect the public from all hazards which result from Contractor activities.
- At a minimum, organize and present monthly project-relevant health, safety and environmental meetings to their employees and subcontractors.
- At a minimum, require management or supervisor level representative for each Contractor to attend monthly contractor led project health, safety, and environmental meetings.
- Provide all Contractor employees with necessary personal protective safety equipment.
- Ensure work areas are maintained, clean and orderly.
- Ensure all Contractor employees have received applicable regulatory training, project health, safety, and environmental orientation, applicable FCX health, safety and environmental policies training, task training, as applicable, site safety/hazard recognition and requirements for the project as identified in the Contractor's Health, Safety and Environmental Plan (HSEP). Note: Contractors who are working directly for FCX agents of the company (directly supervised) are required to receive training as required of all FCX site employees.
- Ensure employees understand and are trained in Risk Management or the risks of the tasks and controls to mitigate the risks prior to starting work.
- Keep all registers, records, and reports up-to-date and properly completed, maintained and readily available for review by FCXand/or any legal or regulatory agency.
- Stop the job when an unsafe act or condition is recognized and take prompt corrective action. (See section 1.6 Stop Work Authority).
- Ensure that no Contractor's manager, supervisor, owner, or other person in charge requires, condones, asks, or allows employees to work in or around unsafe acts or conditions. If so, it may result in immediate removal from the project.
- Report any uncorrected unsafe acts or conditions to the FCX Project Manager / FCX Representative, FCX Health and Safety, site Environmental Representative or the FCX Contracts Control Specialist/Contracts Administrator

1.6.1 Contractor Senior Management/Project Manager

- Establish and enforce rules and programs designed to promote health and safety and environmental protection.
- Hold individuals accountable for fulfilling their health, safety, and environmental responsibilities.
- Provide training for employees to perform tasks safely and protect the environment.
- Provide a safe and healthy work environment.
- Conduct regular health, safety, and environmental inspections, maintain records, and continually monitor for effectiveness.

1.6.2 Contractor Project Supervision

- Be accountable for on-the-job health, safety and environmental performance and ensure that all deficiencies are corrected.
- Monitor employee actions and behaviors.

- Review and investigate incidents, supervise correction of unsafe practices, and file incident reports.
- At a minimum, conduct monthly project health, safety and environmental meetings and provide employees with proper instruction on related requirements.
- Require employees and subcontractors comply with health, safety and environmental rules, regulations, and policies and the provisions of this manual and FCX Health, Safety and Environmental Policies.
- Instruct new employees and existing employees performing new tasks on safe working practices.
- Make sure personal protective equipment is available and used properly.
- Ensure Job Safety Analysis (JSA)/Job Hazard Analysis (JHA) or equivalent are property filled out and adhered to and are available for review by FCX upon request
- Secure prompt medical attention for any injured employees.
- Ensure regular and thorough communication with the Project Manager.

1.6.3 All Contractor Employees

No employee will be required or knowingly be allowed to work in an unsafe environment. Each employee is responsible for learning and abiding by those rules and regulations which are applicable to his or her work, and for reporting and correcting observed or anticipated hazards to his or her immediate supervisor. Contractor employees will:

- Report to work fit for duty, well-rested, free from effects of drugs or alcohol.
- Work safely to ensure personal safety as well as that of co-workers and others.
- All contract employees are responsible and accountable for working safely and productively, while remainingaware of the hazards of their jobs and following recognized safe job procedures.
- Follow all health, safety and environmental rules, regulations, and policies and keep work areas clean and free of debris and obstacles.
- Report to FCX Representative when contractor leadership is not adhering to FCX expectations and /or requirements.
- Request help when unsure about how to perform any task safely.
- Utilize established health and safety controls to reduce risks of the tasks performed.
- Utilize established environmental controls to minimize impacts to the environment.
- Stop work if work cannot proceed safely and notify their supervisor until the necessary steps have been taken to address and correct the hazards.
- Report any uncorrected unsafe acts or conditions to the appropriate supervisor.
- Correct unsafe acts or conditions within the scope of the immediate work.
- Use and maintain all health and safety devices as required.
- Not interfere or disable any safety device including remote control, automatic equipment, safety interlocksor warning systems or guards.
- Immediately report incidents (injury, illness, property damage, near miss, environmental events, etc.) to supervisor.
- Not tamper with the scene of a safety event.
- Not tamper with any emergency medical supplies or emergency vehicles.
- Not engage in horseplay.
- Not interfere with any radio communications.
- Not use cell phones or other electronic devices while operating mobile equipment or vehicles.

1.7 Stop Work Authority

FCX recognizes Stop Work Authority as the responsibility and obligation of each contractor and FCX employee to stop work when an unsafe act, behavior, condition or change in conditions is perceived that may lead to an injury, illness, or serious situation. Each Contractor is expected to establish Stop Work Authority that grants the contractor, their employees, and subcontractors the responsibility and authority to stop work when it is perceived that a situation

exists that could place an individual in harm's way and/or could adversely affect the safe operation or cause serious damage to a facility or equipment, or adversely affect the environment. Additionally, FCX considers it unacceptable and will not tolerate any retaliation against an individual who uses Stop Work Authority. Contractors have an obligation to evaluate and initiate corrective actions, as applicable to resolve the stop work issue(s).

1.8 General Responsibilities

It is the Contractor's responsibility to be familiar with the provisions and requirements of this Contractor Health, Safety and Environmental Manual, local, state and federal regulations, and the FCX Health, Safety and Environmental Policies (as further referenced in the Freeport-McMoRan Tools for Suppliers website). When and where a revision of the manual occurs, the Contractor will implement any changes which result from the revision within 48 hours of the time they are notified of that revision or obtain an approved variance. Implementation includes actions such as, but not limited to, training of personnel, acquisition of equipment, revisionof standard operating procedures, and any other actions which provide the means to achieve the requirements of a policy.

Within ten days after a signed contract, but prior to the start of work, the Contractor will submit to the FCX Project Manager / FCX Representative the following:

- Final list of all subcontractors working on the project with all FCX required health, safety, and environmental documentation
- Written respirator certifications of fit testing (Note: applicable for project work requiring respirators)
- Written Medical Surveillance Program, as applicable (e.g., HAZWOPER, asbestos, lead, cadmium, arsenic, silica, etc.)
- Written Drug and Alcohol Program
- Any project related contractor's standard operating procedures (e.g., utility locate, confined space entry, hazardous energy control, etc.)
- All other relevant written Occupational Health & Safety Programs (e.g., Hearing Conservation, PPE Program, Respiratory Protection, etc.)
- Health, safety, and environmental permits, as applicable
- List of all hazardous chemicals/products that will be used on project
- Material request and product approvals (MRAP) for chemical products being brought onto and are required for the project, as applicable
- Copies of completed risk assessments
- Accepted written Health, Safety and Environmental Plan (HSEP) for proposed work
- Training documentation for equipment/machinery/tasks that employees/subcontractors operate orperform, as applicable. This includes copies of specialized licenses, training certificates and current refresher documentation for all employees on project.
- Current copy of licenses to operate equipment and associated regulated inspections
- Scheduled and completed required training as described in Section 2.0

If these tasks cannot be completed within 10 days, a schedule will be provided to the FCX Project Manager for approval.

1.8.1 Contractor Health, Safety and Environmental Plan (HSEP)

Prior to beginning work, Contractor will prepare and submit to the Project Manager / FCX Representative and/or Health, Safety and Environmental Representative for review and acceptance a project specific HSEP that reflects the Contractor's intentions for full and complete compliance with this manual andassociated health, safety, and environmental policies. The HSEP will include those sections and associated items as described in the HSEP template (see Appendix A). The Contractor's HSEP will also address any FCX facility specific health safety and environmental provisions that are not identified in this manual. Contractor's project specific HSEP will be reviewed to ensure it meets all health, safety and environmental expectations and is specific to the job or task(s)

being completed. If a contractor performs work on multiple projects over an extended period and this work is at an individual site or location, one comprehensive HSEP may be used. It is important that the description and scope of work provides project specific detail, and project relevant information be incorporated within each section, as applicable. Additionally, the Contractor will complete the risk assessments for review and acceptance by the Project Manager / FCX Representative and/or Health, Safety and Environmental Representatives prior to completing the risk management section of the HSEP. The FCX Representative will communicate to the Contractor any specific details not addressed by the HSEP which must be included. Modifications to the HSEP will be finalized and accepted prior to commencement of work activity. Subsequent amendments or changes to the plan will be submitted for review and acceptance by FCX Project Manager and FCX Health, Safety and Environmental Representatives before being implemented.

The Contractor is responsible to review the HSEP with all employees and subcontractors. This review will be documented and submitted to the FCX Project Manager and FCX Health, Safety and Environmental Representatives.

1.8.2 Contractor Health, Safety and Environmental Representation

As described within Company's request for proposal/quote and included in the applicable Scope of Work, each Contractor will appoint a qualified health, safety and environmental professional prior to project initiation and such individual or individuals depending on project scope, duration and complexity will ensure compliance with all applicable health safety and environmental related regulatory requirements and Company Health, Safety and Environmental Requirements, unless local regulations dictate otherwise. The names and credentials of all Contractor health, safety and environmental professionals that will be assigned to the project may be requested by the FCX Project Manager/Representative and Health and Safety Department for review prior to initiating work.

2.0 Training Requirements

- Each Contractor is required to ensure health, safety and environmental training of its employees and subcontractor (s) is maintained and current.
- All training will be conducted by a competent/qualified person and be provided before tasks are performed.
- All training will be documented, and a process implemented allowing a quick verification of training received by any employee of the Contractor and its subcontractor(s).
- No individual will be allowed to work on any FCX property who has not received site-specific health and safety hazard training and FCX Contractor Health, Safety and Environmental Orientation.
- Training verification will be readily available within 24 hours of request.
- Emergency case-by-case exceptions to training requirements may be granted by the Project Manager/ FCX Representative and FCX H&S Representative. Training may include:
    - FCX Health, Safety and Environmental Contractor Orientation,
    - Project Health, Safety and Environmental Orientation (review of the HSEP). This may be combined with FCX Health, Safety and Environmental Contractor Orientation
    - Site-specific health safety and environmental hazard training. This training may be combined with the FCX Contractor Health, Safety and Environmental Orientation.
    - Training identified in the Contractor's HSEP
    - Risk Management
    - Regulatory training, as applicable
    - Specific FCX Health, Safety and Environmental Policies, as applicable
    - Task Training, as applicable
- FCX Contractor Health, Safety and Environmental Orientation should address, as applicable, the following:

- Site-specific hazards
- Incident reporting procedures
- Emergency evacuation procedures
- How to obtain first aid or summon foremergency help (e.g., eye wash and safety shower)
- Reporting of unsafe acts or conditions
- Stop Work
- Hazard communication standardrequirements
- Occupational Health
- Blasting signals and response procedures
- Personal protective equipment requirements
- Identification of workplace hazards, risks, andcontrols of those risks.
- FCX Communications (e.g., PFE, Safety Alerts, etc.)
- Drug and alcohol policy
- General safety rules and responsibilities/critical safety rules
- Actions considered serious in nature (e.g., policy/critical rule violations, etc.)
- Managing risk (e.g., project specific SOP's, fatal risks, JSA's, communication, etc.)
- Traffic procedures
- Environmental procedures and permits
- Working around heavy equipment
- FCX Health, Safety and Environmental Policies
- Roles, responsibility, and accountability (employees, supervisor, and management.)

3.0 Communication, Documentation and Reports

3.1 Health, Safety and Environmental Meetings and Communication

Monthly Contractor Health, Safety Environmental Meetings

Contractor is responsible to organize and hold at a minimum a documented monthly Contractor health, safety, and environmental meeting where Contractor's management and their employees will attend. FCX project management/Representative and FCX Health, Safety and Environmental Representative will be invited to discuss project-relevant health, safety and environmental issues and topics such as FCX company and/or site-specific health, safety and environmental communications, health, safety, and environmental incidents, etc. Additional documented meetings requiring contractor attendance include, but are not limited to the following:

Site Specific Contractor Meetings: A site specific contractor meeting may be required where a representative from the Contractor company will attend and is dependent on or at the request of the site.

Supervisor daily tailgate or line-out meeting: A documented daily tailgate or line-out meeting will be held by the Contractor supervisor with contractor employees prior to performing work for the day. This meeting will include discussions around the work planned, health, safety and environmental risks associated with the work and what controls will be in place to minimize the risk.

Health, Safety and Environmental Communications: Each Contractor will be responsible for sharing with their employees, pertinent information regarding health, safety, and environment as necessary with respect to health, safety, and environmental regulatory information, FCX health, safety and environmental information, communication of workplace incidents, etc.

3.2 Permits and Inspections

Work activity permits and forms (confined space, hot work, pre-operational inspections etc.) provided by the Contractor are subject to review by the FCX Health and Safety Department for adherence to policies.

The FCX Project Manager will identify any other certifications or permits that Contractor may need for equipment, portable units, environmental or scope of project.

3.3 Monthly Report

Contractor and Project Manager will mutually agree on monthly health and safety targets for the project or services provided (e.g., zero incidents, TRIR, # of stop work successes, etc.), as applicable. All Contractors will provide to the FCX Health and Safety Department and Project Manager /Representative (or their delegate) a monthly summary, in connection with the services and services of subcontractor (s) provided in the preceding month, to include:

- Number of lost time/restricted duty injuries with the number of days lost or restricted for all open injury cases.
- Number of medical treatment injuries
- Number of occupational illnesses
- Number of first aid injuries
- Number of near misses
- Number of hours worked by Contractor employees (Note: Hours and injuries reported will be specific to the location where services are being performed).
- TRIR (specific to the location where services are being performed)
- Status of project health and safety target(s), as applicable
- Fire incidents
- Vehicle equipment damages
- Property damages
- Releases to the environment and corrective actions taken.
- Any changes to equipment or contract personnel

These reports are to be project specific, not company-wide, and are **DUE NO LATER THAN THE 5TH DAY OF EACH MONTH** during the term of services being provided.

3.4 Documentation

Records of training, permits, health, safety, and environmental meetings, etc. will be maintained for the duration of the project/contract plus aminimum of three years, unless there is a regulatory requirement for them to be retained for a longer period. These records will be made available upon request.

4.0 Assessments, Inspections and Audits

Audits and/or inspections will be conducted to identify deficiencies and positive elements in health, safety, and environmental performance to build and maintain a positive safety culture. They will be documented, and corrective actions assigned to correct deficiencies, identify, and track trends and evaluate the effectiveness of training and health and safety procedures and to ensure regulatory compliance. It is recommended that Contractor employees be given opportunities to become involved with these audits and inspections. The type of audit and/or inspections required are listed below.

Workplace Examination

Each workplace will be examined by a competent person for conditions that may adversely affect the safety or health of Contractor employee(s). The environmental conditions should also be documented, such as evidence of spills, poor waste segregation, etc. The workplace will be examined at least once each shift before work begins or as Contractor employees begin work in that place.

Monthly Project Audit

Projects with a duration greater than one month, the FCX and Contractor Project Manager and H&S Representatives will jointly organize and perform a monthly documented health, safety, and environmental assessment. The site Environmental Representative should be invited to participate in this audit. Audit results will be documented, and corrective

actions will be identified and tracked to completion. FCX Project Manager's /Representative may request more frequent audit be conducted by the Contractor independently.

Equipment and Facilities Inspections

All Contractors will inspect, operate, and maintain equipment and facilities as directed. Each operator of stationary and mobile equipment will complete a documented pre-operation inspection of the equipment prior to operation. Any deficiencies identified from the inspection will be corrected in a timely manner; however, if any deficiencies represent an immediate health, safety and/or environmental hazard, the equipment will be taken out of service and tagged as bad order (BO) or out of service. Once the deficiency(ies) is corrected, the equipment can be reinspected and placed into service. Any documentation related to Contractor's equipment and facilities shall be made available for review upon request.

The FCX Project Manager will be notified when any additional equipment is added or changed after the project has commenced.

FCX reserves the right to inspect equipment prior to acceptance onto FCX property and anytime during use of the equipment on property. Equipment found to have deficiencies will be tagged out or removed from property until such deficiencies are corrected.

External Audits

FCX Health and Safety, site Environmental Representative and the FXC Project Manager or their delegates, will perform periodic, comprehensive health, safety, and environmental audits of the Contractor's HSEP and/or work areas. Any deficiencies will be documented. The Contractor will be presented with the findings of the audit. The Contractor will be required to respond in writing with the corrective actions taken or plan to address deficiencies. Follow-up audits will be conducted as necessary, to verify all deficiencies have been resolved.

5.0 Specific Health and Safety Requirements

All contractors are expected to adhere to the FCX Standard Safety Requirements Policy and the following specific health and safety requirements.

5.1 Hazardous Substance Management

- All hazardous substances, including chemicals require prior approval from the Health and Safety Department and Environmental Department before being brought to the project.
- The Contractor will provide a list of all hazardous substances proposed for use for the services being performed along with the most current corresponding safety data sheet (SDS), the anticipated quantity, and the use and proper storage location. This will be made available to FCX for approval purposes.
- The list and respective SDS will be updated on an ongoing basis. Substances previously not included in the initial submittal are subject to project approval and will undergo review before being brought onto the FCX property.
- Care will be taken to select and use materials which can successfully accomplish the required work with minimal health or environmental impact.
- All hazardous substances will be removed from the project within three days of completion of the work involving the substances, or within three days of completion of the contract, whichever occurs first.
- Contractors will maintain the most current SDS provided by manufacturers and distributors.
- Contractors will have an established Hazard Communication Program that meets all national, regional, and local requirements.

5.2 Respiratory Protection

When necessary, Contractors will provide their written respiratory protection policy to include:

- Selection and use of respirators that specifies which respirator to use under specific conditions.
- Procedures for medical evaluation of each employee required to use respiratory equipment (Note: Medical clearance is required prior to respirator use).
- Procedural systems to ensure proper respirator usage is always adhered to, including policy of clean- shaven faces to ensure proper seal of respirator to face piece.
- Initial and annual training for employees on the proper use and limitations of respirators to be used for routine or emergency work to include respirator selection, functions, and limitations of individual respirator types.
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators.
- Identification of, and communication on, workplace areas and job-specific tasks requiring respiratory protection to all employees.

5.3 Hearing Conservation

Employee hearing will be protected as required under regulation and per accepted hearing conservation measures. Contractor hearing conservation programs will include:

- A written hearing conservation plan.
- Engineering and administrative controls to reduce employee exposures to 85 dBA or less.
- Training on the effects of noise exposure and the proper use of earplugs and earmuffs.

5.4 Other

Highway Work

All work on, or adjacent to, existing public and jobsite roadways will be performed in conformance to project requirements and applicable regulatory requirements.

Protection of Employees and the Public

All necessary precautions will be taken to prevent injury to the public or damage to property of others. Precautions to be taken will include, but are not limited to, the following:

- Work will not be performed in any area occupied by FCX employees, any of its contractors, or the public unless specifically allowed by FCX.
- When it is necessary to maintain public use of work areas involving pedestrian ways and vehicular roadways, Contractors will protect the public with appropriate shields, signage, barricades, guardrails, adequate visibility, and entrance/exit.
- Appropriate warnings and instructional safety signs will be conspicuously posted. In addition, a signalman shall control the movement of motorized equipment in areas where the public might be endangered.
- A temporary fence will be provided around the perimeter of aboveground operations and excavations adjacent to public areas. A spotter may be used in lieu of a fence under special circumstances and when approved by FCX Project Manager / FCX Representative and FCX Health and Safety.
- Barricades will be provided, where required, between work areas and walkways unless fences, guardrails, or sidewalk sheds have been used. Barricades will be secured to prevent accidental displacement and will be maintained except where temporary removal is necessary to perform the work. During the period whena barricade is temporarily removed for the purpose of work, a spotter will be positioned at each opening inthe barricade.
- Temporary sidewalks will be provided when a permanent sidewalk is obstructed by a contractor's operation.
- When night work is performed, illumination will be provided from dusk to sunrise for all temporary walkwaysin both owner- controlled and project areas.

Weapons
FCX prohibits the use or possession of weapons on any FCX controlled property or event unless allowed by national, regional, or local laws. This does not preclude compliance with any state or local law permitting the possession of a firearm on private company property. Some states require that employers allow firearms in company parking lots provided the firearm is in a vehicle, out of site and the vehicle is locked. FCX controlled premises include, but are not limited to, office and parking facilities, access areas and walkways, company-controlled (owned, leased) vehicles and equipment, desks and lockers, and other storage facilities.

Weapons includes firearms, ammunition, explosives of any type, any knife having a blade more than three inches in length (or any snap-blade, spring-blade, or "butterfly" knife regardless of the length of the blade) and all other substances and devices that by design or in the manner they are used may be considered dangerous or have potential to cause harm to people or property. Items purchased by the Contractor company that are not intended as weapons have the attributes above or could function as a weapon are excluded from this policy when such items are used for their intended purpose for company activities.

6.0 Environmental Requirements

Contractors will comply with all applicable statutes, rules, regulations, and standards, including FCX Corporate Environmental Policy, which may be obtained under the Sustainability section at FCX.com. The FCX Project Manager/Representative and site Environmental Department, as applicable will decide whether permits or authorizations will be obtained by contractor or site. When obtained by the Contractor, they will be submitted to the FCX Project Manager/Representative prior to commencing work. Contractor is expected to adhere to all permit requirements. Additionally, the Contractor will:

- Will take immediate action to stop any spills or releases and will immediately notify the Project Manager and the Environmental Department of any spills, releases, or other environmental incidents. Contractor will clean up any spills as directed by the FCX Project Manager / FCX Environmental Department and will take all reasonable steps to prevent further release or spills.
- Unless directed by the FCX Project Manager / FCX Environmental Department all waste will be managed onsite at the direction of the Environmental Waste Department. Contractors will not take waste generated on FCX property offsite unless approved by the FCX Project Manager / FCX Environmental Department. Waste removal from a remediation site will be handled in accordance with the approved mitigation or remediation plan.
- Properly label, accumulate and dispose of all waste materials generated from activities (including used spill kit materials) in accordance with project guidance. The contractor will coordinate all disposal activities with the Project Manager.
- Provide and maintain adequate secondary containment for all hazardous chemicals, petroleum related products and process solutions that could damage the environment.
- Provide and maintain appropriate spill kits in work areas where petroleum products or hazardous materials are used.
- Prevent discharges to drains and/or sewers and not add, disturb, or modify stormwater controls or outfalls without prior written approval.
- Do not approach, handle, harm, or harass wildlife in any manner. Feeding animals is strictly prohibited. Contractor will notify the FCX Project Manager / Environmental Department regarding any wildlife matters.
- Contractors will not disturb reclaimed areas, wetland or native lands without the necessary permits and prior review and approval by the FCX Project Manager / Environmental Department. In addition, contractor will not disturb or take any cultural resource.
- Prohibit eating, drinking, and smoking where chemicals, hazardous materials or waste materials are present.

- Implement controls to minimize the generation of dust from work activities.
- Notify FCX Project Manager / Environmental Department of any generator or engine brought on sites requiring a permit. This does not include vehicle engines.
- Notify the Project Manager/Environmental Department prior to performing renovations on or demolition of any building to determine the presence of asbestos containing material or other hazardous materials and to ensure required sampling can be completed in advance.

7.0 Emergency Action and Incident Reporting

Emergency telephone numbers/radio channels will be posted in areas accessible to Contractor employees. In the event of a serious incident or injury, immediately activate the project emergency response/notification system, maintain scene safety and trained Contractor personnel should render first aid to any incident victims. FCX will address any media inquiries or announcements and make other decisions critical to the overall site and project.

If an incident requires immediate notification to government agencies, the area will be secured, and nothing disturbed or removed after evacuation of the injured employee until approval from all government agencies and FCX representatives is received.

7.1 Incident Reporting

- Incidents of a serious nature may require "immediate" notification to government agencies. Contractors are responsible for this notification in the time limits set in regulation. Once time sensitive reports are made, the FCX Health and Safety Representative will also be notified.
- All incidents will be reported to the FCX Health and Safety Department immediately with the initial written report to be submitted by shift end. Initial reports will include, at minimum:
    - Location of incident
    - Name of persons involved
    - Equipment involved
    - Time/date of incident
    - Nature of incident: occupational injury, occupational illness, near miss, property damage
    - Brief description of incident
    - Where injured (body part)
    - Name of person contacted for report
- Written final report is due to the Health and Safety Department within 48 hours of the incident, unless otherwise extended based on severity of incident.
- Each incident will be reviewed immediately to determine if it had the potential to result in a fatality. In such instances, the event will be investigated with the same rigor as if a fatality had occurred.
- Contractors may be required to conduct or participate in any investigations and/or root cause analysis (RCA).
- Action plans may be developed and implemented to prevent reoccurrence.

7.2 Emergency Response

All Contractors have responsibility for developing and maintaining a current emergency response/evacuation plan for their employees on the project. An emergency or disaster is an event or condition which has the potential of causing bodily injury or harm to employees and/or significant damage to the property and/or infrastructure.

Contractors will develop a project specific emergency response plan in coordination with site rescue teams or site management, when a rescue team is not present at the site, as applicable. Emergency response plans and procedures will include evacuation routes, rally point locations, emergency responders, communication plans, emergency alarms/signals and employee training and will be posted in all Contractor controlled/inhabited locations.

8.0 Drug and Alcohol Testing/Programs

FCX maintains a strong commitment to our employees, contractors, and stakeholders to provide a safe workplace and to establish programs promoting high standards of safety and health. Consistent with the spirit and objective of this commitment, FCX expects Contractor employees to report to work in proper condition to perform duties and to remain fit for duty for the duration of the shift. The objective of this policy is to prevent the use of drugs and alcohol from threatening the safety and efficiency of our employees, contractors, and operation. Use and abuse of these substances pose a serious threat to the health and safety of employees, contractors, and visitors. This includes taking or planning to take a prescribed controlled substance and working in a position where a safety threat may exist.

Contractors will have a written drug and alcohol program consistent with FCX policy and national, regional, and local regulations and will be submitted to FCX prior to beginning work upon request. Contractors without drug and alcohol programs will notify the FCX Project Managerin writing of their lack of a drug and alcohol program. If Contractor does not have a written D&A Program, they will establish one to meet Company requirements.

8.1 Testing Requirements

All employees or agents of Contractors performing services for FCX, will be required to participate in a drug and alcohol surveillance program,where a certified laboratory will be used. Testing requirements and screening cut-off limits for drug and alcohol will include those identified in Table 1. Drug and alcohol testing will occur at the time of employment under the provisions of the Contractor drug and alcohol program. In those instances where an employee leaves the employment of the Contractor, and then is rehired the employee will be tested again as part of the rehire process.

Table 1: Drug and alcohol screening requirements and cut-off limits

Alcohol	**0.02 cut-off limit**	
Drug Class	**EIA Screening Cut off**	**GC-MS Confirmation Cut-off**
Amphetamines*	500 ng/mL	250 ng/mL
Barbiturates	300 ng/mL	200 ng/mL
Benzodiazepines	200 ng/mL	100 ng/mL
Cannabinoids	50 ng/mL	15 ng/mL
Cocaine	150 ng/mL	100 ng/mL
Methadone	300 ng/mL	300 ng/mL
Opiates	300 ng/mL	300 ng/mL
Oxycodone	300 ng/mL	300 ng/mL
Phencyclidine	25 ng/mL	25 ng/mL
6-Acetylmorphine	10 ng/mL	10 ng/mL
MDMA	500 ng/mL	250 ng/mL
Buprenorphine	10 ng/mL	10 ng/mL
Tramadol	200 ng/mL	200 ng/mL
Fentanyl	2000 pg/mL	500 pg/mL

*includes automatic reflex d & I isomer testing for methamphetamine positive results

The Contractor will maintain an ongoing drug and alcohol program that includes, but not limited to, pre-employment, 20% random and for cause testing. The screening test will require each employee to produce his or her sample (biological sample being one or more of the following: urine, blood, hair, breath as applicable and relevant). FCX will not bear the cost and expenses associated with drug screening.

Employees producing positive test results will NOT be eligible to work on any FCX property/project for a period of three years from the date of testing.

Contractors who have programs for rehabilitation or “multiple strikes” will notify FCX immediately upon learning of the positive result(s) and remove that employee from the property/project and ensure they are not assigned to another FCX location/project for a three-year period.

8.2 Enforcement

Contractors will not tolerate the selling, manufacturing, distributing, possessing, using, or purchasing of drugs, drug paraphernalia, or alcoholic beverages or having prohibited levels of drugs or alcohol in an employee’s system while on FCX premises. FCX premises as defined by the policy, means all areas in which FCX operates including but not limited to: FCX property, parking lots, FCX owned or leased equipment, lockers, desks, workspaces, and storage facilities. Individuals found in violation of this policy will immediately be escorted off FCX property.

Accordingly individuals who exhibit irrational or unusual behavior; negligence or carelessness; disregard for the safety of self or another; a reasonable belief that they may be using drugs or abusing alcohol; reporting to or remaining at work in a seeming unfit working condition; are involved in a serious accident that results in serious property damage, a disruption of an operating process or injury to self or another; or a near-miss situation where the potential for any of the above results was present may also be removed from FCX property until their employer can certify to FCX that the employee had a negative result to a timely drug and alcohol test.

Contractor employees who test positive, tamper with, or alter a drug and/or alcohol sample, or who refuse to submit to testing in a timely period will not be allowed to perform work on any FCX property for a period of three years.

If requested, the Contractor may be required to provided information on their drug and alcohol testing processes and program which details:

- The number of persons tested each year, aggregate for the quarter being reported
- The number of non-negative results determined each year, aggregate for the quarter being reported
- The percentage of persons selected to be randomly tested along with the frequency of random testing
- The name of the Medical Review Officer (MRO)
- A basic program description which describes the processes in place and who manages the program

NOTE: The Contractor will not submit any confidential information of the individuals who have been or are subjectto testing.

9.0 Background Check and Site Access

Per the company master agreement/contract, the Contractor may be responsible for performing a background check at the local, state, and federal/country level for all employees, prior to performing Services on any Company Property/Project. Contractor will submit a list of employees needing to access the Site prior to commencing the work. That list will be reviewed by Company for each employee's eligibility to access the Site. This review should happen irrespective of the Site utilizing badging access/hardware/software. Company will inform the contractor of any employees that are not eligible to access Company Sites. Refer to the master agreement / contract for specific requirements. This information should be made available to the Project Manager upon request.

Appendix A: Health, Safety and Environmental Template for Contractors

A project-specific Health Safety and Environmental Plan (HSEP) will describe the project and proposed work; all related hazards/risks and controls; what to do if things go wrong, and the expectations of all involved. It is a written plan forconducting the work in a safe, healthful and environmentally friendly manner to protect workers the public and environment. It is meant to be read and understood by the workers and followed. Therefore, it will be project-specific, practical, and concise. More information does not necessarily mean a better HSEP. The level of detail should commensurate with the complexity of the work.

Note: If a contractor performs work on multiple projects over an extended period of time and this work is at an individual site or location, one comprehensive HSEP may be used. It is important that the description and scope of work provides project specific detail, and project relevant information be incorporated within each section, as applicable.

IMPORTANT: A HSEP should NOT include copies of Freeport-McMoRan (FCX) Health, Safety and Environmental Policies, the FCX Contractor Health, Safety and Environmental Manual or the contractor's written Health and Safety Program or Program elements (e.g., Drug and Alcohol Program, Medical Surveillance Program, Hazard Communication Program, Respiratory Protection Program, Hearing Conservation Program, PPE Program, etc.). Instead, all Policies/Programs/Program elements that are relevant to the work should be referenced, where necessary, but NOT included in the HSEP. Again,the goal is to be project-specific, practical, and concise.

Below is an outline template, which can be used as a general guide for creating a HSEP. At a minimum, a HSEP will address any pertinent topics listed in the outline.

1. Applicability

Describe who the HSEP applies to and the location where it should be kept on-site.

2. Project Location/Description

Include the project name, project address, date of work, date HSEP prepared, site map, history (including background on why the work is being done) and site characterization including description of any constituents of potential concern and know concentration ranges.

3. Scope of Work

Describe the project tasks.

4. Organization and Coordination

Identify key personnel (names, titles, contact information including phone and email), general functions and responsibilities, lines of authority.

5. Expectations

Define the standards of conduct including the use of the "buddy system", stop work authority and compliance with Regulations, Drug and Alcohol Policy, and all other FCX Policies, Programs and the Contractor Health and Safety Manual, etc. (include a statement that all contractor / subcontractor employees will comply with all federal, state, local and country health and safety regulations, FCX Health, Safety and Environmental Policies and the Contractor Health, Safety and Environmental Manual.)

6. Management of Change

Define when the HSEP requires revision and who approves. HSEP will include a requirement that it be updated, as necessary, to reflect any changes in the work, site characterization or site conditions.

7. Communications

Define what is communicated, with whom, when and how, including job site communication methods (e.g., radios,

phones, horns, etc.), safe production communication (e.g., kick off meeting), daily tailgates (e.g., line-out meetings) or pre-job meetings (which are required before initiating any site activity), monthly health, safety and environmental meetings and communicationwith contractors and sub-contractors.

8. Risk Management

The risk assessments previously reviewed and accepted by the company will be used to complete this section. Describe the hazards and risks associated with each operation or process conducted and how they will be managed. Include ALL relevant health and safety hazards and environmental and property loss risks (e.g., confined spaces, working at heights, hazardous energy, silica, dust, constituents of potential concern, chemical and petroleum product hazards, biological hazards, radiological hazards, potential environmental impacts to surface water, groundwater, vegetation and wildlife, air emissions, waste that will be generated, etc.). Describe the controls used to mitigate any unacceptable risks using the hierarchyof controls (e.g., guarding, water sprays, utility locate, lift plans, confined space permits, secondary containment, surface water protection and runoff controls, spill response kits, inspections, etc.).

9. Training

Describe the training requirements and process for the various job tasks (initial and refresher). For example, do equipment operators have hands on training and assessment? HSEP will state that employees working on the project will be trained to the level required by the work, their job function, and responsibilities, and those that are not, cannot participate in or supervise field activities. Training will include environmental review, spill response and regular Emergency Plan rehearsal. Specify the location of training documents and certificates.

10. Personal Protective Equipment (PPE)

Describe the PPE to be worn by personnel during various project operations. HSEP will reference the contractor's PPE Program that addresses selection, use limitations (including temperature extremes), maintenance, storage, decontamination, disposal, fitting, donning, and doffing and inspection.

11. Medical Surveillance

Describe any project medical surveillance requirements. If medical surveillance is required (e.g., for work under regulatory program, respirator use, etc.), the HSEP will reference the contractor's written Medial Surveillance Program.

12. Personal and Environmental Monitoring

Describe the program for periodic air monitoring, personnel monitoring, and environmental sampling, if needed per project scope, including the techniques and instruments to be used, the frequency and types of monitoring, action levels, methods of maintenance and calibration of monitoring equipment and documentation.

13. Project Access and Control

Identify the exclusion, decontamination, and support zones, if applicable, and describe project security measures to keep unauthorized persons from the project /work.

14. Sanitation

Describe toilet and washing facilities, project personal hygiene practices and workers access to potable water (in case of remote access work, this may require "Wilderness techniques"). Management processes for resulting septic/sewage that is generated is described and approved.

15. Decontamination Procedures

Describe any possible types of contamination and decontamination procedures for people and equipment, if needed. If decontamination procedures are necessary, the HSEP will include requirements that all employees leaving a contaminated area will be appropriately decontaminated; all contaminated clothing and equipment leaving a contaminated area will be appropriately disposed of or decontaminated; decontamination will be performed in

geographical areas that will minimize the exposure of uncontaminated employees and equipment to contaminated employees and equipment; all equipment and solvents used for decontamination will be decontaminated or disposed of properly, and that protective clothing and equipment will be decontaminated, cleaned, laundered, maintained or replaced as need to maintain their effectiveness.

16. Standard Operating Procedures (SOPs)

Reference all applicable FCX SOPs and any applicable contractor SOPs that have previously been submitted for review (e.g., LOTOTO, utility locate, confined space entry, etc.). Include any contractor SOPs that havenot been previously submitted for review. Include any SOPs for those activities that can be standardized and where a checklist can be used.

17. Permits/Audits/Inspections

Describe any required inspections (e.g., equipment inspections, workplace examination, etc.), permits (e.g., confined space, hot work, utility locate, etc.) and audits (compliance, fatality prevention, etc.) and the frequency of audits (e.g., daily, and monthly) and who is involved. The HSEP will include a requirement for planned inspections by a project health and safety supervisor or, in the absence of that individual, another individual who is knowledgeable in occupational health and safety, to determine the effectiveness of the HSEP. HSEP will include a requirement that any deficiencies in the effectiveness of the HSEP are corrected.

18. Spill Containment Program

Describe how refueling of equipment will occur. Describe secondary containment that will be provided. Where major spills may occur, the HSEP will reference the contractor's written Spill Containment Program to contain and isolate the entire volume of any potential hazardous material or petroleum product spill. This includes information on spill control and cleanup materials that will be made available.

19. Waste Management

Identify all potential wastes that may be generated. All waste is to be managed in accordance with the relevant legal requirements, FCX policies and Standard Operating Procedures.

20. Incident Notification, Reporting and Investigation

Describe the required methods and procedures for notification, reporting and investigation of incidents including occupational injury/illness, property damage, near miss and environmental events such as releases, air emissions and wildlife.

21. Emergency Plan

Describe the contingency plan for safe and effective response to handle anticipated emergencies including environmental events. Include pre- emergency planning (including locations and directions, with map, to the nearest medical services), personnel roles (including contact info), lines of authority and communication, project security and control, evacuation routes and procedures, rally point(s), emergency decontamination, which are not covered in the decontamination section of the HSEP (if necessary), emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up and emergency PPE and equipment. Plan will also include project topography, layout, and prevailing weather conditions (if necessary); procedures for reporting incidents to local, state, and federal governmental agencies; training employees on emergency response procedures; provisions for regular Plan rehearsals, and provisions for periodic Plan review and revision, if necessary. Plan will also include an employee alarm or communication system to notify employees of an emergency, to stop work activities, as necessary and begin emergency procedures. Emergency response procedures will be posted in all Contractor controlled/inhabited locations.

22. Acknowledgement

Documentation of acknowledgement with signature(s).

APPENDIX G

FCX RM SOP-01-20 Working Near Overhead Power Lines

SOP Name: Working Near Overhead Power Lines
SOP No.: 01-20
Area: Resource Management
Issue Date: 3/6/13
Revision Date: 5/27/16
Reviewed Date: 5/27/16
Issued By: Resource Management Health and Safety

Purpose/Scope: To describe the safe procedures for working near overhead power lines.

Critical Hazards:

Critical Hazards	Possible Outcomes	Incident Potential	Critical Controls	Applicable GSR
Electricity	Contact with overhead power lines	Serious Injury or Death	Clearence Distances, LOTOTO, Survey, Workplace Examination	FCX-04 LOTOTO

Definitions:

Equipment Capability – The reach of a given piece of equipment in its fully extended form.

Communication Lines – Any overhead line not involved in the transmission of power

Competent Person – Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Guy Wire – Cable used to support power poles, generally anchored away from base post.

Insulated – Conductor that has been covered by material used to separate from conducting bodies by means of nonconductors so as to prevent transfer of electricity.

JHA – Job Hazard Analysis, process used to identify job hazards and the controls set in place to eliminate or reduce those hazards to as low as reasonably achievable.

Overhead Power Lines - An overhead power line is a structure used in electric power transmission and distribution to transmit electrical energy along large distances. It consists of one or more conductors suspended by towers or utility poles.

Service Drop - An overhead electrical line running from a utility pole to a customer's building or other premises

Supervision – An appointed agent of the company or their authorized designee that has authority over a given project.

Qualified Person – One who has skills and knowledge related to construction and operation of the electrical equipment and its installations and has received safety training to recognize and avoid the hazards involved. The person must understand the electrical hazards associated with the work task being contemplated. Refer to 29 CFR 1910.399 and NFPA Art 100 – Definitions.

Uninsulated – Exposed conductors of electricity that are not insulated.

Procedures:

1. Power Line Identification

   a) A workplace examination will be conducted. If overhead lines are in the proximity to the workplace, a Job Hazard Analysis (JHA) will be conducted.

   b) As part of the JHA, a competent or qualified person will determine the line type. If the line is identified as a power line or service drop, the voltage will be determined and whether the line is insulated or uninsulated. If the line is insulated, the condition of the insulation will also be determined. Based upon the line type, voltage and insulation status, an adequate clearance distance will be determined by the competent or qualified person, and provided to Supervision.

   c) Supervision will determine whether adequate clearance distance is available for all aspects of the assigned task.

   d) Clearance distances may be reduced if power lines are de-energized and visibly grounded, or mechanically guarded, upon consent of the utility owner.

2. Equipment Travel Clearance Distances for Uninsulated Overhead Power Lines

   a) The clearance distances, both vertical and horizontal, for equipment traveling in the proximity of uninsulated, overhead power lines on MSHA Regulated Properties will be in accordance with Table A (below). For additional information refer to 30 CFR 56.12071 and 30 CFR 77.807-2

   b) For work sites regulated by OSHA, vehicles and equipment in transit may adhere to 29 CFR 1910.333(c)(3)(iii)(A)(1) which states: "If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 feet (122cm). If the voltage is higher than 50kV, the clearance shall be increased 4 inches (10cm) for every 10 kV over that voltage."

   c) If adequate distance cannot be achieved, other protective measures will be taken (i.e. de-energizing the line, mechanical protective devices, etc.)

   d) Travel clearance distances do not apply to workers walking beneath power lines without hand tools.

   e) Supervision will determine if there is adequate clearance distance for the equipment needed to perform the work. Based upon this determination, Supervision will identify and communicate appropriate travel routes to equipment operators.

Table A – MSHA Equipment Travel Clearance Distances for Uninsulated Power Lines

Uninsulated Power Line Voltage (in 1,000 volts)	Clearance Distance Required (in feet)
0 to 50	10
51 to 68	11
69 to 114	12
115 to 229	15
230 to 344	20
345 to 499	25
500 or more	35

(Table A retrieved from MSHA Website, 30 CFR 77.807-2, with additional distances for voltages between 0 and 68kV provided by the Electrical Safety Steering Team (ESST))

3. Equipment Working Near Insulated/Uninsulated Overhead Power Lines

   a) Equipment working near insulated/un-insulated overhead power lines on MSHA Regulated Sites will maintain both horizontal and vertical clearance distances as indicated in Table A above. This distance will take into account the capability of the equipment being operated to contact the power line. If adequate distance cannot be achieved, other protective measures will be taken (i.e. de-energizing the line, mechanical protective devices, etc.). Refer to MSHA Regulations 30 CFR 56.12071 and 30 CFR 77.807-2

   b) Equipment working near insulated/un-insulated overhead power lines on OSHA Regulated Sites will maintain both horizontal and vertical clearance distances as indicated in Table B Below . This distance will take into account the capability of the equipment being operated to contact the power line. If adequate distance cannot be achieved, other protective measures will be taken (i.e. de-energizing the line, mechanical protective devices, etc.). Refer to OSHA Regulations 29 CFR 1910.333 and 29 CFR 1926.1408

   c) Guy wires will be identified to avoid equipment contact and potential damage.

4. Equipment Working Near Insulated Service Drops

   a) Equipment working near insulated service drops of less than 300 volts will maintain three feet of clearance to avoid contact. The three-foot clearance requirement will be maintained utilizing best management practices (spotters, etc.), and does not consider the capability of the equipment being utilized.

   b) If a service drop is determined to exceed 300 volts or uninsulated at any voltage, the equipment clearance requirements provided in Section 3 apply.

5. Personnel Working on the Ground Near Insulated Service Drops

   a) Qualified Personnel working near insulated service drops of less than 300 volts will maintain three feet of clearance to avoid contact. The three-foot clearance requirement will be maintained utilizing best management practices (spotters, etc.), and does not consider the height of the worker or the capability of the hand tools being utilized by the worker. Refer to 29 CFR 1910.333, Table S-5 and NFPA 130.4c

   b) If a service drop is determined to exceed 300 volts or uninsulated at any voltage, the clearance requirements provided in Section 3 apply, and the required clearance distance will take into account the height of the worker and the capability of the hand tools being utilized by the worker.

6. Other Considerations

a) Appropriate care will be given to avoid contact and damage to overhead communication lines by both equipment and ground workers.

b) If work proceeds between workers shifts, the JHA will be reviewed by Supervision with site workers.

c) Reference appropriate MSHA and OSHA Regulations for specific Crane and Derrick requirements for working near overhead power lines.

d) Clearance distances may be reduced if power lines are de-energized and visibly grounded, or mechanically guarded, upon consent of the utility owner.

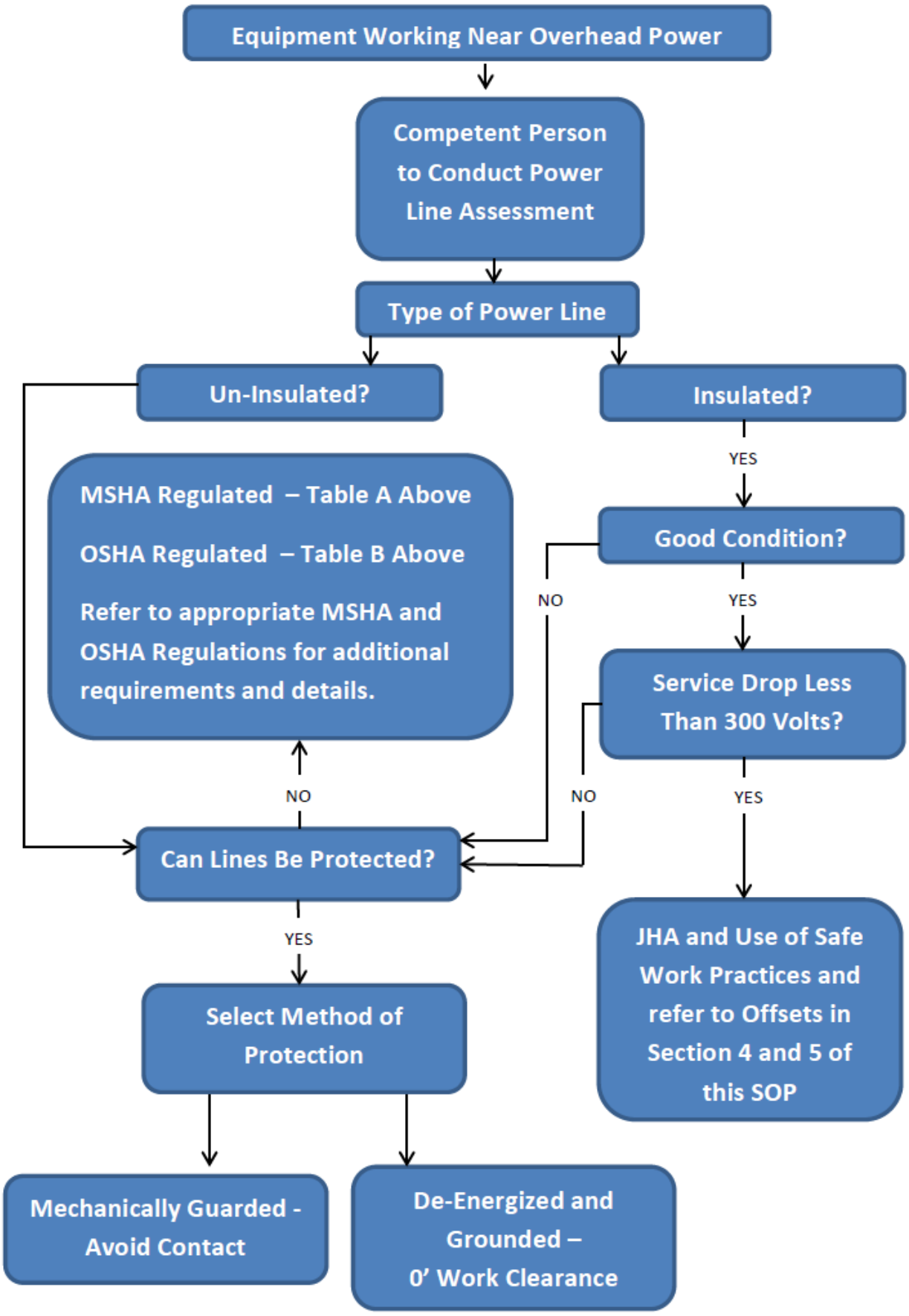
e) If the site cannot be made 100% safe, other steps will be needed such as contacting the utility owner or conducting an MOC.

TABLE B—MINIMUM CLEARANCE DISTANCES

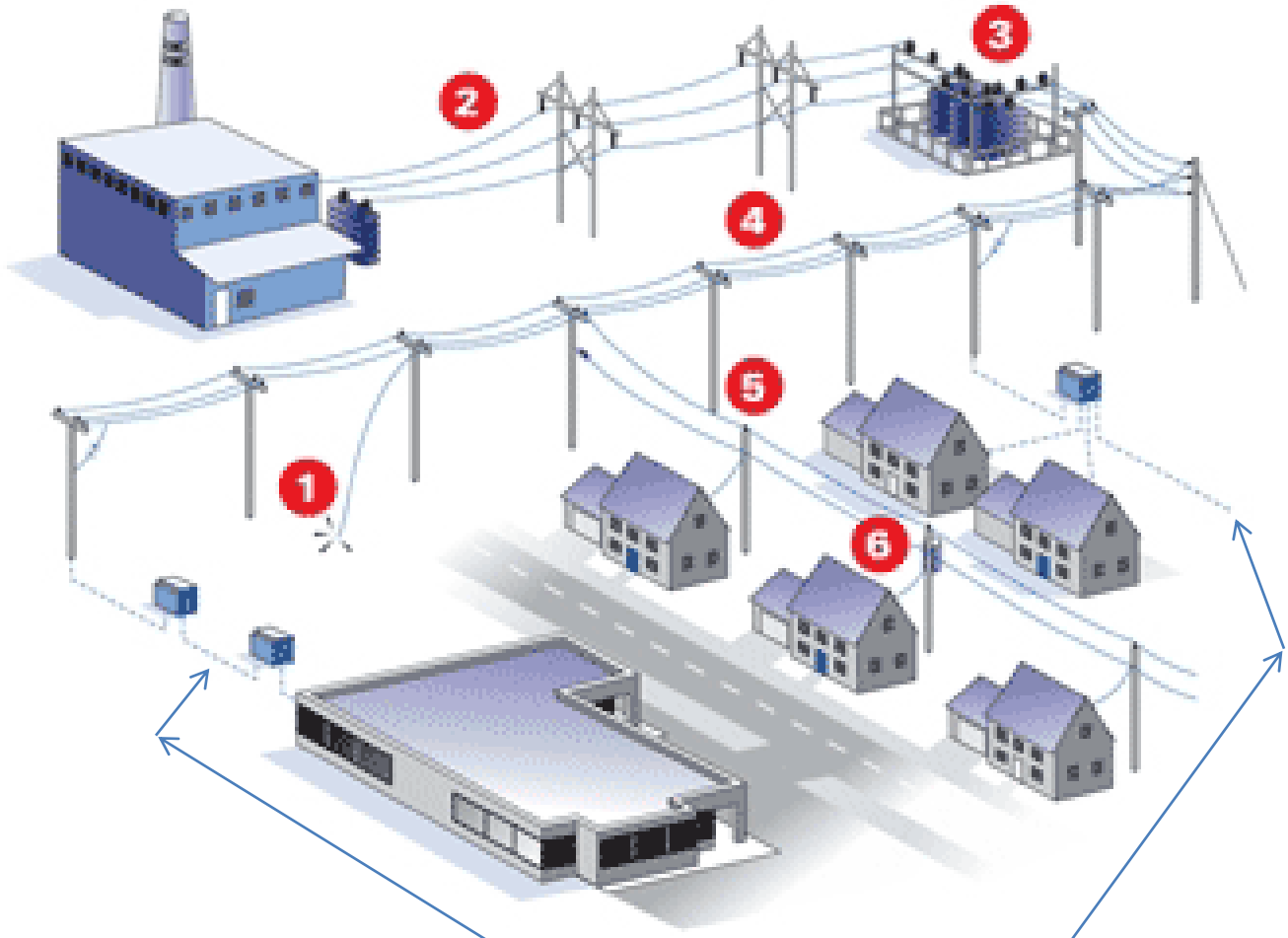
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

(Table B retrieved from OSHA Website – 29 CFR 1926.1408)


Equipment Working Near Overhead Power
Competent Person to Conduct Power Line Assessment
Type of Power Line
Un-Insulated?
Insulated?
YES
Good Condition?
NO
YES
Service Drop Less Than 300 Volts?
NO
YES
MSHA Regulated – Table A Above
OSHA Regulated – Table B Above
Refer to appropriate MSHA and OSHA Regulations for additional requirements and details.
NO
Can Lines Be Protected?
YES
JHA and Use of Safe Work Practices and refer to Offsets in Section 4 and 5 of this SOP
Select Method of Protection
Mechanically Guarded - Avoid Contact
De-Energized and Grounded – 0' Work Clearance

Typical Power Distribution System



1. Broken Power Line
2. High Power Transmission Lines (Typically 138Kv to 765Kv)
3. Substation
4. Distribution Line (Typically 26Kv to 69Kv)
5. Distribution Line (Typically 4Kv to 13Kv)
6. Overhead Service Drop to Homes (Typically 120/240V)

Un-numbered Underground Services (Can be 120/240V to 69Kv+)

****For informational purposes only – All lines will be identified by a Competent Person or Qualified Person****

References:

MSHA: 30 CFR 56 Subpart H – Loading, Hauling and Dumping, Subpart K – Electricity
OSHA: 29 CFR 1910 Subpart S - Electrical, 1926 Subpart O - Equipment, Subpart L - Scaffolds, Subpart CC - Cranes and Derricks in Construction, Subpart DD – Cranes and Derricks Used in Demolition and Underground Construction
FCX: Resource Management General Code of Safe Practices, Electrical Safety Steering Team (ESST) Resources
HSMS: 4.4.1 Health and Safety Roles and Responsibilities, 4.4.1.A Operational Health and Safety Role, Responsibilities, Authority and Communication, 4.4.6(5) Operational Controls

Additional References:

Arizona Revised Statutes – 40-360.41 thru 45
NFPA 70 National Electrical Safety Code
NFPA 70E Handbook for Electrical Safety in the Work Place

APPENDIX H

FCX RM SOP-01-13 Resource Management Utility Locate

SOP Name: Freeport Townsite Soil Remediation Programs Utility Locate
SOP Number: SOP-01-13
Area: Resource Management
Issued By: Resource Management Health and Safety

PURPOSE/SCOPE:

The purpose of this Standard Operating Procedure (SOP) is to provide direction on the utility locate activities to be utilized during Freeport's townsite soil investigation and remediation activities, which include soil investigation, remediation, and restoration on residential, commercial, and publicly-owned properties.

CRITICAL HAZARDS:

Symbol	Fatal Risks	Possible Outcomes	Incident Potential	Critical Controls	Applicable H&S Policy/Program
	Uncontrolled Release of Energy	Broken Gas, Electric, Water, Sewer or Cable Line	Electrocution, Fire, Explosion, Minor Injury or Death	Utility Locate, Potholing	FCX-13 Blue Stake Policy
	Exposure to Electrical Hazards	Electrical Shock/Arc Flash	Electrocution, Fire, Burns, Explosion, Minor Injury or Death	Control of Hazardous Energy, LOTOTO, Utility Locate	FCX -HS04 Control of Hazardous Energy Policy

DEFINITIONS:

Contractor - Person or company designated in a Service Order to perform the Work.

Subcontractor - Person or company that has a direct contract with Contractor to perform any of Contractor's obligations under the Contract Documents, but excludes vendors and suppliers of equipment. Subcontractor does not refer to any separate contractor employed or engaged by Company.

Ground penetration - is defined as greater than one inch and includes excavation, trenching, surface scraping, and digging activities. Note: It is assumed that the use of mechanized equipment to scrape the surface penetrates the ground greater than one inch.

Public Utility/Facility – Set of services provided by organizations consumed or used by the public. These include but are not limited to water, wastewater, electricity, natural gas, fuel oil, storm drains, traffic lights, streetlights, telecommunications. .

Public Utility/Facility Owner – An organization that provides the public with necessities, such as water, sewer, electricity, natural gas, etc...

Potholing - Potholing is the practice of digging a test hole with non-mechanized equipment to expose underground utilities, or otherwise determining the horizontal and vertical location of the utility/facility.

Public Utility/Facility Locate (Blue Staking/One-Call) – Process where a public utility owner (organization) or a private utility locating company uses to locate and mark the ground surface via paint, whiskers, flags, and/or stakes to indicate where an underground utility or facility is located and is based on a request made through the applicable state One-Call Utility Notification Center.

Overhead Utilities - Utilities that are transmitted/transferred in lines above surface typically on utility poles. Please see The Resource Management "SOP 01-20 Working Near Overhead Power Lines" for additional information.

Low Energy Underground Feature (LEUF) – underground system(s) installed by the residential property owner to convey and disperse low pressure, hydraulic energy and is NOT defined as a public utility. In the context of this SOP, this solely is a system designed to convey water that may include drain tile lines, gutter lines and irrigation drip systems. This does not include septic or sewer systems or potable water supply.

One Call Center – A public utility notification center that utilizes a phone number "811" and/or web electronic ticket system for requesting mark-out of underground public utilities/facilities. The One Call Center will notify the local public/private utilities for an underground utility mark-out/demarcation for the requested location. State/region One-Call Information such as advance notification requirements and the period of time the facility marks are valid are available electronically at www.call811.com . Typically, the One Call Center requires 48 to 72 hours notification prior to subsurface activities and is state dependent.

Private Utility Locate – Private Company or Freeport-McMoRan trained employees used to verify public utility markings and perform underground utility location activities on private property not otherwise identified by One-Call utility owners.

Parcel/PPIN – Public or private land where work is occurring.

Utility Offset / Safety Zone – The boundary surrounding the utility, structure, or anomaly is identified to be 24 inches in both vertical and horizontal extents (360°). No mechanized equipment shall be utilized within this boundary at any time. Only soft dig technologies are permitted and must have a non-invasive nature as to not impose any collateral damage to utilities when being utilized.

Soft Dig – Method of soil removal that does not utilize heavy digging equipment. Soft dig methods include: Vacuum Extraction (air or water-based), Air Knifing, Hydro Knifing, Probing and Hand Digging using rounded/blunt edged tools.

Stockpile:- The act of accumulating a large stock of goods or materials, for example topsoil, fill soil, drainage rock, compacting rock, impacted soils as well as any other materials used for the purposes of remediating or restoring the PPINs.

Utility Crossing -Constructing of or installation of a temporary or permanent structure across, on, along or under a facility/utility or pipeline right-of-way, or a means of operating or transporting heavy

equipment or machinery over or across the pipeline right-of-way or facility site. Examples of crossings include but are not limited to road plates, earthen ramps and other weight distributing features.

Refresh Utilities – The process of remarking the location of utilities due to the fading or removal of markers during excavation activities.

Vacuum Extraction – process where air/water is introduced into the ground to break up and loosen ground cover into small fragments, then a high volume vacuum is used to remove and safely contain the displaced material inside a vehicle mounted spoil tank or inline barrel interceptor.

Air Knifing – The use of high-velocity air to penetrate, expand, and break up subsurface soil. The soil and rock is then removed from the hole using a powerful vacuum.

Hydro Knifing –The use of water under pressure, to loosen the soil and vacuum to remove broken down soil.

PROCEDURES

The type of work requiring a utility or blue stake permit is guided by laws, rules, regulations and policies from potentially many sources. For example: Federal, State, Local Municipalities, FCX Policies, Consultant policies, Contractor Policies. The most stringent of all must be followed. A variance from policies may be possible and is determined on a case by case basis.

Utility Location

The type of public utilities within a parcel may be dependent on the municipality and must be verified prior to performing work. Standard Utility Locating Methods will be used for soil remediation townsite project activities. This method requires:

- submitting a locate request to the local One-Call(Blue Staking) Utility Locate Notification Center or 811 and,
- utilizing a private utility company to adequately locate utilities within the interior boundaries of the property being evaluated.

Utility identification will be consistent with the APWA (American Public Works Association) guidelines and demarcated by the applicable colors and may be demarcated by paint, stakes, flags, whiskers, and/or stakes.

Orange	….Telecommunication, Alarm or Signal Lines, Cables or Conduit
Purple	….Reclaimed Water, Irrigation and Slurry Lines
Yellow	…. Natural Gas, Oil, Steam, Petroleum or other Gaseous or Flammable Materials, Air
Red	

….Electric Power Lines, Cables, Conduit and Lighting Cables

Green	….Sanitary Sewer and Drains, Slurry Lines
Blue	….Potable Water
Pink	….Temporary Survey Markings, unknown/unidentified lines
White	….Proposed Excavation limits

It is recommended that whiskers be used in conjunction with spray paint because of their durability in weather conditions and lawn mowing. It is further recommended that offset stakes are utilized during the excavation process so that line location can be monitored even during disturbance. In addition, it may be necessary to periodically refresh utility markings during the excavation process.

If unknown/abandoned utility lines are identified they will be treated as live until they are positively determined to be abandoned and purged (gas lines must be purged and documentation present in order to treat as a non-utility).

Permit Duration

Employees and/or contractors are required to contact the state/local municipalities to verify permit requirements. Unless the municipality has a more stringent requirement, the utility locate permit will be valid or current for 30 days from the date of issue. For example: utility locate permit durations for Arizona and Oklahoma are 10 days and 15 days, respectively.

Soil Sampling

Prior to conducting initial, subsurface soil sampling at a property, utilize Standard Utility Locate Methods in all designated sampling areas on the property. It is recommended that utilities be located for the entire property so the utility lines can be accounted for. Soil sampling locations may be flexible and can be adjusted in the field to avoid working within the utility offset or safety zone. All soil sample locations will be at least 24” away from identified utilities and no potholing is necessary outside of the 24” offset to further identify utilities.

It is common for initial soil sampling results on a property to identify only a subset of all yard areas as requiring future remediation. If additional soil sampling is required and the locate permit is no longer valid or the sampling is outside the proposed and marked sampling boundary the One-Call Utility Locate

Notification Center must be contacted prior to sampling. All soil samples collected will be located outside the utility offset or safety zone.

Yard Restoration

There must be a current utility locate permit for the subject property/area prior to the installation of construction fencing, silt fencing, waddles or other best management practices for storm water erosion control or the commencement of soil excavation activities. Potholing must be conducted to confirm the location of the identified utilities. When excavating soil near an identified utility, hand-digging methods with appropriate, non-mechanized tools (rounded/blunt edged) are required to identify and confirm the location of the utility. Vacuum trucks as well as air knife excavation systems are also permitted for use for potholing. Additional mechanized equipment cannot be used for excavation within the utility offset/safety zone. This visual identification will include directional paths of that utility. As with all excavation near utilities, a careful and prudent manner will be used. It is important to verify the depth of every utility/facility. A two-foot safety zone must be maintained between the maximum depth of excavation and the utility. The two-foot safety zone must be verified by potholing.

Landscaping

Although there are no restrictions for typical landscaping activities (raking, installation of sod, hydro seeding, etc.), particular care should be taken when performing work within 24" of identified utilities.

Stockpiling

As with all other areas a private and public utility locate permit must be completed prior to managing stockpiled materials. A long-term permit through the Freeport Utility Locate (Blue Stake) policy may be granted depending on location and ownership of stockpile properties. A long-term permit issued by the site/program under the Freeport Policy does not negate or diminish any responsibilities/requirements under the Public Utility Locate laws/policies/procedures. Stockpiling over utility lines may not be allowed. Permission from the utility owner for stockpiling over utility lines must be granted before doing so and the documentation for this must be on-file for review when requested.

Utility Crossing.

Utility owner requirements shall be followed when crossing utilities. If the utility owner has no crossing requirements, prudent care will be taken to avoid damage to the buried utility. This includes the use of low ground pressure equipment, temporary earthen berms, plates and other forms of energy dissipation.

Maintenance of BMPs

Maintenance or repair of waddles do not require a current utility locate unless the securing of the BMP's requires additional or new ground penetrations.

Low Energy Underground Features

Prior to performing any work requiring ground penetration a utility permit must be obtained by contacting the public utility notification center (811). The location of the low energy underground features (LEUF) must be established with the assistance of property owners. Before excavation verify with the Consultant Project Manager that a signed cleanup work plan has been received from the property owner and the plan includes language for removing and replacing the LEUF prior to proceeding.

Excavations Involving LEUF's

If there are utilities located in the proposed excavation area, potholing must be performed and required offsets established and maintained per all applicable FCX, state and local policies and procedures. Where LEUF cross utility lines ensure the following:

- All mechanical offsets are established a minimum of 24" (vertical and horizontal) from each side of the utility, or greater where local laws require.
- Overhead and underground utility lines are guarded from damage in a safe and prudent manner.
- If removal of a LEUF feature may cause damage to a utility line, the utility owner, Consultant Project Manager and H&S department shall be notified prior to starting any demolition.

Removal of LEUFs

Personnel have the option of removing and replacing LEUF under the following criteria: If the feature meets the definition of a LEUF, it can be removed and replaced. If LEUFs cannot positively be identified as meeting the definition, all applicable Utility Locate (Blue Stake) policies and procedures shall be utilized. Removing the LEUF requires the following to be adhered to:

- Make a clean cut at excavation boundary
- Protect the ends of the LEUF to remain in the ground

Replacing the LEUF

After removal of the LEUF, replace with new materials as per industry and/or manufacturers standards with similar construction materials. Property owner approval should be obtained for the replacement and construction of the LEUF. However if the LEUF is abandoned no replacement is required. Note that after installation, proper care must be taken to avoid damage to newly installed materials.

References

MSHA: NA
OSHA: 29 CFR 1926 Subpart P - Excavations

FCX: Blue Stake (Utility Locate) Policy FCX-13; Blue Stake and Digging Procedures (supporting documentation for FCX-13 Blue Stake Policy); Resource Management SOP 01-20 Working Near Overhead Power Lines, FCX -HS04 Control of Hazardous Energy Policy
HSMS: 8.1 Operational Controls
Other: **Appropriate State/Local Municipality Regulations;** Site Health & Safety Plan (HASP), Consultant HASP, Contractor HASP

Revision History

Description	Date	Name
Added additional definitions and information on the removal and replacement of LEUFs, utility crossings and stockpiling; Clarified permit requirements, offset requirements and working within a utility offset.	4/11/17	J. Schultz
Grammar and spelling edits, added definitions for soft digging mechanized methods (i.e. air knifing, hydro knifing, vacuum extraction), revised utility crossing language	May 2017	J. Schultz, C. Svenson, D. Gosen, A. Voss

Appendix A – Sample of Private Utility Permit

Private Utility Locate Permit

Note: All individuals involved in intrusive work (Excavation) will be required to review identified utility locations. Current permits shall be kept at the working parcel. Completed permits shall be filed for future audit purposes.

Date Issued: Expiration Date:
Requester: Phone Number:
Contractor: Location:

Short Description of the Project & Blue Stake Boundary:_____

Removal of soils: _____

_____

Permit Issued By (Print Name)_____Signature_____

THE REQUESTER IS RESPONSIBLE FOR ALL PROPERLY COMPLETED PERMITS NEEDED TO SAFELY COMPLETE JOB

Detailed Scope of Work (use added sheet if needed):		
Caution/Markings:		
Site Visit Schedule:		
check one	YES	NO
Is this Excavation to repair an existing line?		
Is a site investigation required?		
Do outside utilities need to be contacted?		
Are copies of applicable drawings and prints attached?		
Is a confined space entry required? (If yes, attach signed copy) To be determined by requester		
Is a hot work permit required? (If yes, attach signed copy) to be determined by requester		
Is a LOTOTO procedure required?		

Approval	**Name**	**Signature**	**Date**
Project Supervisor			
Crew Supervisor			
Crew			
Crew			
Crew			
Crew			
Crew			

APPENDIX I

FCX-HS02 Working at Heights and Technical Supplement

Working at Heights Policy

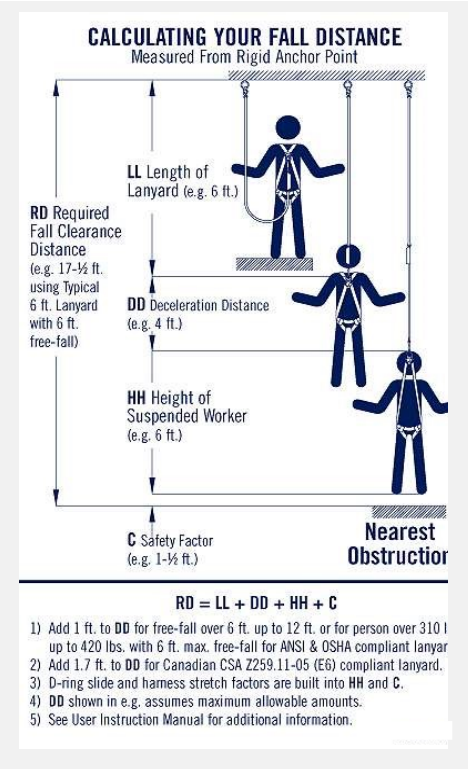
Health and Safety FCX-HS02 | Release 03/2018 | Version 1

POTENTIAL FATAL RISKS

Fall from Heights
Falling Objects

CRITICAL CONTROLS

- Fall Protection System
- Fixed Work Platform
- Mobile Work Platform
- Leading Edge/Open Hole Protection
- Scaffold
- Barriers and Segregation
- Integrity of Overhead Structures
- Securing Devices
- Work Area Management



TRAINING REQUIREMENTS

SFT_FCX1012C, Initial, Refresher, and Remedial as necessary

POLICY

OVERVIEW

Fall protection/prevention (personal fall arrest systems or guardrails) is required 100% of the time whenever persons are exposed to a fall hazard (including wall and floor openings) that could reasonably result in an injury, including:

- Any unguarded walking/working surface either horizontal or vertical that is 4ft (1.2m) above a lower level. If a ladder with a cage is used for access and work is not being performed from ladder, it is exempt.
- Work/Walking 4ft (1.2m) above potential hazards.
- Work from a ladder at any height, including levels below 4ft (1.2m) if a person's center of gravity is near the ladder rail or requires them to lean backwards.
- Ensure proper equipment: shock absorbing lanyards (see diagram) or retractable lanyards.

ACTIONS TO STAY SAFE

- Inspect fall protection equipment prior to using. Key items include:
  - Braids, webbing and stitching, fall/wear indicators
  - Condition of grommets, buckles and hardware, anchor points
- Have rescue plan and rescue capabilities available.
- Complete risk assessment prior to work (i.e. JSA).
- Use fall protection systems work inside guardrails and follow manufacturers' requirements for mobile work platforms.
- Secure tools and material when working above ground level.
- Include areas above and below work area in workplace exams and inspections.
- Prior to creating openings in walls or walking/working surfaces, install appropriate temporary barriers.
- Flag lower levels, install fences and toe boards as necessary to guard against falling objects; Reference Flagging and Barricading, FCX-19.
- Permanently installed fall protection systems must be labeled to prevent being used as a lifting device.

Ladders

- Persons may climb a ladder that is 20ft (6.1m) or less w/o fall protection if 'three points of contact' are used.
- Tie off or secure ladders prior to use.
- Ladders must extend 3ft (1m) beyond the access point.
- Never use the top two steps of stepladders.
- Do not reach outside the plane of the ladder to prevent tipping.
- Use 4 –to-1 principal for extension ladders.
- Hot work from a ladder is not permitted without a variance.

Fall Hazard (open hole/leading edge) Management

- When flooring or handrails are removed for work, or openings are created in walls or walking/working surfaces reference the Working at Heights Technical Supplement.

TECHNICAL SUPPLEMENT

WORKING AT HEIGHTS FCX-HS02 |FALL PREVENTION SYSTEMS | RELEASE 03/2018 | VERSION 1

Component	Fall Restraint Specification	Positioning Device Specification	Fall Arrest Specification
Harness	Full body Body belt permitted only if there is no potential for a fall	Full body Body belt permitted only if there is no potential for a fall	Full body harness Body belt **not** permitted
Anchorage	Support 1000lbs (454 kg) 2x maximum force to restrain the fall	Support 3000lbs (1361 kg) 2x impact load of a fall of person	Support 5000lbs (2268 kg) Safety factor of 2 for the maximum possible load
Lanyard	Must be a fixed length Deceleration devices and self-retracting life-lines not permitted	Must limit free fall to 2ft (0.6m) or less	Includes deceleration device Maximum arrest force 1800lbs (817 kg) Once device per system Maximum free fall distance of 6ft (2m)
Limitation	Working surface at or less than 4:12 slope	Not acceptable for work on horizontal surfaces	Anchorage location should be above the walking level

FALL PROTECTION ANCHORAGE

- Designed, installed and tested under supervision of qualified person
- Independent of other anchorage points (platforms, hoists etc.)

Sites should establish regular inspection and preventative maintenance for permanently installed fall protection systems

LIFELINES

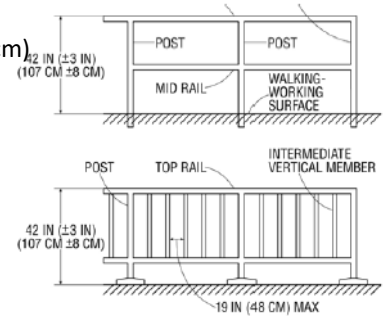
Vertical Lifeline**:** Minimum breaking strength 5000lbs (2268 kg)

Horizontal Lifelines**:**

- Follow manufacturer recommendations, or design, build and install under competent person.
- Safety Factor of two
- Tagged with maximum number of persons permitted on each end

GUARDRAIL REQUIREMENTS - temporary barriers must meet this criteria for fall prevention

- Install nets or other barriers to prevent falling objects when necessary, and able to withstand 150lbs (68 kg) of force
- 39-45in (99-115 cm) from the walking surface to the top of the rail; not deflect lower than 39in (99 cm)
- Able to withstand 200lbs (91 kg) of force in a downward/outward direction
- Midrail installed halfway between top rail and walking surface
- Vertical members every 8ft (2.6m) on center
- Intermediate vertical members every 19in (48 cm) on center when installed
- Toe boards a minimum of 4in (10 cm) nominal height, able to withstand 75lbs (34 kg) of force outward, and no more than ¼in (0.64 cm) gap between surface and lower edge of toe board
- Stair rail systems must be 42in (107 cm) from the leading edge of the stair to the top of the rail
- Guardrails around ladderways: self-closing gate that slides or swings away from the hole and top rail/midrail that meets guardrail requirements (unless opening is offset)



Floor holes must be covered:

- Secured from accidental displacement
- Able to support at least 2x's expected load (employees and material)
- Marked with "HOLE" or "COVER"

Every floor hole into which persons cannot accidentally walk (on account of fixed machinery, equipment, or walls) shall be protected by a cover that leaves no openings more than 1in (2.5 cm) wide.

Floor Opening: An opening 12 in (0.3m) or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall.

Wall opening: a gap or open space in a wall, partition, vertical walking/working surface, or similar, at least 30 inches (76 cm) high and at least 18in (46 cm) wide, through which an employee can fall to a lower level

Hole: a gap or open space in a floor, roof, horizontal walking/ working surface or similar surface that is at least 2in (5cm) in its least dimension

FIELD APPLICATION CONSIDERATIONS: Nature of environment (corrosive, weather, etc); Nature of work being performed (electrical, welding, etc); Accessibility for inspection and preventative maintenance

APPENDIX J

FCX-HS06 Hot Work

Hot Work Policy

Health and Safety FCX-HS06 | Release 3/2018 | Version 1

POTENTIAL FATAL RISKS

Fire
Exposure to Hazardous Substances - Chronic

CRITICAL CONTROLS

- Segregation/Storage:
- Atmospheric Testing
- Suppression Systems/Fire Extinguishers
- Rescue Systems
- Fire Watch
- Hot Work Permit Execution
- Alarm System
- Hazard Awareness
- Handling Requirements
- Engineered Controls
- PPE

Additional procedures required to perform Hot Work in or on the following:

- Fuel & storage tanks
- Pressure vessels and piping systems
- Rubber lined equipment & belts
- Within 100ft/30m of powder magazines
- Dust collectors
- SX/EW Operations
- Heavy & Mobile Equipment
- Vessels or Confined Spaces
- Within 35ft/11m of combustible or flammable materials
- Within 50ft/23m of distance for gas/fuel/oxy

Available References for Researching Pressure Vessel Management:

- ASME Boiler and Pressure Vessel Code
- API 510
- OSHA Pressure Vessel Guidelines
- NBIC certified inspectors for compliance inspections

TRAINING REQUIREMENTS

Hot Work Training: Initial, Annual Refresher and Remedial as necessary

POLICY

OVERVIEW

Hot work is any process that can be a source of ignition when flammable or combustible materials are present, or can be a fire hazard regardless of the presence of flammable/combustible materials in the workplace. Common hot work processes are welding, soldering, cutting, grinding and brazing.

A **hot work permit** is required for hot work operations unless working in designated 'fire safe' area (e.g. welding shop). Fire safe areas shall be documented by management. Hot work permits are valid for one work shift and one task. Operational areas shall have signage indicating fire hazards that may not be easily recognizable to personnel (i.e. machinery containing rubber liners, conveyor galleries, oil containment/storage, etc.).

ACTIONS TO STAY SAFE

- Evaluate other mechanical means/cold work for task completion before hot work is considered as an option.
- Hot work permit must be completed by all involved prior to the work initiating unless the area is designated as 'fire safe,' and remain in the area until work is complete and permit is cancelled.
- Use appropriate controls around conveyance systems to prevent ignition sources from contacting belts or conveyed material.
- Remove combustible materials if possible. Where not feasible, cover and protect areas where potential for fire exists. This includes openings in floors/grating and walls, and flammable garments and PPE.
- Atmospheric monitoring shall be conducted as part of the permit process where there is a reasonable possibility for flammable gases/vapors/excessive oxygen to exist
- Evaluate conditions throughout the shift for potential changes to the work environment.
- Hot work will **not** be performed on vessels or systems under pressure.
- Purge vessels prior to welding/cutting on them.
- LEL must be below 10%.
- Oxygen Measurement must be below 23%.
- Fire extinguishing equipment must be immediately available.
- Fire Watch shall be in place during work and 30 minutes after the work is completed and deploy controls to prevent a fire from occurring.
- Sites will establish procedures for notification and management approval when alarm systems, or fire suppression/sprinkler systems are deactivated for any reason.
- Manage potential risk for fire hazards at all levels around work area (grinding debris, welding slag, sparks etc.).
- Prior to cancelling permit, a thorough inspection of the work area must be completed.

HOT WORK PERMIT FCX-HS06 Version 1

Before signing this permit, think through the entire task and identify, evaluate and control energy sources. Safety precautions described in the Hot Work Policy must be followed. Every line on both sides must be completed. Evaluate the use of cold work alternatives prior to starting hot work.

Not valid if work is delayed for 90 minutes or more. Good for one shift only

Date_____ Shift_____
WO No._____
From_____ AM/PM To_____ AM/PM
Bldg. or Area_____
Dept._____ Floor_____
Task/Activity _____
_____
_____
Hot Work Performed By _____
_____
Fire watch assigned? ☐ Yes ☐ No
Required, if uncovered combustibles remain within 35 feet.

Fire Watch _____
_____
Time Released by Fire Watch_____ AM/PM

I verify that the area has been inspected

_____
Signatures of Persons Performing Work

_____
Signature of Area Supervisor or Designee

Emergency Contact_____

COMPLETE THIS SECTION AT END OF JOB
Work Completed Date & Time:_____
I verify the area has been monitored for the absence of fire for 30 minutes after hot work ceased, and that a thorough inspection of the entire work area has been completed.
Final Inspection by:_____
Time:_____

HOT WORK ON CONTAINERS & FUEL TANKS
Containers holding flammable or combustible liquids or gases have been purged, cleaned, and filled with inert liquid or gases and tested for %LEL/LFL. NOTE: Welding on mobile equipment fuel tanks is not permitted.
_____ Initial when reading is taken and tested to verify an LEL/LFL less than 10%

HOT WORK IN ALL AREAS, INCLUDING THE ABOVE
1. Person completing "Hot Work Permit" understands hazards in the hot work zone.
☐ Yes ☐ No
2. Flame or spark-producing equipment to be used has been inspected and found to be in good repair.
☐ Yes ☐ No
3. Sprinklers and fire water, where provided, are in working condition and will remain in service while this work is being done.
☐ Yes ☐ No
4. Portable fire extinguishers are available, are appropriate for the fire hazard, and personnel have been trained to use them.
☐ Yes ☐ No
5. All combustibles have been relocated 35 feet from the hot work, and the remainder protected with flame-proof curtains or covers, and a fire watch is assigned as needed.
☐ Yes ☐ No
6. All voids and openings leading to other areas (rooms, floors) have been covered.
☐ Yes ☐ No
7. All appropriate SOPs and good work practices are being followed.
☐ Yes ☐ No
8. Do you have the proper personal protective equipment including welding shields, respirators, hearing protection for the job?
☐ Yes ☐ No
9. A method for contacting emergency responders is in place.
☐ Yes ☐ No

IF ANY ANSWER IS NO, A VARIANCE MUST BE COMPLETED

AIR TESTING REQUIRED FOR WORK NEAR FLAMMABLE LIQUIDS AND GASES

Oxygen level _____ % LEL _____ % Time
Oxygen level _____ % LEL _____ % Time
Oxygen level _____ % LEL _____ % Time

Work must not proceed if oxygen level is above 23%, or the LEL is greater than 10% (note that oxygen must be above 19.5% in order to accurately measure LEL/LFL).

APPENDIX K

FCX-HS05 Confined Space and Technical Supplement

Confined Space Policy

Health and Safety FCX-HS05 |Version 1 | Release 03/2018

POTENTIAL FATAL RISKS

Exposure to Hazardous Substances
Entanglement and Crushing
Uncontrolled Release of Energy

CRITICAL CONTROLS

Atmospheric Monitoring
Ventilation
Energy Isolation
Entry Permit Execution

A Confined Space is a space that meets all three of the below conditions:

1. Is large enough and so configured that a person can enter with their whole body and perform their assigned work
2. Has a limited or restricted means of entering and exiting (a configuration that would impede a person ability to self-rescue)
3. Is not designed for continuous occupancy (i.e. an individual could not occupy the space during normal operating conditions)

TRAINING REQUIREMENTS

Awareness Training for all employees
Initial Training
Annual Refresher Training
Remedial Training as required

POLICY

OVERVIEW

The Confined Space Policy establishes the requirements and performance standards needed to protect employees and contractors from hazards associated with confined space and to safely enter to perform work in confined spaces.

Permit Required Confined Spaces (PRCS) are confined spaces that have one or more of the following characteristics:

1. Contains or has the potential of containing a hazardous atmosphere
2. Contains a material that has the potential for engulfing an entrant
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section
4. Contains any other recognized serious safety or health hazard

NOTE: Permits are valid only for as long as it takes to complete the task, but not more than one shift.

ACTIONS TO STAY SAFE

The following requirements must be met when FCX employees or contractors are entering confined spaces on FCX properties:

- Evaluate confined space using the permit to determine if the space is a permit required confined space, retain documentation
- Verify, understand and abide by Confined Space Permit requirements
- Monitor atmospheric condition periodically throughout the entry
- Entrant(s) have the right to observe pre-entry atmospheric test
- Identify and control the hazards within the confined space
- Use proper ventilation
- Understand and abide by assigned roles and responsibilities of confined space entry team
- Establish a communication process with entrant(s)
- Evacuate space immediately at established alarm condition, atmospheric monitor failure, or any uncontrolled/unanticipated change in condition

A confined space entry team is the group of individuals assigned to complete a task within a confined space. A typical entry team consists of three roles: entrant, attendant, and entry supervisor. For any Permit Required Confined Space (PRCS) entry, a minimum of two individuals are necessary. These individuals will be classified as either the:

- Entrant (individual entering the confined space)
- Attendant (the individual staying outside and monitoring the confined space)

A person will also be designated as the entry supervisor (the attendant may serve as the entry supervisor, but the supervisor may never serve as the entrant) and will be responsible for the confined space entry and ensuring that all safety precautions have been met.

Regardless of the role, all entry team members, attendants, entrants and entry supervisors, must understand the following:

Responsibilities and Duties of the Entry Supervisor:

- Define all Risks and Controls
- Establish in writing all acceptable entry conditions
- Conduct a pre-entry meeting with all confined space team members
- Ensure that the atmospheric tests is conducted and recorded
    - To classify the space
    - Conducted immediately prior to entry
    - Continued throughout the entry if required
- Ensure all members have been trained in Confined Space entry
- Ensure that rescue services are notified and available, and that the means for summoning them are operable
- Ensure acceptable entry conditions are in place before anyone enters the space and that conditions remain safe throughout the entry
- Maintain the confined space permit:
    - Authorize entry by signing the entry permit after all conditions for safe entry have been met
    - Post the completed, signed permit at the entrance to the space
    - Terminate the entry and cancel the permit when entry operations are complete or when uncontrolled hazards arise in or near the permit space
    - File the original canceled permit with the appropriate department
- If hazardous conditions arise that are Immediately Dangerous to Life and Health (IDLH), immediately evacuate the space

Responsibilities and Duties of the Attendant:

- Control access to the PRCS:
    - Maintain an accurate count of entrants
    - Do not allow unauthorized entry
- Communicate with the authorized entrants
- Monitor entrant(s) activities and conditions
- Maintain retrieval lines/system
- Stop work and evacuate the space if:
    - A non-acceptable entry condition occurs
    - Behavior changes in the entrant(s)
    - Outside conditions arise that may endanger the entry team
    - The air monitor alarms
    - Any new or uncontrolled hazards are introduced
- Manage emergencies
- Attendant may not perform any other duties

Responsibilities and Duties of the Entrant(s):

- Communicate with the Attendant
- Inspect for hazards within the space
- Stop work and evacuate the space if:
    - Air monitor alarms
    - Air monitor stops functioning normally
    - Uncontrolled hazard is suspected or observed
    - Any entrant experiences signs or symptoms of exposure to hazards
    - Communication link between the entrant and attendant is broken
    - Conditions outside the space threaten the entrants or attendant
    - Attendant calls for an evacuation
- Wear designated PPE

Technical Supplement

Confined Space FCX-HS05 |Rev 6 | Release 03/2018

ATMOSPHERIC TESTING & MONITORING

Atmospheric testing is required for two distinct purposes:

1. Evaluation of the hazards of the permit space; and
2. Verification that acceptable entry conditions for entry into that space exist.

Air monitoring equipment will be selected by a qualified individual based on the hazards of the entry. As the monitor's sensors are gas specific, these determinations must be documented with area SOPs/Risk Registers/HIRADC/JSA. Calibration will be performed per the manufacturer's specifications and records will be kept according to the Records Retention Program.

Acceptable Monitoring Levels and Entry Conditions:

- **Oxygen levels**: O_2 levels between 19.5% - 23.5%
  - **Oxygen Deficient** (< 19.5%) is considered hazardous
  - **Oxygen Enriched** (> 23.5%) is considered hazardous
- **Flammable Gases**: Flammable gas concentration less than 10% of the Lower Explosive Limit (LEL) of the flammable gas.
- **Toxicity:** Atmospheric concentration in excess of the occupational exposure limit for any substance that is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects and which could result in employee exposure in excess of its dose or permissible exposure limit.

Refer to the **FCX IH Field Guide** for more information on exposure limits.

REFERENCES

- 29 CFR 1910.146; Permit-required Confined Spaces
- 29 CFR 1910.146 Appendix B; Procedures for Atmospheric Testing
- 29 CFR 1910.146 Appendix F; Rescue Team or Rescue Service
- Evaluation Criteria
- 30 CFR 56.16002; Bins, hoppers, silos, tanks, and surge piles
- NSI/ASSE Z117.1-2009; Safety Requirements for Confined Spaces

ADDITIONAL REQUIREMENTS

(1) Evaluation testing. The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these results, and development of the entry procedure, should be performed by, or reviewed by, a technically qualified person based on evaluation of all serious hazards.

(2) Verification testing. The atmosphere of a permit space which may contain a hazardous atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

(3) Duration of testing. Follow manufacturer's recommendations for the duration of time the monitor should remain in place for a complete response, analysis times may vary depending on probe length and flow rate.

(4) Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified (layered), testing should proceed from the top to the bottom of the space and tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be reduced to accommodate the sampling speed and detector response.

(5) Order of testing. Test for oxygen first because most combustible gas meters are oxygen dependent and will not provide reliable readings in an oxygen deficient atmosphere. Test for combustible gases next because the threat of fire or explosion is both more immediate and more life threatening, in most cases, than exposure to toxic gases and vapors. If tests for toxic gases and vapors are necessary, they are performed last.

APPENDIX L

FCX-10 Fatigue Management Guideline

Working Hours & Fatigue Management Policy

Health and Safety FCX-HS10 | Release Date: 11/2009 | Version 2: 7/2022

POTENTIAL FATAL RISKS

Identify Potential Fatal Risks prior to performing any task or job

CRITICAL CONTROLS

- Fit for Duty checks
- Provide time for adequate rest
- Immediately report any unsafe conditions or behaviors

TRAINING REQUIREMENTS

- Trained on this Policy
- New Hire training
- Annual Refresher training

RELATED POLICIES

- Safety & Health Policy
- Human Rights Policy
- Principles of Business Conduct
- FCX-HS01 – Policy Administration Requirements

POLICY

OVERVIEW

This policy establishes the working hours requirements designed to manage fatigue and provide a safe and healthy working environment for employees and contractors, providing regular on-site services, while supporting the business needs. Additionally, it is intended to meet the requirements of Copper Mark Criterion 10 for working hours. The Company's operations are 365 days a year, 24 hours a day which requires multiple rotating shift schedules and at times business driven overtime. Rotating shift schedules are designed to meet site operational needs while ensuring health, safety, and wellbeing of our employees and contractors.
This policy applies to all employees and contractors working onsite (workforce).

ACTIONS TO STAY SAFE

- Report to work fit for duty.
- Empower our workforce to address concerns of fitness for duty.
- Exercise fatigue management by, among other things, recognizing the signs of fatigue and assessing/controlling risk factors associated with fatigue.
- Follow work hours requirements.

REQUIREMENTS

Working Hours

- Working hours shall not exceed 60 hours per week on average over a period of a calendar month unless it is done with voluntary overtime (OT) that is approved in advance by the employee's Supervisor.
  - No one will be subject to, and the Company prohibits, any form of retaliation for not volunteering for OT.
- The workforce shall be provided an average of at least one rest day in seven over the period of a calendar month (i.e., over a period of 28 calendar days there should be at least 4 rest days)
- Scheduled consecutive work days shall not exceed either 92 hours per work-set (total hours worked in consecutive days without a rest day) during normal operations or 182 hours per work-set during outages without a rest day.
- Once a scheduled work-set is complete, there shall be:
  - A minimum of 24 consecutive hours of rest for 8-hour to 10-hour shifts
  - A minimum of 34 consecutive hours of rest for shifts longer than 10 hours if the immediately preceding work set did not exceed 3 night shifts.
  - A minimum of 46 consecutive hours of rest for shifts longer than 10 hours if the immediately preceding work set included 4 or more night shifts.

Overtime (OT) and Extended Shifts

- OT beyond the scheduled shift should be voluntary; however, OT may be required occasionally to meet short term business needs (e.g., managing equipment, safely operating the plant, correcting unsafe conditions, undertaking unplanned or scheduled maintenance, training, etc.)
- Total working hours, including OT, should not exceed 14 hours per 24-hour period. A shift exceeding 14 working hours should be reserved for unplanned work as outlined below.
- Extended shifts (>14 working hours) shall occur only when approved by the Department Superintendent or delegate. Total working hours on an extended shift shall not exceed 16 hours in a 24-hour period and once the shift is complete, the employee shall be scheduled off for a minimum of eight consecutive hours of rest between the completion of the shift and returning to work.
- When OT or extended shifts are required, Supervision should provide as much advance notice as possible to the affected employees.

Shift Schedules Changes

- At times legitimate business reasons may require shift schedules to change. When this occurs, Supervision should provide as much advance notice as possible to the affected workforce.

General

- The workforce shall be trained at New Hire training and Annual Refresher training to recognize and respond to the signs of fatigue (i.e. stop work) and have the knowledge and skills to practice effective fatigue management.
- Contractors are required to align with this policy while working on-site and they should be able to demonstrate it is being followed when it is requested by the Company.
- Leaders shall review the site's monthly OT Report to identify and address trends and potential issues, especially during planned outages or unplanned work that may create a higher demand of hours.
- While OT does not apply to the exempt workforce their working hours should follow the requirements for extended shifts and days off to manage fatigue and ensure they are fit for duty.

Workforce is Empowered to Act

- Regardless of your role:
  - Follow the actions to stay safe listed above.
  - Monitor working hours, get adequate rest, follow the fatigue management practices and only report to work fit for duty.
  - Recognize signs of fatigue and exercise fatigue management, including the stoppage of work when necessary.
  - Refer to your Supervisor or Human Resources for specific questions about working hours, overtime and rotating shift schedules.

Exceptions

- Fire/Medical emergency responder schedules aligned with commonly accepted community response industry practices.
- Contractor work where the legitimate business need requires more than 92 hours worked per work-set (e.g., drillers, contract miners, etc.) provided their actual time worked does not exceed the 60-hour per week average over a period of a calendar month and they average at least 1 rest day in seven over the calendar month.

APPENDIX M

FCX-23 Interaction with Heavy Mobile Equipment, Surface Road Design, Light Vehicles and Ground Personnel

FCX Department of Occupational Health and Safety			
	SOP #		FCX-23
	Revision #		Rev. 1
	Supersedes		0: New
Interaction with Heavy Mobile Equipment - Surface ***Road Design, Light Vehicles & Ground Personnel***	**Task Risk**	X	**High**
			Medium
			Low
			NA
Approval Date: February 3, 2017	**Original Date: August 2015**		

Contents

1.0 Policy

This document establishes the minimum requirements and procedures for the health and safety of Freeport-McMoRan employees and contract personnel where there could be interaction between heavy equipment and light vehicles or people.

Policy	All Freeport-McMoRan (FCX) locations where heavy equipment is utilized will at a minimum adopt this policy and ensure that all site standard operating procedures are aligned with it.
Scope	This policy covers all FCX employees and contractors that may interact with heavy mobile equipment. Heavy mobile equipment shall include: • Haul trucks • Articulating trucks • Loaders • Track dozers/bulldozers • Rubber tire dozer • Motor grader/blades • Trackhoes/backhoes • Mobile cranes • Shovels • Water trucks • Scrapers • Drills • Compactors • Slag haulers • Forklifts (20k lbs or greater) • Other heavy mobile equipment that interact with smaller equipment and pedestrians

2.0 Responsibilities and Duties

2.1 Management

It is management's responsibility to ensure compliance with this policy, procedure and the expectations outlined below.	
Maintain Equipment in Good Working Order	Ensure all equipment is in good working order and that regular preventative maintenance procedures are in place. Where a defect or equipment issue will not allow safe operation, ensure equipment is not operated until such repairs can be completed.
Ensure Proper Employee Training	Ensure that all personnel that may interact with heavy mobile equipment are properly trained per the requirements outlined within this document and with pertinent other regional, federal and state regulations. Ensure employees are competent and qualified to operate equipment.
Ensure Periodic Engineering Reviews are Conducted	Ensure periodic engineering reviews of mine roads, intersections, light vehicle access, tie-down areas (haul truck staging areas), and heavy traffic areas such as shops are conducted.
Review Contractor Requirements	Ensure that contractors working on FCX property are aware of these requirements and have been trained.
Provide Equipment and Resources	Provide all necessary equipment and resources needed to safely operate equipment.
Maintain Documents Control	Maintain all completed inspections, documentation and training records according to the FCX -Records Retention Policy.
Identify Critical Risks and Critical Controls	Ensure that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Ensure that leadership conducts periodic audits of these controls to verify use and effectiveness.
Perform Periodic Audits of Process	In conjunction with the Health and Safety department, conduct periodic audits of the overall interaction with heavy mobile equipment to ensure compliance.
Contractor Bidding and Selection	Ensure that contractor management is aware of this Policy and the appropriate language is included in contracts.

2.2 Health and Safety

It is the H&S Department's responsibility to support compliance with this policy, procedure and the expectations outlined below.	
Perform Periodic Audits	The H&S Department will periodically audit for compliance and risk of the interactions between mobile equipment, light vehicles and people to identify issues and work with management to develop solutions. Inspection of contractor mobile equipment brought on site to ensure it meets minimum standards.
Maintain Rescue Team Capabilities	The H&S Department in conjunction with site management will maintain adequate rescue capabilities (on-site team or 3rd party team), and ensure these teams are trained in accordance with the requirements outlined within this document. Significant incidents involving heavy equipment interactions with light vehicles and people risks should be evaluated for rescue capabilities. These drills shall consider all safety, environmental and business continuity aspects. **Note:** If a site must rely on third-party rescue, H&S and/or environmental personnel must audit training and rescue capability of the third party.
Contracts Selection and Bidding	Work with contracts management to review the requirements of this Policy with contractors during the bidding process. Review contractor safety plans to ensure elements of this Policy are included where applicable.

2.3 Supervisors

It is the supervisor's responsibility to verify compliance with this policy, procedure and the expectations outlined below.	
Maintain Equipment in Good Working Order	Verify all equipment is in good working order and that regular preventative maintenance procedures are in place. Where a defect or equipment issue will not allow safe operation, ensure equipment is not operated until such repairs can be completed.
Verify Proper Employee Training	Verify that all personnel that may interact with heavy mobile equipment are properly trained per the requirements outlined within this document and with pertinent regional, federal and state regulations. Ensure employees are competent and qualified to operate equipment.

Provide Equipment and Resources	Provide all necessary equipment and resources needed to safely operate equipment.
Maintain Documents Control	Maintain all completed inspections, documentation and training records according to the FCX -Records Retention Policy.
Identify Critical Risks and Critical Controls	Verify that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Verify that employees are conducting a pre-task risk review. Evaluate area of responsibility for new risks or changes that could pose risk and ensure critical controls are in place to mitigate risk. Ensure that a risk review is completed for any new roads, changes in traffic patterns, or other changes which could impact safe interaction of heavy equipment with light vehicles or pedestrians to ensure that adequate controls are in place. Ensure that any new risks identified are passed on to incoming crews. Enlist help from engineering, health and safety or other resources as necessary to improve critical controls.
Perform Periodic Audits of Process	In conjunction with the Health and Safety department, conduct periodic audits of the overall Interaction with Heavy Mobile Equipment to ensure compliance.
Contractor Compliance	Ensure contractors working in area of responsibility have received appropriate information and training on the area-specific hazards. Monitor contractors for compliance.

2.4 Contractors

It is a Contractor's responsibility to provide properly trained employees and to comply with this policy.

Meet FCX Policy Requirements	Any contractors working for FCX will meet or exceed the requirements of this policy and shall comply with the FCX Contractor Safety Manual while on FCX property and within company-owned facilities.
Identify Critical Risks and Critical Controls	Ensure that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Ensure that contract leadership conducts periodic audits of these controls to verify use and effectiveness.
Perform Periodic Process Audits	Conduct periodic audits of the overall Interaction with heavy mobile equipment, light vehicles and people to ensure compliance.

2.5 Contractor Management

It is the responsibility of Contractor Management to ensure elements of this Policy are included in the contract language for contractor qualification, bidding and selection for work on FCX property.

Contractor Selection and Bidding	Ensure that contractors understand the requirements of this Policy and the training necessary to operate and interact with heavy mobile equipment.
Contractor Equipment Requirements	Ensure contractors receive minimum equipment requirements as well as requirements for inspections and maintenance for mobile equipment. Perform periodic audits of contractor maintenance records and procedures for mobile equipment inspection and maintenance.

2.6 Employees

It is the responsibility of FCX employees to complete proper training and comply with this Policy.

Communicate Hazardous Conditions	Employees are expected to correct or report to Supervisors and/or Health & Safety Representatives if hazardous conditions or actions arise which may cause injury to any employee before proceeding with further workplace activities.
Maintain Training	Training must be completed according to the training section and maintained through refreshers as specified in site training plan. Employees must not utilize a piece of mobile equipment or interact with heavy mobile equipment without the proper documented training. Employees will abide by all training and instruction given in In-pit Driver Training and other safety training received.
Perform Pre-task Risk Assessments	Each individual is responsible to ensure that the critical controls are in place for the task they will perform prior to starting work. Critical controls should be identified using the appropriate tools (ex: pre-shift equipment inspection, work area inspection, job hazard analysis, job safety analysis.) Situational risks must also be evaluated to determine if something in the area creates any additional risks (ex., weather, other work in the area that poses new risk).

3.0 Program Elements & Requirements

Each site will ensure that site-specific procedures comply with this Policy. All employees will comply with site-specific procedures.

Use of Cell Phones and Other Electronic Devices	No one shall use cell phones or other personal electronic devices while operating equipment or vehicles. All sites shall comply with the FCX – Communication Policy.

3.1 Separation of Heavy Equipment and Light Vehicles

Evaluation of areas where heavy equipment and light vehicles interact shall be conducted to look for opportunities to eliminate the interactions utilizing the checklist in the Appendix.

Light Vehicle Access Roads	Sites will provide light vehicle access (LVA) to main shop and office areas that are physically separated from haul truck and heavy equipment traffic. Additional LVA roads will be established whenever possible in other areas where heavy equipment is operating. Where LVA roads are required to cross haul roads, the use of tunnels shall be evaluated. Haul trucks shall sound their horn when approaching vendor routes or designated LVA intersections on main haulage roads.
Turnouts at Intersections	Evaluate opportunities for installation of LVA turnouts (orejas) at intersections to separate light vehicles from haul trucks and provide better visibility.
Heavy Equipment Crossings on Highways or other Non-mine Roads	Evaluate re-routing or using other methods where feasible. Where significant interaction or anytime haul traffic crosses public roads: • Evaluate the use of a tunnel for these crossings. Or a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment. • A flagger or crossing guard shall be present to manage the intersection for all public roadways. Ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning and proper permits are acquired.
Parking	Small equipment shall not park in the blind spot of a haul truck or other large equipment without additional controls being in place. If light vehicles, such as mechanical trucks, need to park closer to the equipment, then proper lockout procedures must be followed prior to light vehicle parking within blind area. Heavy equipment shall utilize windrows, wheel ditches, chocks or other means to prevent equipment from movement based on the grade.
Approaching Heavy Equipment	Approach shall never be made from the blind area of the equipment. Positive radio contact shall be made before approaching heavy mobile equipment.

	When radio contact cannot be established, visual contact with the operator must be made prior to approaching. Visual contact must be maintained as approaching. Operators of haul truck, loading units, water trucks (and other equipment as determined by site) are required to secure vehicle and be out of the operator's cab before others approach the equipment. Visual contact is to be maintained with those approaching. Sites will establish procedures for non-routine situations (i.e., emergency or non-responsive operator).

3.2 Separation of Heavy Equipment and Pedestrians

Evaluation of areas where heavy equipment and pedestrians (people) interact shall be conducted to look for opportunities to eliminate the interactions.

Pedestrian Walkways or Paths	Sites will provide designated pedestrian walkways or paths wherever there is regular interaction with heavy equipment and pedestrians. Pedestrian crossings will be provided where pedestrians need to regularly cross roads. Crossings must be well signed for both pedestrians and equipment. Adequate lighting will be provided where pedestrian walkways or paths exist. Where possible a pedestrian crossing light (traffic signal) shall be provided.
Ground Crews (leaching, surveyors, cable crew)	All ground personnel shall wear PPE required for the area as well as a high visibility and reflective vest or reflective clothing. This clothing needs to be highly visible both day and night. When there are ground personnel that will be working on or near mine roads, a pre-task risk evaluation must be conducted to identify critical controls that will be implemented to separate these individuals from interaction with heavy mobile equipment. Berms and safe distance requirements are potential controls. Warning devices shall be utilized to communicate the presence of ground crews such as: signs, lights, radio announcement by Dispatch or Control Room.
Flaggers or Spotters	Flaggers or spotters shall be provided with a vehicle or shack. A radio must be provided for communications. A high visibility and reflective vest or reflective clothing will also be required.
Shops	When moving large equipment in and out of the shop, spotters will be utilized.

Emergency Protocol	Each site shall evaluate and establish emergency procedures for heavy equipment incidents. These procedures shall include safe retrieval of personnel and traffic management protocol.
Personal Protective Equipment	Employees and contractors on the ground around heavy equipment or light vehicles shall wear a reflective safety vest or reflective clothing except in designated areas such as shops, parking lots for personal vehicles, secured perimeters and other designated areas.

3.3 Tie-down (Q-points)

Each tie-down area will be evaluated to ensure proper controls are in place, with a focus on eliminating interactions between heavy equipment, light vehicles and pedestrians.

Separation between Haul Trucks and Light Vehicles	Tie-down areas shall be designed to provide a physical barrier (such as a berm) between haul trucks and light vehicles. Example photo provided in Appendix.
Minimum Requirements	These minimum requirements will be applied to all tie down areas. • Support equipment shall be separated from haul trucks in designated areas (Note: loading equipment may be parked with matched haul trucks) • Wheel ditch for equipment • Forward travel only for **exiting equipment** (note: ok to back into the parking ditch) • Restricted from small equipment not involved in shift change Supervisor vehicles are allowed in this area during shift change when necessary. • There shall be a minimum of 15 feet between haul trucks when parked side-by-side; additional clearance will be needed for “in-line” parking based on size of equipment • Slots shall be provided in berms for personnel to enter and exit • Equipment shall go to the forward most parking position or from right to left as facing the equipment whichever applies • Spare trucks left on the tie-down will be moved to the right (as facing the equipment) after shift change is over, properly secured and shutdown. • Risk assessments shall be completed by all sites to determine the need for additional requirements.
Shift Change Procedures	Employee transport vehicles shall contact mine dispatch on the radio prior to entering the pit and after exiting the tie-down area. Haul trucks will not enter or leave the tie-down area until the employee transport vehicle leaves the tie-down area. Other activities away from Tie-down area may proceed as normal.

Each site will develop procedures for non-routine situations where there is a stray driver or heavy equipment that was not at the tie-down area at the appropriate time.

3.4 Roads and Intersections

All roads and intersections will be evaluated for proper controls to ensure that all authorized equipment can travel safely.

Haul Road Construction

Haul roads shall be constructed and maintained to ensure safe operation. Where conditions do not allow safe passage, additional controls shall be applied or roads shall be closed until maintenance occurs.

Surface haul roads should be 3.5 times as wide as the largest vehicle on the road. For a 793 this is 85 feet between the berms (96 feet for 930Es).

Haul roads should be constructed at 10% grades or lower where specific safety considerations determine lower grade design requirements. Grades steeper than 10% should be minimized and shall not exceed 15%. Utilize the equipment manufacturer's recommendations for the maximum grades of articulating trucks used on site.

Haul roads should be designed to minimize the use of sharp turns. If sharp turns are required, the road shall be widened to more than 4-4.5 truck widths and employ super elevations to help the trucks turn. Sharp turns at intersections will not be allowed.

Berms shall be constructed to a minimum mid-axle height of the largest vehicle to travel on that road. At the base of steep ramps or where significant drop-offs exist, a review will be conducted to determine if larger berms shall be constructed to prevent equipment from going through the berm. Wider, rather than taller, berms are preferred in order to maximize visibility. Consideration for visibility for light vehicles shall be included in the evaluation.

Where road requirements above cannot be met, other controls must be put in place to address the risk.

Intersections

An intersection refers to anywhere multiple heavy equipment roads intersect or where light vehicle roads meet a road used by heavy equipment. Light vehicle support equipment access to haulage roads, and other heavy equipment roads, must have consideration for adequate line of sight to heavy equipment.

Intersections shall be clearly signed for heavy and light vehicles.

Intersections need to be carefully located and constructed to ensure adequate visibility.

- For intersections on grades, 300 feet of sight distance is needed to allow a fully loaded haul truck to come to a stop.
- For intersections on flat ground, 175 feet of sight distance is needed to allow a fully loaded haul truck to come to a stop.
- Intersections should be avoided on the inside of curves and on the crests of hills due to the limited visibility in those areas.
- All intersections should be constructed as right angle intersections. "T" intersections should be encouraged while "Y" intersections should be avoided.

If adequate sight distance is not available, then additional controls must be applied.

Intersections shall be regularly audited to ensure there are no objects that restrict visibility. These objects include but are not limited to; vegetation, signs, utilities, power poles, buildings, berms.

Center berms or other separating traffic control devices should be utilized at intersections and on sharp curves to separate two-way traffic and prevent traffic from taking a shortcut through an intersection.

Light vehicles should be physically separated from haul trucks at intersections whenever possible to minimize haul truck / light vehicle interaction. Light vehicle entry points onto haul roads should be minimized and separated from major intersections.

If possible, intersections should be illuminated at night and the lights should be directed so they do not obscure the vision of either light vehicle or haul truck operators.

The right-of-ways should be adequately signed and included in training. The following vehicles have right-of-way over light vehicles:

- Larger equipment
- Loaded haul trucks
- Trucks to the blind side of larger equipment
- Emergency vehicles
- Vehicles carrying explosives

When in doubt, stop and communicate.

Speed Limits

Speed limits shall be based on equipment manufacturer recommendations but with haul road speed limits being no more than 35 mph and shop area speed limits at 5-15 mph depending on pedestrian and light vehicle traffic in the area.

Speeds should be reduced based on the physical conditions of the road such as width, surface conditions, intersections, visibility, and presence of ground crews as well as for weather conditions.

Haul Road Operations	Left hand traffic for surface mines shall be utilized within the mine areas or wherever there may be interaction with haul trucks and large water trucks. Adequate signage and crossovers also need to be provided. Roads should be adequately watered to control dust and ensure visibility for haul truck operators and light vehicle operators. Water truck operators need to spot-water and not over-water to ensure adequate traction for all vehicles. Permanently closed roadways shall be bermed off. Haul truck tires may be used to temporarily restrict access to haul trucks and large water trucks. Where haul trucks are hauling loaded downhill additional controls shall be implemented to minimize the risk (Ex., straddle berms, run-away ramp, signage for lower gear/speeds, RAMP Tech monitoring.) Signs should be utilized on all roads to indicate speed limits. Use of signage shall be evaluated on all roadways to warn for hazardous conditions and placed at appropriate locations. Examples of signs that may be needed: intersection, narrow roadway, obstructed view, road damage, indication of right-of-way, personnel working, etc. Signs shall be regularly maintained and readable. During adverse weather conditions, speed limits will be reduced and traffic should be limited to only necessary travel. If weather conditions prevent safe operation, traffic shall be stopped until weather clears. In areas where fog or snow are frequent, guideposts shall be used to delineate edge of road. One-way traffic signs will be utilized to define direction of traffic flow. In left hand traffic areas, haul trucks and large water trucks will not make U-turns without confirmation that the right side of the vehicle is clear of other equipment or pedestrians.

3.5 Passing Procedures

All sites will establish safe passing procedures for equipment and light vehicles.

Haul trucks	Prior to passing haul trucks, radio contact must be made with the operators. The light vehicle operator must tell the haul truck operator his equipment call number. Once direct contact is made, the haul truck operator must respond with the same equipment call number and acknowledge it is clear to pass. Note that the light vehicle operator is responsible for making sure the road is clear of oncoming traffic. If contact cannot be made, passing will not occur. Passing haul trucks on the left side in left-hand traffic areas shall not be permitted.

	Only one vehicle at a time may pass a haul truck or other piece of large equipment. While passing, the light vehicle should remain far enough to the right to avoid hazards associated with spillage and tire blowouts. Where radio communication is not available, passing shall be prohibited without an approved variance (see FCX – Global Significant Risk Variance Process).
Other large equipment	When passing other large equipment, radio contact shall be made. If radio contact cannot be made, passing will be prohibited. When radio contact cannot be made with a stopped or downed piece of equipment, then visual contact with the operator in conjunction with hand signals may be used.

3.6 Light Vehicle Requirements

Light vehicles traveling into the mine shall meet minimum requirements and be kept in good working order.

Periodic maintenance and inspection requirements	All light vehicles used to transport personnel shall be inspected before being operated. Light vehicles shall be regularly maintained at intervals not to exceed every 3 months or 3000 miles. (Time and duration should be based on conditions.) Inspections shall consist of: • Steering Components • Brake Components • Drive Lines and U Joints • Lights • Gauges • Equipment Numbers • Tires/Rims/Lugs • Suspensions • Frame for Cracks • Seatbelts • Glass/Wipers • Fluid Levels • Buggy whip/light Worn components will be replaced before the vehicle is released for operation. Any safety items (*) marked on pre-use inspections checklists as “bad order” or not functional will be repaired before the equipment is released.
Minimum requirements for pit entry	All vehicles entering the mine must have a two-way radio and buggy whip with some form of working light at all times. Areas where buggy whips are required will be identified with signage. Buggy whips must be a minimum of 12 feet; measured from ground level to the top of the light.

Lights shall be used to indicate types of equipment and to make them more visible:

- Blue is reserved for support equipment as needed to restrict passing
- Amber for visibility as needed
- Red for emergency and blasting
- Flashing strobe lights on transport vehicles (buses and man vans) in a color that can be seen in various weather conditions

Haul trucks shall have numbering with LED lights or a minimum reflective tape and be large enough to be seen by other vehicles.

Light vehicles will have numbering a minimum size of 4 inch lettering on each side with one on the rear when possible. Lettering color will be distinguishable compared to the vehicle color. Number series/sequence should be simplistic and well organized for easy identification.

All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted or have working amber strobe light when operating on mine haul roads.

3.7 Perimeter Security and Lockout Tagout Tryout of Equipment

Lockout, tagout, tryout of equipment will be in accordance with the FCX – lockout Tagout Tryout Policy. Perimeter security shall be utilized when LOTOTO is not required but there is a need to communicate the equipment is in control of an operator.

Pre-use inspections and Ground Breaks	When an employee leaves the cab of the truck and it must remain running (during pre-shift inspections and ground breaks for example) the operator must signify that the equipment is in use and ensure that control of the energy source is maintained. Perimeter security must be utilized to communicate to others that the truck is under control of an operator that is currently on the ground. Examples include but are not limited to: locks and tags on ladder gates, cable with a clamp with a lock and tag, signs and flags, etc. Use of park brake light indication for haul trucks should be evaluated for additional communication that the truck park brake is set. Large loading equipment, water trucks, drills also shall have a perimeter security procedure established.
Maintenance and Fueling (Lockout Tagout Tryout)	When maintenance is being performed lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under, or work on the heavy mobile equipment. The following minimum standards must be in place when fueling: • Equipment secured • Pedestrian walkways defined

- LOTOTO and/or perimeter procedures must be followed by all in the area

4.0 Equipment – Technology

As various forms of technology become available that introduce improved controls to reduce risk, each site will install these technologies as feasible or as required. Sites should work with the FCX Technology Center - Mining to evaluate new and existing equipment technologies.

In-cab Fatigue Monitoring System (Drivers State Sensing – DSS)	All sites will install and maintain the in-cab fatigue monitoring systems for surface haul trucks and other equipment where feasible. Maintenance programs will be established to keep units operational. Each site is required to maintain a fatigue management program that includes: communication, training, fit-for-duty and supervisor interaction.
Other Technology	As other technology becomes available (such as proximity detection, light vehicle monitoring, etc.) and is found through testing to be a viable option, sites will implement on a case-by-case basis with the assistance of the FCX Technology Center.

5.0 Training

All training will be documented and records maintained.

Visitor Awareness Training (Hazard Awareness)	Must be provided to all visitors who have or may have the potential to be present in areas where heavy equipment will be operated. This training shall include an overview of the hazards of the area.
In-Pit Driver	All employees, or contract employees, that will drive in the pit, as specifically defined by each property, will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver's license, sticker or some sort of identification will be used to limit access into these areas. This driver training will only be provided to those that request and receive mine area management approval for the training. If an individual does not have in-pit driver certifications, they will need to be escorted into the pit.

	Driving in the pit at night introduces additional hazards and should be addressed in the training materials and practice. Note: In-pit driving training is not the left-hand driving training done in annual refresher. It is a specific task training requirement to authorize drivers for pit access.
Light Vehicle Only Access or Left-Hand Drive Training	Employees, or contract employees, that will only utilize Light Vehicle Access routes will receive training in safe operation of these routes (could also be known as "left-hand" driving training.) Having this training will not qualify a driver to drive on mine haul roads.
GSR Refresher	Annual GSR refresher training must be provided to affected employees, and contractors who are authorized, competent or qualified to perform tasks in areas where interaction with heavy equipment occurs. It must include a review of existing policies and regulations and shall review any new or existing hazards and mitigations.

6.0 Audits

Periodic unannounced audits and scheduled audits are expected to ensure compliance with the policy and safety of personnel. All audits are to be documented, an action plan developed to address any identified gaps, and actions assigned and tracked to completion. Documents will be retained per the FCX Corporate Record Retention Policy.	
Monthly	Each site to develop an audit schedule for area leaders and employees to audit selected elements of this policy at a frequency appropriate to the frequency of light vehicle and personnel exposure to heavy mobile equipment.
Quarterly	Quarterly Gap Analysis will be performed by a site cross-functional team such that by the end of a 12 month period, the entire Gap Analysis has been completed internally. Action items will be generated, as needed, and tracked to completion.
Annual	An annual audit will be scheduled at each site and will be conducted by a Freeport-McMoRan cross-functional team. Audits will include review of compliance with FCX policies, training, site SOPs, and field practices. Follow-up audits may be conducted more frequently depending on site performance. A standard format will be used for the annual site audits.

7.0 Variance

If any part of this policy cannot be followed, an approved variance is required. The FCX Variance Policy will be followed. GSR Variance Process.pdf. Seek assistance from site Health & Safety as needed.

8.0 Definitions

Definitions	
Blind Area or Blind Spot	A blind area, or blind spot, is the area around a vehicle or piece of heavy equipment that is not visible to the operator, either by direct line-of-site or indirectly by use of internal and external mirrors.
Critical Controls	A device, system, or process implemented to eliminate or reduce the risk for a task/job, but if missing or overlooked has the potential to lead to catastrophic outcomes such as serious injury or death.
Critical Risks	A risk that if not controlled has the potential to lead to catastrophic outcomes such as serious injury or death.
Grade (Gradient)	The degree of inclination or rate of descent or ascent in a roadway.
Heavy Mobile Equipment	Large equipment used in mining and construction as defined in Section 1.0 of this document.
Intersection	A place where two or more roadways meet, especially when one is a major road.
Light Vehicle	Smaller single or multi-passenger vehicles and equipment typically less than one-ton. This can include cars, pick-up trucks, vans, buses, UTVs and ATVs, and small equipment such as forklifts or bobcats.
Positive Radio Contact	As used in this document, defines the radio communication between two persons identifying themselves and responding one to the other to establish an understanding of the action each is about to take with relation to approaching or passing heavy mobile equipment.
RAMP Tech	Remote Access Monitoring Process Technician
Right-of-Way	The right to proceed with precedence over other vehicles in a particular situation. For this document at an intersection or along a road.
Tie-downs (Q-point)	The place where heavy mobile equipment is parked or staged such as a ready line.

Turnouts (Orejas)	An area provided along a mining road that allows the driver to turn in and square up with road to allow better sight of other vehicles before turning. See Appendix for example.

9.0 References

Throughout this Policy other policies and procedures are referenced.

Reference Documents	FCX – Lockout Tagout Tryout Policy FCX – Records and Retention Policy FCX – Bus Policy FCX – Variance Process

10.0 Records

The following records must be retained according to the FCX Records Retention Policy	• Employee Training Records • Annual program review • Equipment inspection records • Variance Documents • Management of Change forms • Others as described in FCX Records Retention Policy

11.0 Revision History

2015 NEW	Initial Release	
Dec 2016	Rev. 1	Adoption of FCX Standard GSR format - 2016
Dec 2016	Rev. 1	**Replaced** various occurrences of segregation with separation
Dec 2016	2.3 Roles & Resp. – Supervisors – Identify Critical Risks & Critical Controls	**Modified the sentence:** "*Ensure that a risk review is completed for any new roads, changes in traffic patterns, or other mine changes to ensure that controls are in place.*" **To read** "… or other changes which could impact safe interaction of heavy equipment with light vehicles or pedestrians to ensure that controls are in place."
Dec 2016	2.6 Roles & Resp. – Employees – Communicate Hazardous Conditions	**Revised the sentence:** "*Supervisors and/or Health and Safety Representatives must be immediately contracted if hazardous conditions or actions arise* which may cause injury to any employee before proceeding with further workplace activities."

		To read: "Employees are expected to correct or report to Supervisors and/or Health & Safety Representatives if hazardous conditions or actions arise …."
Dec 2016	2.6 Roles & Resp.- Employees – Perform Pre-task Risk Assessments	**Replaced the sentence**: *A pre-task risk assessment should include critical controls identified for this specific risk (Ex., job hazard analysis, job safety analysis).* **To read:** "Critical controls should be identified using the appropriate tools (ex: pre-shift equipment inspection, work area inspection, job hazard analysis, job safety analysis.)
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles – Light Vehicle Access Roads	**Modified** various occurrences of "LVAs" to "LVA roads". **Removed the sentence** "Sites shall evaluate where this is appropriate based on the amount of traffic on the haul road (i.e., if haul trucks enter periodically this can serve as a reminder to LVAs that haul trucks are in the area).
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles – Heavy Equipment Crossings on Highways or other Non-mine Roads	**Restructured the following text**: *"For long term projects sites shall evaluate the use of a tunnel for these crossings. At a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment.* *"A flagger or crossing guard shall be present to manage the intersection for all public roadways.* *"Where applicable, ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning."* **To read**: "Where significant interaction or anytime haul traffic crosses public roads: • Evaluate the use of a tunnel for these crossings. Or at a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment. • A flagger or crossing guard shall be present to manage the intersection for all public roadways. Ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning and proper permits are acquired."
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles –	**Modified the sentence**: *"The operator is required to be out of the cab before others approach the equipment and are out of the operator's line of site."*

	Approaching Heavy Equipment	**To read: "**Operators of haul trucks, loading units, water trucks (and other equipment as determined by site) are required to secure the vehicle and be out of the operator's cab before others approach the equipment. Visual contact is to be maintained with those approaching."
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Ground Crews (leaching, surveyors, cable crew)	**Modified first paragraph:** *"All ground personnel shall wear PPE required for the area as well as a high visibility reflective vest."* **To read:** "All ground personnel shall wear PPE required for the area as well as a high visibility and reflective vest or reflective clothing. This clothing needs to be highly visible both day and night." **Modified last paragraph by adding the words:** "or Control Room at the end of the sentence.
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Flaggers or Spotters	**Modified the last sentence by adding the underlined:** A high visibility and reflective vest **<u>or reflective clothing</u>** will also be required.
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Personal Protective Equipment	**Modified the last sentence by adding the underlined:** Employees and contractors on the ground around heavy equipment or light vehicles shall wear a reflective safety vest **<u>or reflective clothing</u>** except in designated areas such as shops, parking lots for personal vehicles, secured perimeters and other designated areas.
Dec 2016	3.3 Tie-down (Q-points) – Minimum Requirements	**Added the following to the first bullet:** (Note: loading equipment may be parked with matched haul trucks) **Modified the following bullet with text underlined and a clarification point in parenthesis:** • Forward travel only for **<u>exiting equipment</u>** (note: ok to back into parking ditch) **Modified the following bullet** replacing the minimum distance from 20 feet **to 15 feet** • There shall be a minimum of <u>15 feet</u> between haul trucks when parked side-by-side; additional clearance will be needed for "in-line" parking based on size of equipment **Replaced the word driver** to read personnel in the bullet below: • Slots shall be provided in berms for <u>personnel</u> to enter and exit

Dec 2016	3.3 Tie-down (Q-points) – Shift Change Procedures	**Modified the sentence** *"Haul trucks will not leave the tie-down area until the employee transport vehicle leaves the area."* **To read: "**Haul trucks will not enter or leave the tie-down area until the employee transport vehicle leaves the tie-down area. Other activities away from Tie-down area may proceed as normal. **Modified last paragraph** "*Each site will develop procedures for non-routine situations where there is a stray driver or truck that was not at the tie-down area at the appropriate time, unless directed to do so by dispatch or supervisor. The shift supervisor shall direct this effort and conduct a follow-up to determine actions to prevent a reoccurrence."* ***To read*** **"**Each site will develop procedures for non-routine situations where there is a stray driver or heavy equipment that was not at the tie-down area at the appropriate time."
Dec 2016	3.4 Roads & Intersections – Haul Road Construction	**Deleted the following bullets:** • Haul roads should be constructed with a substantial base of rock or other material to prevent rutting, pot-holing, and the development of soft spots in the road. • Haul roads will have a surface layer of crushed rock or other suitable road building material to ensure a smooth surface. • All roads should be regularly bladed to ensure a smooth surface. **Modified the paragraph** "*Haul roads should be constructed at 10% grades or lower. Grades steeper than 10% should be minimized and shall not exceed 15%. Grades may need to be less than 10% due to safety considerations. Utilize the manufacturer's recommendations for the maximum grades of articulating trucks used on site."* **To read:** "Haul roads should be constructed at 10% grades or lower where specific safety considerations determine lower grade design requirements. Grades steeper than 10% should be minimized and shall not exceed 15%. Utilize the equipment manufacturer's recommendations for the maximum grades of articulating trucks used on site." **Deleted the paragraph** "*Haul roads should be built using a consistent linear grade to reduce haul truck transmission shifts and to reduce spillage onto roads. Where grade changes are necessary, they should be as smooth as possible to avoid racking the haul truck frame."*

Dec 2016	3.4 Roads & Intersections – Intersections	**Modified the paragraph "***An intersection refers to anywhere multiple haul roads intersect or light vehicle roads meet a haul road. Light vehicle support equipment access to haulage roads must have consideration for adequate line of sight for haulage traffic."* ***To read:*** **"**An intersection refers to anywhere multiple heavy equipment roads intersect or where light vehicle roads meet a road used by heavy equipment. Light vehicle support equipment access to haulage roads, and other heavy equipment roads, must have consideration for adequate line of sight to heavy equipment." **Modified the sentence** "*The right-of-ways (ROWs) should be adequately signed and included in training. The following vehicles have ROW:"* **To read: "**The right-of-ways should be adequately signed and included in training. The following vehicles have right-of-way over light vehicles:"
Dec 2016		**Modified the paragraph** *"Speed limits shall be set based on equipment manufacturer recommendations with haul roads being no more than 35 mph and shops areas in the 10-15 mph range depending on pedestrian and light vehicle traffic in the area."* **To read:** "Speed limits shall be based on equipment manufacturer recommendations but with haul road speed limits being no more than 35 mph and shop area speed limits at 5-15 mph depending on pedestrian and light vehicle traffic in the area."
Dec 2016	3.4 Roads & Intersections – Haul Road Operations	**Modified the paragraph:** *"Permanently closed roadways need to be bermed off. Haul truck tires can be used to temporarily restrict access to haul trucks and large water trucks."* **To read:** "Permanently closed roadways shall be bermed off. Haul truck tires may be used to temporarily restrict access to haul trucks and large water trucks."
Dec 2016	3.5 Passing Procedures – Haul trucks	**Modified the sentence:** *"Passing haul trucks or other equipment on the left side in left-hand traffic areas shall not be permitted."* **To read:** Passing haul trucks on the left side in left-hand traffic areas shall not be permitted.
Dec 2016	3.6 Light Vehicle Requirements – Minimum requirements for pit entry	**Modified the sentence:** "*Light vehicles will have numbering with a minimum size of 4 inch lettering on each front quarter panel, and one on the rear when available."*

		To read: "Light vehicles will have numbering with a minimum size of 4 inch lettering on each side of the vehicle, with one on the rear when possible." **Modified the sentence: "***All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted when operating on mine haul roads."* **To read:** "All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted or have working amber strobe light when operating on mine haul roads."
Dec 2016	3.7 Perimeter Security and Lockout tagout Tryout of Equipment – Pre-use inspections and Ground Breaks	**Modified the sentence:** *"Other heavy mobile equipment will use established procedures to signify that the equipment is under the possession of an operator that is on the ground."* ***To read:*** *"*Large loading equipment, water trucks, and drills also shall have a perimeter security procedure established."
Dec 2016	3.7 Perimeter Security and Lockout tagout Tryout of Equipment – Maintenance and Fueling	**Replaced the following text:** "*When maintenance is being performed and when the truck is being fueled, lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under or work on the heavy mobile equipment."* ***To read:*** *"*When maintenance is being performed on any piece of equipment, lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under, or work on the heavy mobile equipment."
Dec 2016	4.0 Equipment – Technology - Cameras	**Deleted the section: "***As other technology becomes available sites should evaluate the implementation of backup cameras on all heavy equipment that has a large blind spot to the rear of the vehicle."*
Dec 2016	5.0 Training **– Visitor Awareness Training (Hazard Awareness)**	**Added this sub-section to the Training section:** "Must be provided to all visitors who have or may have the potential to be present in areas where heavy equipment will be operated. This training shall include an overview of the hazards of the area.**"**
Dec 2016	5.0 Training – In-pit Driver	**Modified the paragraph:** *"All employees that will drive in the pit will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver's license, sticker or other means of identification will be used to limit access into these areas."* **To read:** "All employees, or contract employees, that will drive in the pit, as specifically defined by each property, will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver's license, sticker or some

		sort of identification will be used to limit access into these areas." Modified the sentence: "*This driver training will only be provided to those that request and receive management permission for the training."* **To read: "**This driver training will only be provided to those that request and receive mine area management approval for the training." **Added the following text: "**Note: In-pit driving training is not the left-hand driving training done in annual refresher. It is a specific task training requirement to authorize drivers for pit access."
Dec 2016	5.0 Training – Light Vehicle Only Access	**Modified the text:** *"Employees that will utilize Light Vehicle Access routes will receive training in safe operation of these routes. Having this training will not qualify a driver to drive on mine haul roads."* **To read:** "Employees, or contract employees, that will only utilize Light Vehicle Access routes will receive training in safe operation of these routes (could also be known as "left-hand" driving training.) Having this training will not qualify a driver to drive on mine haul roads."
Dec 2016	5.0 Training – Personnel Transport Driver Training	**Modified the text:** "For personnel carriers (vans) drivers must have a minimum of two years of experience operating equipment before driving personnel transports. They must also have received training and information on the Q-point procedures." **To read: "**For personnel carriers (vans), drivers must have a minimum of two years of experience in their respective environment before driving personnel transports. Those personnel van drivers who will enter into mine Q-point areas, must also have received training and information on the Q-point procedures; this training is to be documented."
Dec 2016	5.0 Training – **GSR Refresher**	**Added this sub-section to the Training section:** Annual GSR refresher training must be provided to affected employees, and contractors who are authorized, competent or qualified to perform tasks in areas where interaction with heavy equipment occurs. It must include a review of existing policies and regulations and shall review any new or existing hazards and mitigations.
Dec 2016	6.0 Audits	**Added audit requirements** for Monthly, Quarterly and Annual periods.

Appendix A Examples and Forms

FREEPORT-McMoRan

Haul Road Safety Audit Form

Date		Haul Road, Pit or Area	
Auditor(s)			

General Design Considerations	YES	NO	NA	COMMENTS / ACTIONS
Is the road free of potholes, rutting, or soft spots?				
Is the road's top surface graded and smooth?				
Is the road wider than 3.5 haul trucks (793-85', 930E-96')?				
Is the maximum sustained grade at or below 10%?				
Is the road grade as smooth as possible to minimize gear shifting?				
Are there smooth transitions between grade changes?				
Are sharp curves widened & provided with adequate supers?				
Are there objects in the line of sight (berms, vehicles, shrubs, buildings) which restrict visibility?				
Are speeds reduced in areas where vertical or horizontal curves reduce visibility?				
Drainage and Dust Control	**YES**	**NO**	**NA**	**COMMENTS / ACTIONS**
Is the road configured with adequate drainage and is it maintained?				
Does the road have adequate cross-fall for drainage?				
Are culverts located at low points & intersections which are capable of retaining water?				
Is there adequate dust-control to ensure visibility?				
Is water applied appropriately by water trucks by spotting and not over-watering?				
Berms and barriers	**YES**	**NO**	**NA**	**COMMENTS / ACTIONS**
Are berms at least mid-axle height?				
Are berms near the base of steep ramps or significant drop offs higher and wider than normal?				
Are berms de-rocked?				
Are center berms installed at sharp curves, critical intersections and areas of increased speeds/risk?				
Are closed sections of roads properly restricted from entry?				

Safety Enhancements	YES	NO	NA	COMMENTS / ACTIONS
Are there signs indicating the proper speed and/or grade for the road?				
Are there signs indicating intersections, narrow spots, rough sections, or other pertinent information?				
Are the signs in good shape and readable to the operators of large haul trucks?				
Are there guideposts on the side of the road?				
Are there rock slots available for storing spillage?				
Is pedestrian access prohibited? If not, are pedestrian walkways physically separated from haul truck traffic?				
Is light vehicle traffic physically separated from haul truck traffic?				
Are there run-away truck ramps for downhill loaded sections?				
Intersections	**YES**	**NO**	**NA**	**COMMENTS / ACTIONS**
Are the speed limits approaching the intersection appropriate?				
Is at least 300ft of sight distance available at intersections located on grades in excess of 6%?				
Is at least 175ft of sight distance provided at intersections located on flat terrain?				
Are intersections located on straight and flat terrain as much as possible?				
Are intersections configured as right angle intersections?				
Is lighting appropriate for the intersection? Is lighting needed at night? Is it directed away from the operator's line of sight?				
Are there objects in the line of sight (berms, vehicles, shrubs, buildings) which restrict visibility?				
Are there any powerlines, pipelines or other utilities near the intersection?				
Is there a queue point near the interchange?				
Is light vehicle traffic physically separated from haul truck traffic as much as possible?				
Are special accommodations made for light vehicles? (e.g. turnouts or orejas "ears", special turn lanes, elevated roadways)				
Is pedestrian access prohibited? If not, are pedestrian walkways physically separated from haul truck traffic?				
What controls are in place to control vehicles? (e.g. traffic lights, stop signs, yield signs, physical controls)				
Are center berms in place or needed to direct light vehicles and haul trucks into the appropriate lanes?				

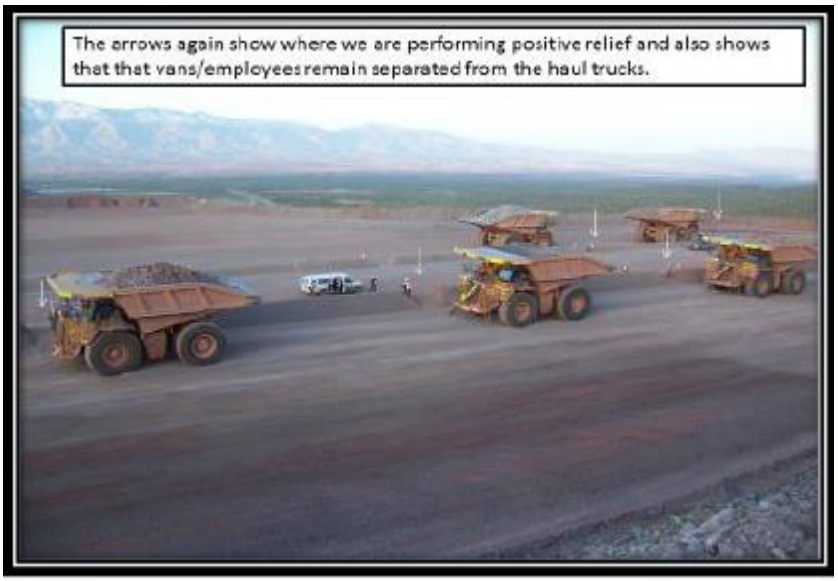
Are there drainage controls in place to keep the intersection dewatered?				
Has the intersection been planned? Is it built according to the design?				

General COMMENTS / ACTIONS about Haul Road:
Diagram / Drawing:

Safford Mine Tie Down Example

Photo 1

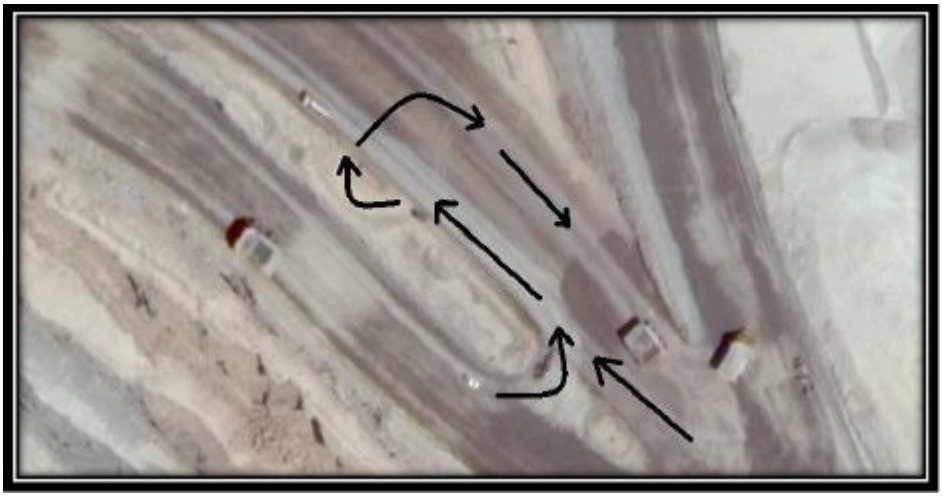
Photo 2



Cerro Verde Turnouts (Orejas)

Photo 1

Photo 2



APPENDIX N

FCX-04 Control of Hazardous Energy, LOTOTO

FREEPORT-McMoRan

Control of Hazardous Energy Policy

Health and Safety FCX-HS04 | Release Date 8/5/2019

POTENTIAL FATAL RISKS

Uncontrolled Release of Energy

CRITICAL CONTROLS

Blocking for Maintenance Work
Guards, Barriers and Barricades
Energy Isolation/LOTOTO
Pipe Management
Hose Coupling Locking Systems
Pipe/Hose/Equip. Mechanical Integrity
Relief Valves
Tensioned Lines Management
Tire Management

POTENTIAL ENERGY SOURCES

Atmospheric	Chemical
Electrical	Electromagnetic
Gravitational	Hydraulic
Kinetic	Mechanical
Pneumatic	Residual
Stored	Thermal

FORMS AND SUPPLEMENTS

LOTOTO Technical Supplement
ECC Form
Energized Work Permit
Non-Routine Lock Removal form

TRAINING REQUIREMENTS

Initial
Annual Refresher
Task training to written procedures
New equipment/processes
Remedial as necessary

POLICY

OVERVIEW

Identify and isolate, eliminate or control all potential sources of energy when there is the possibility of exposure while performing work (i.e. inspection, installation, calibration, maintenance, etc.). Verify that controls are effective. This policy applies to all employees and contractors on FCX operating sites.

ACTIONS TO STAY SAFE

1. Plan the activity to be performed
2. Identify the potential sources of hazardous energy
3. Eliminate, isolate or control each source
4. Dissipate residual energy
5. Verify controls are effective and tryout

Follow hazardous energy control procedures for each piece of equipment, system or process. Procedures must include steps for verification of control.
Stop the job when scope of work changes or controls are ineffective.
Isolate at the source whenever possible, or use other methods to ensure zero energy (i.e. double block/bleed, blind, air gap, blocking, etc.).

Plan:

- Understand the full scope of the work and all tasks associated.
- Identify all personnel roles and responsibilities, tools, hazards, isolation points, isolation devices, prior to starting work.
- Consult SOPs or JSAs prior to performing work.

Identify Sources:

- Use most recent drawings, prints, etc. for identifying sources of hazardous energy.
- Ensure lines/breakers/valves etc. are properly labeled/identified; contact responsible parties or consult relevant documentation.

Eliminate, Isolate and Control:

- Verify that the correct isolation points are isolated for each type of hazardous energy identified.
- Use appropriate devices for the source.
- Follow the de-energization procedures for the specific task or equipment for de-energization

Dissipate Residual Energy:

- When zero energy cannot be accomplished, install controls to reduce or eliminate exposure to the energy source. Complete Energized Work Permit.

Verify Controls and Tryout:

- Ensure zero energy and attempt to restart the equipment.
- Do not confuse process interlocks with energy isolation or use for tryout.
- ECC or Authorized Individual and Project Manager or delegate must visually confirm non-routine energy isolation prior to performing work in the absence of SOPs.

Energized Work (Commissioning, Testing, Calibrating, Troubleshooting, etc.)

- Hazardous energy control procedures may not apply, but complete a documented safety analysis/risk assessment.
- Understand the process for start-up and potential for exposure to self and others.
- Develop a communication plan for these activities.
- Evaluate new controls and verify existing controls.
- When guards and barriers are removed (or interlocks bypassed) for troubleshooting/testing and calibration, other controls must be in place to prevent exposure.
- When work is performed on energized equipment, follow specific documented guidelines and procedures.
- When other bypass devices are installed, and equipment is energized while performing work, follow specific documented guidelines and procedures for installation, use and removal of bypass devices.
- Conduct pre-operational inspections prior to start up.
- When testing or positioning machines or equipment:
    - Clear the area of unnecessary personnel, tools and materials
    - Install flagging or barricading, reference FCX-HS19
    - Remove energy control devices as specified in procedures
    - Energize and proceed with testing or positioning
- Prior to performing additional maintenance, de-energize, isolate from potential sources and reapply energy control devices

ENERGIZED WORK PERMIT

- When possible exposure to hazardous energy exists, but the equipment must remain energized to perform work, complete an Energized Work Permit.
- For routine work, where an SOP exists, the Energized Work Permit is valid for one year, and should be kept with the SOP as a part of the record. The SOP must be reviewed prior to performing the work.
- Electrical troubleshooting and testing is excluded from the permit requirements, reference the Electrical Safety Policy TS for Energized Electrical Work.
- If there is no Superintendent on site, the delegate may authorize the work in his/her place.

Shift Change

- Procedures for shift change must be documented.
- Ensure integrity of isolation devices prior to turn-over.
- Use ECC procedures if necessary.
- Remove personal locks and tags if work is complete and equipment is in a safe condition.

Access and Verification

- If an Authorized Individual joins after verification of isolation has taken place, they must contact the other Authorized Individuals or ECC (if used) to confirm equipment is isolated and has been verified/tested.
- All Authorized Individuals retain the right to verify isolation by clearing the area and attempting to start the equipment.
- When access to isolation devices is limited (e.g. inside a restricted area), Authorized Individuals will be escorted by a Qualified Individual, or the ECC process will be used.

Non-Routine/Emergency Work

- During emergency work and when an SOP is not available, planning for energy control must include:
    - an inventory of identified hazardous energy sources,
    - determination of isolation/control devices,
    - assignment of responsible persons, including Qualified Individuals and ECC if necessary,
    - field verification of the application of the control devices.
- Document this information and evidence of the verification. *Documentation may be a JSA if there is not existing documentation in place.*

APPENDIX O

FCX-HS03 Electrical Safety and Technical Supplement

Electrical Safety Policy

Health and Safety FCX-HS03 | Release 07/2018 | Version 1

POTENTIAL FATAL RISKS

Exposure to Electrical Hazards

CRITICAL CONTROLS

- Access Control
- Barriers and Segregation
- Electrical PPE
- Energized Electrical Work Permit Execution
- Energy Isolation/LOTOTO
- Engineering Controls

ELECTRICALLY QUALIFIED INDIVIDUAL

Only Electrically Qualified Individuals will perform de-energizing process to bring equipment to electrically safe work condition.

An Electrically Qualified Individual:

- Has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations
- Has received safety training to identify the hazards and reduce the associated risk
- Is approved to perform energy isolation and dissipation
- Is approved to perform energy measurement/testing and/or tryout
- Qualified non-electrical personnel with the proper training may operate a disconnecting means under certain conditions and approvals - Reference **Switching for Non-Electrical Personnel Technical Supplement**

LABELING REQUIREMENTS

- Electrical gear (breakers, cabinets, switches, panels etc.) must have labels that indicate:
  - Voltage
  - Equipment being powered or fed
- Reference **Arc Flash Management Technical Supplement** for arc flash labeling requirements

POLICY

This policy intends to protect employees and contractors from the hazards of work around electrical installations and equipment.

1. Manage and reduce arc flash levels to the lowest possible.
2. Reduce exposure to electrical shock.
3. Provide protection to personnel when electrical work is performed.
4. Maintain electrical equipment and installations as safe and serviceable

ACTIONS TO STAY SAFE

- Electrical risk assessment is required before starting the work.
- Review SOPs for specific task before starting electrical work.
- Equipment must be de-energized except under exceptional conditions or trouble shooting.

ELECTRICALLY SAFE WORKING CONDITION

A state in which an electrical conductor or circuit part has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to verify the absence of voltage, and, if necessary, temporarily grounded for personnel protection.

<u>Procedures to De-energize Electrical Equipment must include:</u>

1. Determine all possible sources of electrical supply to the specific equipment. This may include: drawings, diagrams, and identification tags.
2. Shutdown all electrical loads from each source.
3. Open disconnecting devices for each source wearing the proper personal protective equipment for the task.
4. Whenever possible, visually verify a physical disconnection
5. Lock out sources of energy following FMI Lockout / Tag-out / Try-out (LOTOTO) Policy.
6. Release any stored electrical energy.
7. Release any stored mechanical energy.
8. Use an adequately rated portable test instrument to test each phase conductor or circuit part, where work is to be performed, to verify it is de-energized. Verify the testing unit before and after testing to determine the test instrument is operating correctly using a known voltage source.
   Required personal protective equipment shall be worn while testing.
   Tests to perform include:
   o Each phase to each other phase
   o Each phase to ground
   o Neutral to ground, if present
   NOTE: Where the possibility of induced voltage or stored energy exists, physically ground the phase conductors or circuit parts before touching them.

TECHNICAL SUPPLEMENTS & REFERENCES

Energized Electrical Work and Permit
Arc Flash Management
Personal Protective Clothing and Equipment
Switching for Non-Electrical Personnel
NFPA 70E

TRAINING REQUIREMENTS & AVAILABLE COURSES

SFT_FCX1013C LOTOTO Initial and Refresher
NFPA 70E
CPR / First Aid
Contact Release
Electrical Safety for Mining
600V Switching for Non-Electricians

ADDITIONAL SAFETY REQUIREMENTS

- Never assume that an electrical circuit is de-energized
- Only use serviceable electrical equipment, tools, appliances and extension cords.
- Maintain clearances around electrical panels (18in. (0.5m) on each side, 36in. (1m) in front).
- Always use approved insulated tools to move trailing power cable, unless proper LOTOTO procedures have been followed to de-energize the trailing power cable.
- Do not drive over unprotected power cables.
- Maintain minimum clearance from overhead power lines:

Voltage (KV)	Minimum Clearance
Up to 50 KV	10 ft (3.3m)
50-200 KV	15 ft (4.6m)
200-350 KV	20 ft (6.1m)
350-500 KV	25 ft (7.6m)
500-750 KV	35 ft (10.6m)
750-1,000 KV	45 ft (13.7m)

Important Terms:

Arc Flash Boundary - When an arc flash hazard exists, an approach limit from an arc source at which incident energy equals 1.2 cal/cm^2 (5 J/cm^2)
Incident Energy – The amount of thermal energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. Incident energy is typically expressed in calories per square centimeter (cal/cm^2).
Incident Energy Analysis – A component of an arc flash risk assessment used to predict the incident energy of an arc flash for a specified set of conditions.
Diagnostic Testing/ Troubleshooting - Taking readings or measurements of electrical equipment with approved test equipment that does not require making any physical change to the equipment.
De-energized - Disconnected from external sources of voltage, locked, tagged, and measured for absence of voltage. There should be no source of potential difference between any metallic surfaces or ground. Personal protective grounds may be required.
Energized Electrical Work - When working within the restricted approach boundary or the arc flash boundary of exposed energized electrical conductors or circuit parts that are not placed in an electrically safe work condition. Requires an Energized Electrical Work Permit in some cases.
Exposed - Capable of being inadvertently, accidently, unintentionally touched, or approached nearer than a safe distance by a person. It is applied to electrical conductors or circuit parts that are not suitably guarded, isolated, or insulated.
Limited Approach Boundary - An approach limit at a distance from an exposed energized conductor or circuit part within which a shock hazard exists.
Low Voltage- Any circuit greater than 50 volts but less than 1000 volts is considered to be low voltage.
Medium Voltage - Any circuit greater than 1000 volts but less than 34.5KV is considered to be medium voltage.
Repair Work - Any physical alteration of electrical equipment (such as making or tightening connections, removing or replacing components, etc.).
Restricted Approach Boundary – An approach limit at a distance from an exposed energized electrical conductor or a circuit part within which there is an increased likelihood of electric shock, due to movement, for personnel working in close proximity to the energized electrical conductor or circuit part.

TECHNICAL SUPPLEMENT

ELECTRICAL SAFETY FCX-HS03|ARC FLASH MANAGEMENT

RELEASE 07/2018 | VERSION 1

GENERAL INFORMATION

This technical supplement is intended to establish minimum requirements for electrical Arc Flash studies in all Freeport-McMoRan mining operations and plants in order to balance production requirements, distribution system reliability and troubleshooting, to protect equipment, and to define administrative safety controls to properly protect our people.

Management Process

FCX will assign an Electrical Safety Lead to oversee compliance to this policy and manage a process that includes: tracking the completion of electrical studies, application of arc flash labels, and updating of drawings.

Electrical Safety Lead

The Electrical Safety Lead, in coordination with site leaders, is responsible for verifying and documenting that each site is in compliance with FCX-HS03 Electrical Safety Policy. This includes verification and documentation that each site has updated arc flash results, in compliance with Arc Flash Study requirements section, and updated arc flash labels, single line drawings and an electrical equipment database, as defined in this document.

Arc Flash Engineer

The site will assign an Arc Flash Engineer should be a qualified Electrical Engineer, competent in performing all analysis required to complete the arc flash study and deliver arc flash labels.

The Arc Flash Engineer will keep the electrical equipment documentation/database updated, will be able to perform ad-hoc arc flash studies as needed, in the case of minor changes, and is responsible for performing or oversight of contract engineering when the site-wide arc flash study is completed in compliance with the Arc Flash Study Requirements section.

Arc Flash Study Requirements

Three Phase electrical equipment, rated greater than 240V (RMS-LL), such as switchboards, panel boards, industrial control panels, meter socket enclosures, switchgear, and motor control centers (MCC) that are in other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized shall have an arc flash analysis performed. One of two methods below shall be used to obtain the arc flash incident energy.

1. Incident Energy Analysis Method
2. Arc Flash PPE Category Method

Equipment rated equal to or less than 240V may be labeled as follows:

- 3-Phase equipment rated 240V may be labeled with an incident energy of 4.0cal/cm^2.
- 3-Phase equipment rated less than 240V:
  - Fed by a transformer rated less than 125KVA, may be labeled with an incident energy of less than 1.2cal/cm^2.
  - Fed by a transformer rated greater than or equal to 125KVA, may be labeled with an incident energy of 4.0cal/cm^2
- 1-Phase equipment rated 120V (RMS-LN):
  - Fed by a transformer rated less than 50KVA, may be labeled with an incident energy of less than 1.2cal/cm^2.
  - Fed by a transformer rated greater than or equal to 50KVA, may be labeled with an incident energy of 4.0cal/cm^2

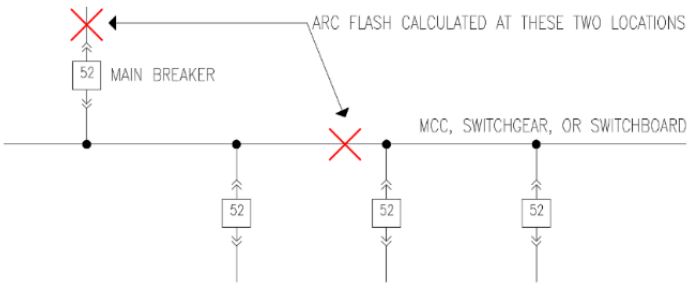
Reference – Electrical Power Research Institute (EPRI) for equipment 50V to 240V

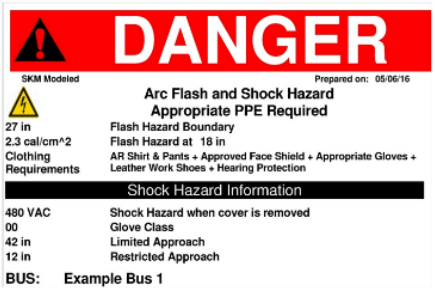
Re-engineering review is required when arc flash levels in 480VAC MCC bus bars are greater than 40 cal/cm^2. Engineering controls will be required for any 480VAC MCC bus bar as a minimum.

Re-engineering should be based on adjustment of relay protection, implementation of maintenance switches (for instantaneous trip), replacement of protection devices, replacement of circuit breakers and the implementation of arc flash reduction devices like Fast Acting fuses, ultra-fast earthing switches or others.

Arc Flash Labels, Single Line Drawings, Electrical Equipment Documentation / Database:

- Accurate arc flash calculations require a complete representation of system configuration and electrical equipment data, to include an arc flash model. Sites must maintain:
  - Electrical drawings
  - Arc flash Model
  - Electrical equipment database (if feasible or must have annual reviews of the first two bullets)
- Each department will have a person responsible to manage and maintain their electrical drawings. Electrical drawings will be updated per MOC procedures.
- Any changes to electrical drawings must:
  - Be provided to the Arc Flash engineer
  - Be signed by the appropriate electrical supervisor or superintendent
  - Be evaluated for accuracy
  - Updated in the drawing database/system
  - Generate new arc flash labels if necessary
- Additionally, electrical equipment documentation or database, arc flash calculations, arc flash labels, and single line drawings shall be reviewed at least every 5 years.
- The results of the Incident Energy Analysis must be on an arc flash label, to be applied directly to the equipment. Labels must contain the following, at a minimum: (see example below)
  1. Nominal equipment voltage
  2. Arc Flash Boundary
  3. Either available incident energy (or) minimum required arc rating of clothing
- Every switchgear, switchboard or MCC with a main breaker will have two arc flash stickers. The first one indicating the arc flash level in the bus bar and the second one indicating the arc flash in the bus bar upstream of the main breaker:





TECHNICAL SUPPLEMENT

ELECTRICAL SAFETY FCX-HS03| PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
RELEASE 07/2018 | VERSION 1

GENERAL INFORMATION

- This defines the minimum requirements that must be followed if work requires circuits of 50 volts or more to be energized. Electrical personnel include for example: electricians, instrument technicians, relay technicians, linemen, electrical engineers, electrical superintendents, and in some cases computer/communications technicians.
- This policy does not cover operators or non-electrical personnel.
- Only electrically qualified individuals will be allowed to perform the work. No work will be performed without the proper safety equipment being worn. The following are the minimum requirements when working around electrical equipment and is intended to meet the standards of the current edition of the NFPA 70E**.**
- Refer to the Arc Flash Calculation Technical supplement for specific rules for incident energy analysis.

Process for PPE selection; Energized Electrical Work

1. Prior to performing energized work, an electrical risk assessment shall be performed to determine if a hazard exists. The "Arc Flash Risk Assessment" flow chart at the end of this document may be used as an acceptable Arc Flash Risk Assessment.
2. If an electrical risk assessment determines that an arc flash hazard exists, the results from the incident energy analysis (arc flash label) shall be used to determine the following:
   a. Arc Flash Boundary
   b. Arc flash PPE required to perform the energized work within the Arc Flash Boundary
3. If an Incident Energy Analysis has not been performed for the equipment, (no arc flash label is present) the "Arc Flash Risk Assessment" flow chart may be used to determine the appropriate level of PPE. Inform a supervisor so that an Incident Energy Analysis can be performed.
4. Prior to performing energized work, the Arc Flash Boundary determined by the Incident Energy Analysis shall be used to provide flagging, barricading or an attendant to prevent unqualified personnel from entering the boundary.

Assessment and Shock Protection Boundaries

- Shock risk assessment is the process that identifies exposure to the potential electrical shock hazards, estimates the potential severity of a shock injury, estimates the likelihood of occurrence of this injury and then determines if protective measures are required and determines the appropriate protective measure to use.
- The shock protection boundaries identified as limited approach boundary and restricted approach boundary shall be applicable where personnel are approaching exposed energized electrical conductors or circuit parts. Refer to the NFPA 70E Table 130.4(D) (a) for A.C. and Table 130.4(D) (b) for D.C.

The chart below shows part of the NFPA 70E Table 130.4(D) (a) for AC and Table 130.4(D) (b) for DC

AC Voltage Range	Limited Approach Boundary	Restricted Approach Boundary
Less than 50V	Not specified	Not specified
50V-150V	3 ft. 6 in. (1.07 m)	Avoid Contact
151-750V	3 ft. 6 in. (1.07 m)	1 ft. (0.3 m)
750V-15KV	5 ft. (1.52 m)	2 ft. 2 in. (0.6 m)

DC Voltage Range	Limited Approach Boundary	Restricted Approach Boundary
Less than 50V	Not specified	Not specified
50V-300V	3 ft. 6 in. (1.07 m)	Avoid Contact
300V-1KV	3 ft. 6 in. (1.07 m)	1 ft. (0.3 m)

Arc Flash PPE

- All personnel inside the flash hazard boundary must follow the same arc flash clothing requirements. If the proper safety equipment is not available, the individual performing the work must clear and guard the area of all affected personnel before any work is performed. The arc flash PPE shall be selected based on the incident energy shown on the arc flash label, or from the "Arc Flash Risk Assessment" flow chart when an arc flash label is not present. The table below shall be used to determine the required PPE once the incident energy is known.

- The Company will provide the required protective clothing for the designated employees working under the mandates of this technical supplement. Cotton underclothing is necessary to maintain maximum burn protection.

- When the incident energy exceeds 40 cal/cm^2, energized work shall not be performed and the circuit must be de-energized at a location upstream of the work area where the incident energy is less than 40cal/cm^2.

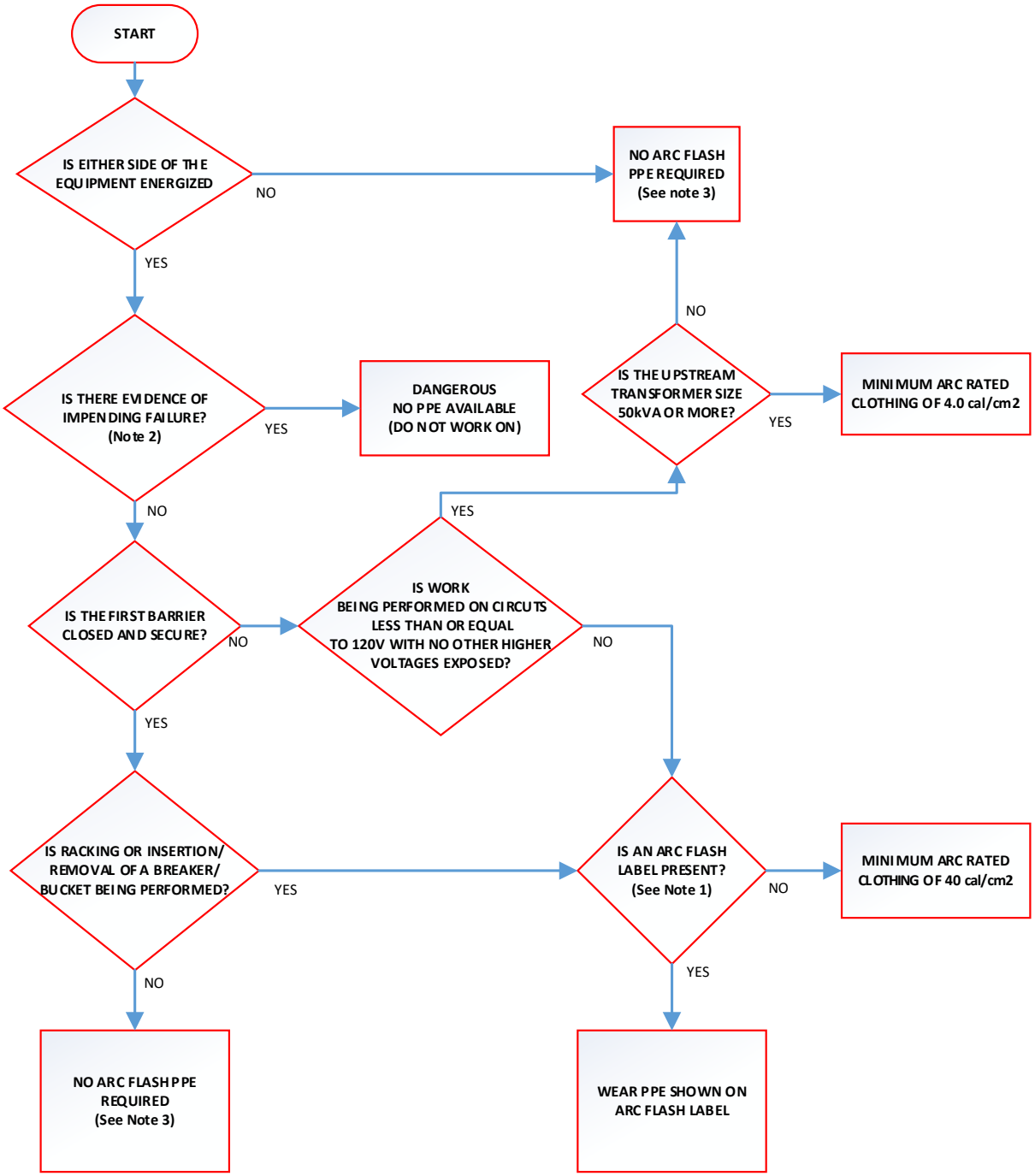
Arc Flash Protective Clothing Table
Less than 1.2 cal/cm^2 • Hard hat • Safety glasses • Leather work shoes • Appropriate gloves
Greater than 1.2 cal/cm^2 AND Less than 8 cal/cm^2 • Arc-rated long-sleeve shirt and pants (or arc-rated coverall) • Arc-rated face shield w/ balaclava (or arc flash suit hood) • Arc-rated outerwear (e.g., jacket, parka, rainwear, hard hat liner) • Appropriate gloves • Safety glasses • Hearing protection • Leather work shoes
Greater than 8 cal/cm^2 AND Less than 40 cal/cm^2 • Arc-rated long-sleeve shirt and pants (or arc-rated coverall) • Arc-rated arc flash suit jacket and pants • Arc-rated arc flash suit hood • Arc-rated gloves or rubber insulating gloves with leather protectors • Safety glasses • Hearing protection • Leather work shoes
Greater than 40 cal/cm^2 **waitNO APPROVED ARC FLASH PPE AVAILABLE. DO NOT WORK ON WHILE ENERGIZED**

Incident Energy	**Arc Flash/Shock Hazard Glove Requirements**	
	Shock Hazard Present	**No Shock Hazard**
Less than 1.2 cal/cm^2	Rubber insulating gloves with leather protectors (Rubber insulating sleeves may also be required)	Heavy Leather gloves
Greater than 1.2 cal/cm^2 AND Less than 8 cal/cm^2	Rubber insulating gloves with leather protectors (Rubber insulating sleeves may also be required)	Heavy Leather gloves OR Arc-rated gloves
Greater than 8 cal/cm^2 AND Less than 40 cal/cm^2	Rubber insulating gloves with leather protectors (Rubber insulating sleeves may also be required)	Arc-rated gloves
Greater than 40 cal/cm^2	**NO APPROVED ARC FLASH PPE AVAILABLE. DO NOT WORK ON ENERGIZED**	

All heavy leather gloves and leather protector gloves must be a minimum thickness 0.03 in. (0.08 cm)

ARC FLASH RISK ASSESSMENT FLOW CHART

NOTE: A Shock Risk Assessment must still be performed to determine electrical shock PPE (rubber gloves, insulated tools, etc.)



Notes:

1. If No Arc Flash Label is present, Inform Supervisor so that an analysis can be performed.
2. Examples may include: arcing, overheating, loose or bound equipment parts, unusual vibration, unusual smell, visible damage or deterioration.
3. This does not preclude the requirements of site specific Arc Flash PPE, Most facilities require an 8cal/cm2 shirt and pants for all electrical personnel while working around electrical equipment.

Energized Electrical Work Permit
Electrical Safety FCX-HS**03**

FREEPORT-McMoRan

JOB/WORK ORDER NUMBER	
REQUESTOR NAME/TITLE	
DATE	

PART I: TO BE COMPLETED BY THE REQUESTER

ITEM	COMMENTS
Description of circuit/equipment/job location	
Description of work to be done	
Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage	

PART II: TO BE COMPLETED BY THE ELECTRICALLY QUALIFIED PERSONS DURING THE WORK

ITEM	COMMENTS Use the back of this form or attach additional information if necessary.	Task Completed?	
		YES	NO
Detailed job description procedure to be used in performing the above detailed work			
Description of the safe work practices to be employed			
Result of the shock hazard analysis			
Determination of shock protection boundaries			
Result of the arc flash hazard analysis			
Determination of the arc flash protection boundary			
Necessary personal protective equipment to safely perform the assigned task:			
Means employed to restrict the access of unqualified persons from the work area			
Evidence of completion of a job briefing including discussion of any-job related hazard			
Do you agree the above described work can be done safely?			
Do you have a 2nd electrically qualified person or trained attendant?			

***** NOTE: If any of the above answers are no, return to requester. *****

PART III: APPROVAL TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED

Electrically Qualified Person(s)		Electrically Qualified Person(s)/Trained Attendant	
Operations Supervisor		Electrical Supervisor*	
APPROVER'S NAME			

***If the Electrical Supervisor is not available then contact must be made with the Sr. Electrical Supervisor or Electrical Superintendent. In the event none of the above can be contacted then contact must be made with the Department Manager and the Health and Safety Manager.**

TECHNICAL SUPPLEMENT

ELECTRICAL SAFETY FCX-HS03| ENERGIZED ELECTRICAL WORK

RELEASE 07/2018 | VERSION 1

GENERAL INFORMATION

- Anytime work is performed on electrical equipment and circuits, every effort must be made to de-energize the power in order to perform the necessary tasks. However, there are times when de-energizing the circuit is not possible. In these cases, appropriate justifications are required and must follow the processes and procedures defined in this Technical Supplement.
- When working within the restricted approach boundary or the arc flash boundary of exposed energized electrical conductors or circuit parts that are not placed in an electrically safe work condition, work to be performed shall be considered energized electrical work.
- This policy applies to all qualified electrical personnel.
- Overhead line work is not covered under this policy.
- Only an electrically qualified individual may perform energized work.

Personnel

- When permitted energized work is performed, there must be a second person present that is able to maintain visual contact with the person performing the work.
- It is preferable that the second person be a "electrically qualified individual," however, if this is not possible an attendant may be used.
- The attendant must be trained in methods of release of victims from contact with exposed energized electrical conductors or circuit parts.
- Attendants shall be trained to perform cardiopulmonary resuscitation (CPR) and how to properly use an automated external defibrillator (AED).

Apprentice / Interns

- Each apprentice or intern must prove they are capable of recognizing and avoiding the hazards associated with the work and have documented competency. Each must be directly supervised by a journeyman.
- No other personnel are considered qualified to perform energized electrical work under any circumstances.

ENERGIZED WORK JUSTIFICATION

Prior to performing energized work, an electrical risk assessment must be completed to determine if an energized work permit must be completed.

Exposed

Employees need to understand electrical exposure as part of the risk assessment in any task. With electrical equipment, most enclosures provide a barrier from energized conductors. Sites need to protect employees from inadvertently, accidently, unintentionally touching, or approaching nearer than a safe distance to electrical equipment. For example, working on smaller 480V panels where 480V disconnects or transformers may be placed in a panel with PLCs or other low voltage electronics.

Energized Work Permit Requirements

- Any Repair work while energized in the restricted approach boundary, including physical alteration of electrical equipment, such as tightening connections, removing or replacing components will require a permit. **See Energized Work Permit**
- An "Energized Electrical Work Permit" must be completed and signed by the qualified individual(s) doing the energized work and a member of Electrical Supervision.
- A permit is not required for diagnostic testing and troubleshooting. This work is still considered energized work and the appropriate personal protective equipment must be used.

Appropriate Justifications

Justification for energized work may include, but is not necessarily limited to, the following:

- Prove that the work is infeasible in a de-energized state due to equipment design or operational limitations.
- Interruption of life support equipment.
- Deactivation of emergency alarm systems, and shutdown of hazardous location ventilation equipment.
- De-energizing the circuit would create additional hazards or increased risks to those performing the work.

Loss of production is not a consideration for justifying the need for energized work. The first priority is the safety of those performing the work and those who are in the affected area.

ENERGIZED WORK

- Each person working on energized equipment is required to know and understand each of the policies/guidelines that apply to the work being performed.
- The person performing the energized work has total control of the job without exception.

Each person is responsible for:

- Safety of one's self and safety of fellow employees.
- Protection of all other personnel through the use of barricading, flagging, attendants, signage, etc.
- Protection of company property and the property of others.
- Notification of any unsafe condition. Work cannot proceed without first calling any unsafe condition to the attention of all personnel involved and completely mitigating all risks.

Procedures for Energized Work

- An "Electrical Risk Assessment" to determine the need for energized work must be completed prior to starting the work.
- When required, an "Energized Electrical Work Permit" must be completed and signed by an appropriate member of electrical supervision.
- When performing energized work, insulated hand tools must be used. These tools will be rated for the appropriate voltage.
- For the proper personal protective clothing for energized work.
- All meters and test equipment must meet a minimum of Category III – 1000V as per ANSI/ISA S82.01 and IEC 61010-1 standards.

MEDUIM VOLTAGE MCC WORK REQUIREMENTS

- **<u>Performing repair work on Medium Voltage (1001V-34.5KV) while energized is not allowed.</u>**
- Switching of motor starters or circuit breakers is not considered energized work as long equipment is in properly installed, maintained on a three year cycle, and has no evidence of impending failure.
- Racking (insertion or removal from the Bus) of starters or breakers when energized with doors open or closed is energized work. No energized work permit is required. Follow PPE information on the label. PPE should be worn while installing remote racking gear. Recommend "Remote Racking / Switching" be implemented and used on energized gear.
- Inserting or removing of starters / breakers from enclosure on an energized bus is energized work. No energized work permit is required. PPE must be worn per the Arc Flash label when the breaker is being removed and installed in the cubicle. PPE must also be worn per the Arc Flash label if breaker door is open when visually checking the position of the shutter.

LOW VOLTAGE BUCKET WORK REQUIREMENTS

- Individual starter buckets may only be removed when there are no feasible alternatives due to equipment design or operational limitations and all options have been exhausted.
- Removal of a low voltage bucket from an energized MCC is considered Energized Work and an Energized Work permit is required to perform this task.
- MCCs that are designed with bus insolation protection for arc flash do not require an energized work permit. (See **Low Voltage MCC Work Requirements Table in this document**)

Replacing major components

- Always remove the MCC bucket when major components are to be replaced, (i.e., overload blocks, starters, fuse holders, breakers, etc.) This is critical when the components are held in place with bolts protruding through the bucket back plane.

Arc Flash Label

- The arc flash label attached to the bucket will supply employees with the required arc and shock information.

o If there is no arc flash label present then refer to Table 130.7 (C) (15) (a) of NFPA 70E or the corresponding table of the most current version of NFPA 70E. Inform your supervisor of this condition to have an arc flash analysis performed.

Absence of Voltage Measure

- Test voltmeter on a known live circuit, perform voltage measurement on de-energized circuit, and then re-test meter on a known live circuit. In areas where a known live circuit may not be available a compact portable safety proving voltage tester is an acceptable means of testing the metering device before and after taking a measurement.

De-energized Bucket and De-energized MCC Bus

- No limits on minor repair work which can be performed once absence of voltage testing is complete. Prior to starting work, employee shall for de-energizing steps /LOTOTO in the electrical policy.

LOW VOLTAGE MCC WORK REQUIREMENTS

Work Type	Energy State	PPE Requirement	Energized Work Permit
Performing minor repairs such as making or tightening connections, removing or replacing components such as fuses, heaters, terminal strips, or any other component which are not held in place by bolts protruding through the bucket back plane.	MCC bucket circuits are **energized**.	Follow the PPE information on the arc flash label	Required
	Breaker in MCC bucket is open, and line side connections to the breaker are energized and accessible.	Follow the PPE information on the arc flash label	Required
	Breaker in MCC bucket is open, and line side connections to the breaker are energized **and not** accessible	Follow the PPE information on the arc flash label until the circuit is proven to be de-energized by performing an absence of voltage test.	Not Required
Work Type	**Energy State**	**PPE Requirement**	**Energized Work Permit**
Performing diagnostic testing, troubleshooting and voltage measurement.	MCC bucket circuits are **energized**.	Follow the PPE information on the arc flash label	Not Required
	Breaker in MCC bucket is open, and line side connections to the breaker are energized and accessible.	Follow the PPE information on the arc flash label	Not Required
	Breaker in MCC bucket is open, and line side connections to the breaker are energized **and not** accessible.	Follow the PPE information on the arc flash label until the circuit is proven to be de-energized by performing an absence of voltage test.	Not Required
Removing bucket to perform major repairs such as replacing overload blocks, starters, fuse holders, breakers, or any other component which are held in place by bolts protruding through the bucket back plane.	MCC bus is **energized.**	Follow the PPE information on the arc flash label	Required

*NOTE – MCCs that are designed with bus insolation protection for arc flash do not require an energized work permit.

TECHNICAL SUPPLEMENT

ELECTRICAL SAFETY FCX-HS03|SWITCHING FOR NON-ELECTRICAL PERSONNEL

RELEASE 07/2018 | VERSION 1

GENERAL INFORMATION

- This technical supplement covers the requirements for allowing qualified, non-electrical personnel at Freeport-McMoRan Operations to work in a safe manner when switching/operating designated electrical equipment.

- The process of operating electrical switches or disconnects has significant hazards associated with it. The potential for electrical arc, flash and blast hazards is always present and these conditions can cause severe damage, injury or even death.

Requirements

- Unless specifically trained and authorized employees will not operate any disconnecting means rated greater than 300V voltage level.

- Area manager approval is required for non-electrical personnel who operate disconnect switches.

- Qualified non-electrical personnel, who are trained and authorized may operate a disconnecting means which meets all of the following conditions:
  - Is a disconnect switch or safety switch.
  - Voltage level above 300V and below 1000V.
  - Continuous current rated 200 Amperes or less.
  - Not located within an MCC room, control room, or switch room.
  - Marked with a “Label.”
  - The equipment has been properly installed.
  - The equipment has been properly maintained in accordance with manufacturer recommendations and documented on a three year cycle.
  - The equipment has no evidence of impending failure.

- Properly maintained means that the equipment has been maintained in accordance with the manufacturer’s recommendations and applicable industry codes and standards.

- Evidence of impending failure means there is evidence such as arcing, overheating, loose or bound equipment parts, visible damage, deterioration, etc., that may indicate a likelihood of impending failure.

Labeling

- Any disconnecting means which trained and authorized non-electrical personnel are allowed to operate shall be labeled.

- The integrity of the disconnecting means (door latching mechanisms) must be verified by an electrician prior to placing the label.

- Each area will be responsible for identifying appropriate disconnecting means and applying the labels.

Training

- Non-electrical personnel must be tasked trained regarding the type of disconnecting means they will be required to operate.
- The 600V Switch/Reset training shall contain elements consisting of the following:
  - Recognize and avoid specific hazards associated with electrical energy.
  - Safety-related work practices and procedural requirements to provide protection from the electrical hazards associated with their respective job or task assignments.
  - Identify and understand the relationship between electrical hazards and possible injury.
  - Identify disconnecting equipment they are qualified to operate.
  - Demonstrate the ability to perform operation of the disconnecting means.
  - Recognizing signs of potential failure

APPENDIX P

FCX-08 Cellular & Hand Held Communication Devices

FREEPORT-McMoRan

Department of Health & Safety Guidelines	GUIDELINES	FCX - 08
	REVISION NO.	
	SUPERSEDE	Ltr., 01/25/07
CELLULAR & HAND HELD COMMUNICATION DEVICES	TASK CLASSIFICATION	Highly Critical / Critical / Non-Critical
APPROVAL DATE – 11/16/2009	ORIGINAL DATE – 11/16/2009	RELEVANT SOPS –

Purpose and Scope

Establish minimum guidelines for the safe use of cellular phones and other hand held devices while operating mobile equipment and light vehicles on FCX operating sites and off-site while on company business.

General

Cellular telephones and other portable handheld communication devices are one of the most convenient ways to communicate when we are away from our work stations. The portability of handheld communication devices make their use increasingly common, however, with that convenience the need to exercise caution and demonstrate responsible use for both personal safety and business reasons is essential.

Operating sites may develop guidelines or procedures more stringent than those listed below based on local operating concerns and hazards.

Guidelines:

- Never allow handheld communication devices to distract your concentration while operating a vehicle or mobile equipment.
- Always give full attention to driving and road conditions and never place or receive a call while driving.
- Sending/receiving text messages, emails or conducting web searches should be prohibited while operating equipment or vehicles.
- Outgoing calls should be made only while equipment or vehicles are stationary.
- Incoming calls should be taken while equipment or vehicles are stationary or when using hands-free devices.
- If you work in operations of a surface or underground mine operations, do not stop on haulage travel roads.
- Handheld communication devices are a quick means for communicating in an emergency. In the event of an emergency, always pull off the road before placing an emergency call.
- The use of display screens for GPS navigation devices, tracking systems, collision avoidance systems, instruments, gauges and systems providing information about the status of mobile equipment is permissible.

APPENDIX Q

FCX-HS01 Administrative Requirements

FCX DEPARTMENT OF OCCUPATIONAL HEALTH AND SAFETY

POLICY ADMINISTRATION REQUIREMENTS

FCX-HS01 | APPROVED 1/22/2020 | RELEASED 1/22/2020
VERSION 1.4

Contents

1.0 Policy

Purpose	This document serves to outline the specific requirements for FCX safety policy administration. In an effort to improve understanding and implementation of FCX health and safety policy, administrative requirements have been compiled in one document.
Scope	These requirements apply to all employees, contractors, vendors and visitors unless explicitly stated otherwise. These requirements apply to the following FCX health and safety policies: FCX-HS02 Working at Heights FCX-HS03 Electrical Safety FCX-HS04 Control of Hazardous Energy FCX-HS05 Confined Space FCX-HS06 Hot Work FCX-HS12 HDPE Handling FCX-HS19 Flagging and Barricading FCX-HS24 Rolling Stock Management FCX-HS28 Sulfuric Acid Handling FCX0HS29 Standard Safety Requirements **Note: Requirements under section 6.0, Variance Request and 7.0, Management of Change apply to all FCX Health and Safety Policies.**

2.0 Responsibilities and Duties

It is expected that all employees, contractors, vendors and visitors exercise stop the job authority when Critical Controls are not in place or are not effective. Managers and supervisors will encourage and empower employees and contractors to exercise stop the job authority without recrimination. Supervisors or Health and Safety Representatives must be immediately contacted if hazardous conditions are identified or actions arise which may cause injury to an employee. Work must be stopped until controls have been identified and implemented.

2.1 Management Responsibilities

It is management's (or their delegate's) responsibility to ensure compliance with this policy and the expectations outlined below.

Maintain Equipment in Good Working Order	Ensure all systems and equipment are in good working order and that regular preventative maintenance procedures are in place. Ensure that manufacturer recommendations and engineering requirements are met and followed. Where a defect or equipment issue will not allow safe operation, ensure equipment and systems are not operated until such repairs can be completed.

Ensure Proper Employee Training	Ensure that all personnel, including contractors, are properly trained per the policies and pertinent regional, federal and state regulations. Ensure employees are competent and qualified to operate equipment and complete other tasks associated with the systems. See Section 5.0, Training for additional information.
Review Contractor Requirements	Ensure that contractors working on FCX property are aware of FCX Health and Safety requirements.
Provide Equipment and Resources	Provide all necessary equipment and resources needed to operate and maintain safe work environments, including local or third party Emergency Response. Establish working relationships with outside resources (i.e., fire department, EMT, local police) as necessary to meet site rescue and emergency response needs.
Maintain Document Control	Maintain all records of completed inspections and documents according to the FCX records retention policy.
Identify Fatal Risks and Critical Controls	Ensure that Fatal Risks associated with activities are identified and Critical Controls to reduce or mitigate those risks are in place and validated by verifying implementation and effectiveness.
Perform Periodic Audits and Inspections	Ensure that regular inspections and audits of systems and equipment are conducted to ensure continued utilization of Critical Controls and their effectiveness. See section 4.0, Audits for additional information.
Evaluate MOC and Variance Requests	Evaluate all Management of Change and Variance Requests, ensuring that the highest level of controls are in place for employee safety and health. See section 6.0, Variance Requests and section 7.0, Management of Change for additional information.
Develop Site Programs	In conjunction with Health and Safety, relevant subject matter experts, steering teams and outside resources, develop and maintain programs to ensure compliance with policy and regulation. Programs include audit and inspection schedules, training requirements, records and retention, risk registers, standard operating procedures and work instructions, and other site specific information as it pertains to each policy. Managers may consider assigning responsible individuals /program administrators as necessary to manage and administer site programs. See section 3.0, Program Requirements for additional information.

2.2 Health and Safety Department Responsibilities

Health Monitoring and Sampling	Health and safety departments will monitor potential exposures and consult on appropriate controls and PPE selection. This includes data

	analysis, reporting, and partnering with operations to develop control strategies.
Fatal Risks and Critical Controls	Ensure that Fatal Risks associated with activities are identified and Critical Controls to reduce or mitigate those risks are in place. Ensure that leadership defines a verification process of these controls continued utilization and effectiveness
Support Site Programs	Programs include audit and inspection schedules, training requirements, records and retention, risk registers, standard operating procedures and work instructions, and other site specific information as it pertains to each policy. See section 3.0, Program Requirements for additional information.
Collect, Maintain and Report Required Information as it Pertains to Policies	This may include employee and contractor hours, incident information, regulatory reporting requirements, and other information as necessary.
Evaluate MOC and Variance Requests	Evaluate all Management of Change and Variance Requests, ensuring that the highest level of controls are in place for employee safety and health. See section 6.0, Variance Requests and section 7.0, Management of Change for additional information.

2.3 Supervisors

Report Injuries, Illnesses and Near Misses	Adhere to site reporting requirements for incidents, injuries, illness and near misses. Participate in root cause analysis when required.
Identify Fatal Risks and Implement Critical Controls	Using the principles of Fatal Risk Management and the Hierarchy of Controls, supervisors are to work in partnership with employees and managers to identify Fatal Risks and implement corresponding Critical Controls to eliminate or mitigate those risks.
Support Site Health and Safety Programs	Accommodate workloads to support employee involvement and attendance in training, monitoring and other mandatory health and safety activities. Monitor employee behaviors and follow up with feedback, formal discipline when necessary. Through observations and evaluations, ensure employees are qualified to perform work as assigned. Ensure employees attend scheduled medical exams and training. Participate in audits, inspections and other risk-reduction activities. Provide feedback to managers and resources to employees as necessary to achieve safe production goals.

2.4 Employees

In line with the principles of Fatality Prevention, the roles and responsibilities for all employees and contractors are outlined below.	
Training and Qualification	Employees are required to have completed appropriate task training prior to beginning work. Documentation of training is required. It is required that the worker follow and perform tasks in accordance with established methods and means to meet the policy and program requirements.
Identify Fatal Risks and Implement Critical Controls	Using the principles of Fatal Risk Management and the Hierarchy of Controls, employees should partner with supervisors and managers to identify Fatal Risks in work areas and implement Critical Controls to eliminate or mitigate them.
Support Site Health and Safety Programs	Participate and attend training, monitoring and other mandatory health and safety activities. Participate in audits, inspections and other risk-reduction activities. Provide feedback to supervisors as necessary to achieve safe production goals.
Report Injuries, Illnesses and Near Misses	Adhere to site reporting requirements for incidents, injuries, illnesses and near misses. Participate in root cause analysis when required.

2.5 Contractors

All contractors are expected to comply with FCX Policies (including this document), the FCX Contractor Health and Safety manual and local, regional and national regulations as applicable.	
Comply with all FCX, Local, regional and national Laws	Prior to performing work on FCX sites, contractors must evaluate full scope of work and be in compliance with all applicable FCX, local, regional and national laws.
Support Site Health and Safety Programs	This includes but is not limited to: • Fatality Prevention • Only perform tasks as trained and maintain training and documentation • Participate in periodic inspections and audits • Record and submit hours • Report incidents, injuries, illness and near misses according to site reporting requirements • Participate in Root Cause Analysis as necessary • Monitor employee behavior and work conditions • Identify Fatal Risks and implement Critical Controls • Ensure employees are qualified to perform work safely • Safe production

- Reference the Contractor Safety and Health Manual for additional information

2.6 Project Managers and Contract Management

Verify Contractor Training	Verify that contractors provide Health and Safety training to employees at least equivalent to FCX expectations.
Risk Assessment	Using Hazard Identification, Risk Assessment and Determination of Controls (HIRADC), project managers, and contracts management should work with local supervisors and Health and Safety Departments to identify Fatal Risks in work areas and tasks.
Ensure Communication of FCX Policies, and that Contractors Meet the Requirements	Provide contractors with appropriate FCX policies and documents to ensure safe production. Verify that contractors meet the requirements as outlined in policy and the Contractor Safety Manual on a continuous basis.

2.7 Steering Teams

Certain Policies will have a steering team to assist sites with understanding, auditing and reviewing the policy to ensure continual improvement of the policy and best practices.	
Perform Periodic Inspections and Audits	Working as individual steering teams, or in conjunction with other audit groups, define criteria and focus of specialty (arc flash, hazardous gas, acid handling, etc.). Establish and conduct schedules for periodic inspections and audits. See section 4.0, Audits for additional information.
Provide Recommendations to Management, Health and Safety and Other Sites as Needed	When audits and inspections indicate a need for change, steering teams are expected to share that information as required with site and company groups as appropriate. Steering teams should be prepared to review and assist in development of new or revised policies and procedures at the site and corporate levels.
Identify Fatal Risks and Critical Controls	Using the principles of Fatal Risk Management and the Hierarchy of Controls, employees should work with supervisors and managers to identify Fatal Risks in work areas and tasks and implement Critical Controls to eliminate or mitigate them.

2.8 Rescue Teams

Maintain Training and Rescue Capabilities	Ensure that the team members meet minimum training requirements for rescue capabilities (CPR, EMT certifications, rope rescue, etc.) and compliance training (work at heights, LOTOTO, confined space, etc.). If rescue team members are not current in a rescue capability or compliance training requirements, they are excluded from participation in those specific activities until training is current.
Emergency Drills	The team is responsible for conducting emergency response drills and table top exercises on site identified high/fatal/critical risks. Exercises should include live practice, as well as table top discussions, and lessons learned or action plans should be recorded and tracked.

3.0 Site Program Requirements

Actions and activities to ensure site compliance with policies. Separate documents and procedures need not be developed when these elements are covered elsewhere in site programs.	
Inspection Cycles	Sites will establish regular and ongoing evaluation cycles and criteria to verify policy requirements and expectations are being adhered to in the field. Required evaluations may include equipment, material, maintenance and process inspections.
Program Review/Audit	Annually, sites will review program elements. Gaps in program elements will be addressed with action plans and schedules for mitigation. See Audits, Section 4.
Standard Operating Procedures and Work Instruction	Sites will develop standard operating procedures and/or work instructions that identify hazards and risks, as well as mitigation steps through the procedures or work activities. Tasks and jobs requiring procedures and instructions will based on risk ratings with those identified as higher risk prioritized. Low risk work may not need procedures or instructions.
Risk Registers	Sites will evaluate risks based on the Risk Matrix, available on the DOHS website, for high risk jobs and tasks. Risk registers will be developed and maintained to identify mitigation efforts. Frequency of review will be determined by actions plans derived from the risk assessment process, including when gaps are identified, incidents occur or when indicated by audit and inspection findings.

Training	Sites will maintain pertinent training documentation for compliance, task and other training as required by policy and local, state and federal laws. Training documentation includes but is not limited to materials, instructors and qualifications, certifications, rosters etc. Reference section 5.0, Training for additional information.
Site Specific Supplements	When sites develop or adopt requirements in addition to those outlined in policy or regulation, those additions should be documented, communicated, monitored and trained in a manner that ensures compliance.
Additional Requirements	See Appendix A.

4.0 Audits

An audit is a snapshot in time. The purpose of an audit is to verify that the requirements laid out by management in the form of policies and procedures is being adhered to as expected in the field. Audits consider a representative sampling of data. Audits can be internal or external in nature.

Annual Program Audit	Site managers are responsible for ensuring that site programs (the site-specific procedures and requirements) meet the expectations of FCX health and safety policies. Program Reviews (Program Audits) are expected to be conducted at least annually, but more often if findings indicate gaps or generate Corrective and Preventative Action Plans. Audit teams should be cross functional and include members of Management, Health and Safety, Operations and Maintenance as necessary and appropriate. Annual program audits should cover all aspects of site programs including • Emergency response • Training • Documentation • Compliance • Roles and Responsibilities • Accountability All audits should be documented with action items tracked as required. Annual program audits may be conducted in conjunction with internal health and safety system audits.
Emergency Response Team Audits	Conduct regular interval audits of training, supplies, qualifications, certifications, equipment, drills and actual rescue lessons learned. When outside entities are used in lieu of site emergency response, ensure those entities meet site requirements including escort plans as necessary. At a minimum, evaluate emergency response to: confined space, fall from height, hazardous gas exposure and vehicle interaction as appropriate.

More Frequent Audits	Some FCX safety policies require more frequent audits based local, regional and national requirements. See Appendix B.

5.0 Training

Training requirements listed in Appendix C.	
Awareness Training	Must be provided to all employees, contractors, and visitors who have, or have the potential to work around, with or have contact with Fatal Risks outlined in FCX safety policy. This training should be provided upon initial assignment (induction) to the site or facility, and annually thereafter. This training should include an overview of the applicable policy and regulations, as well as the hazards and mitigations.
Technical / Task Training	Must be provided to all employees, contractors, and visitors who are authorized, affected, competent or qualified to perform specific tasks. This training should be provided upon initial assignment to the site, area, department or facility. Refresher training should be provided annually as required by local, regional and national laws, or when indicated through audits/inspections/incidents.
Annual/Refresher Training	Must be provided to all employees, contractors, and visitors who are authorized, affected, competent or qualified to perform tasks associated with Fatal Risks outlined in FCX Policy. This training is provided annually. It must include a review of existing policies and regulations and should review any new or existing hazards and mitigations. **NOTE: Annually is defined as once in a twelve-month period.**
Contractor and Vendor Requirements	Contractors and vendors (their company or organization) may complete equivalent training, and provide proof of such training prior to being admitted on to a site or facility. **NOTE: Site visitors, when accompanied and escorted 100% may be exempt from certain training requirements. It is the responsibility of individual sites to set expectations for visitor training requirements.**

6.0 Variance Requests

****This section applies to all FCX Health and Safety Policies****

Controls specified in Health and Safety Policies are minimum controls based on regulations, best practices, expert reviews and past experience. FCX does not accept non-compliance or allow deviations from policy, but does recognize that strict compliance with every policy at all times may not be feasible. FCX has established this process to allow for justifiable variances from the policies.

When a Health and Safety Policy cannot be met for <u>any</u> reason, a Variance Request must be completed and reviewed and approved.

The Variance Request must:

- **Specify the reason the policy cannot be met**
- **Outline the alternative controls to ensure an equivalent level of protection to employees and/or contractors**
- **Must be documented in the MOC system located in Site Ops Call Center**
- **Site Ops Call Center is the archive for MOC ticket and associated documents**

Short-Term Variance

Situations that are temporary in nature where work is in progress and the specific conditions of the work area or other parameters may not allow for full compliance with a policy.

- One-time events
- Emergency situations
- Work in regions where equipment to comply is not immediately available
- Site conditions which do not allow for compliance
- Where alterations to the facility would be required

Short-term variances should be restricted to non-routine work activities where unanticipated conditions make compliance infeasible or more hazardous. Short-term variances should be evaluated as part of continuous improvement of safe work practices.

Work may only proceed when all levels of approval are complete. Process for completion and approval:

Requestor & Supervisor	Provide description of request, justification for variance and additional/alternate control measures. Use the MOC system to submit the request. Include the site responsible H&S Director (and others as necessary) using the "Notifier" option.
Area Superintendent	Determines if Engineering Review is required. If so, forward the request to the appropriate engineer. Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
Division or Area Manager	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
Health and Safety Manager	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.

Long-Term Variance

Long-term variances are not permanent. To obtain a long-term variance there must be a proposal of alternate means of control that provide equal or greater

protection to employees, or diminish the risk to the lowest level reasonably possible. An approved long-term variance must be review annually and move through the approval process, checking for improved controls and mitigation of risk.

Work may only proceed when all levels of approval are complete. Process for completion and approval:

Requestor & Supervisor	Provide description of request, justification for variance and additional/alternate control measures. Use the MOC system to submit the request. **NOTE: set a "to-do" for a one-year review of the variance.
Area Superintendent	Determines if Engineering Review is required. If so, include the appropriate engineer with a feedback/review and approve. Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
Division or Area Manager	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
Health and Safety Manager	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
Site General Manager	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.
DOHS Director	Review the variance request for applicability and acceptability. Approve or decline within the MOC system.

Expiration

Short-term variances have a strictly defined beginning and ending time and date and are limited to a specific unique task. Close short-term variances in the MOC system at the completion of the work.

Long-term variances must be submitted annually to validate the need for the variance to remain in effect. If the scope of work changes, the variance must be re-evaluated and a new variance approved if still required. Close long-term variances in the MOC system at the expiration of the variance.

All variances will be valid only for the timeframe listed on the request or until the action plan to comply is completed, whichever comes first.

7.0 Management of Change (MOC)

This section applies to all FCX Health and Safety Policies	
Process Overview	Sites will utilize a formal action tracked, and documented process of review of Management of Change activities. The process will include all relevant parties including engineering, safety, environmental GSC, operations and maintenance as appropriate.

8.0 Common Standard Definitions

Audit	A safety audit involves measuring and collecting information about the reliability and effectiveness of the safety inspections, programs, training, plans and systems within a workplace. The relationship between a safety inspection and a safety audit is that a safety audit is used to determine whether the safety inspection is returning accurate, reliable, and complete results. A safety audit is verification that the safety programs are working.
Authorized Individual	A qualified person who has the permissions, need, and knowledge to perform a specific task in a specific area. This person is accountable for the safety of the work they are performing.
Barricade	A physical obstruction used to deter the passage of persons or vehicles.
Buddy System	A procedure in which two people, the "buddies", operate together as a single unit so that they are able to monitor and help each other.
Caution	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. Shall be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury. Caution signage will be yellow in color.
Competent Person	One who has demonstrated the capability of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
Contractor	General or Prime Contractor, Subcontractor or supplier on the FCX site.
Critical Control	A device, system, or process implemented to eliminate or reduce the risk for a task/job, and if missing or overlooked has the potential to lead to catastrophic outcomes such as serious injury or death.
Danger	Indicates a hazardous situation that, if not avoided, will result in death or serious injury. The signal word "DANGER" is to be limited to the most extreme situations. DANGER [signs] should not be used for property damage hazards unless personal injury risk appropriate to these levels is also involved. Shall be used in major hazard situations where an immediate hazard presents a threat

	of death or serious injury to employees. Danger tags shall be used on in these situations. Danger signage shall be red in color.
Emergency Drills	A key process to simulate events for the purpose of testing the developed emergency response plan, to determine problems or weaknesses in the plan and procedures, and to develop corresponding corrective actions. Both Tabletop Drills and full Drills and the emergency response process are detailed with the FCX Crisis Management Guideline.
Fatal Risk	A risk that if not controlled has the potential to lead to catastrophic outcomes such as serious injury or death.
Guarding	An object placed between personnel and hazards. Designed to keep any portion of the body from contact (intentional or inadvertent) with a hazard. Shielded, fenced, or enclosed by covers, casings, shields, troughs, spillways or railings, or guarded by position or location. Examples of guarding methods are guarding by location (positioning hazards so they are inaccessible to employees) and point of operation guarding (using barrier guards, two-hand tripping devices, electronic safety devices, or other such devices).
Inspection	A safety inspection looks at the physical conditions and work practices in a workplace. Equipment is examined to determine whether all safeguards are in place and whether its operation presents any hazards. Air, water, and other samples may be obtained to test for hazardous substances. Work practices are observed to identify unsafe actions. The overall goal of a safety inspection is to identify hazards so they can be eliminated, guarded, or protected against.
Near Miss	An unplanned event that did not result in physical injury or illness to people, damage to property, or loss to process or production, but had the potential to do so.
Qualified Person	One who, by possession of a recognized degree, certificate or professional standing or who by knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work or the project.
Safety Equipment	Equipment designed and utilized to mitigate and control risk. EXAMPLES: Block and bleed valves, audible and visual alarms, local exhaust ventilation systems, building roof fans designed for ambient air exchange, process scrubbers, intrinsically safe tools and systems etc.
Spotter/Safety Watch	A qualified person, designated by the supervisor, who performs all the observation duties assigned for the task. This individual may be equipped with an emergency communication device, and be outfitted with PPE as required for the task. It is the sole responsibility of this individual to perform only the observation activities that apply to the task, and no other functions or tasks.
Warning	Indicates a hazardous situation that, if not avoided, could result in death or serious injury. WARNING [signs] should not be used for property damage hazards unless personal injury risk appropriate to this level is also involved.

9.0 Records Retention

Records applicable to policies must be retained according to the FCX Records Retention Policy	
Required Documents	• Annual program review documents • Variance Documents • Audit findings and action items • Employee training records • Engineering reports • Third party findings • Others as appropriate

10.0 Revision History

Initial Release	May, 2018 Appendix Revision: July 2018 Appendix Revision: January, 2019 Variance Management Adjustment: January, 2019 Appendix Revision: August, 2019 Appendix Revision: January, 2020

Appendix A – Site Program Requirements

Policy	Other Requirements
FCX-HS02 Working at Heights	Sites will maintain monthly and annual inspections (documented) of fall protection equipment, and annual PM of permanently installed systems, including engineering review of verification of anchorage capacity as necessary.
FCX-HS03 Electrical Safety Policy	Sites will maintain: ground check program for equipment; assigned Arc Flash Engineer and a responsible person for drawing management (reference Arch Flash Management Technical Supplement for further details); Electrical Equipment Database, and/or accurate drawings and arc flash model when a database is not feasible.
FCX-HS04 Control of Hazardous Energy	Written program detailing the requirements for lockout/tagout/tryout. Survey of all hazardous energy sources and identification of complex or multiple source energy isolating devices. Written procedures for machines, equipment and processes (like items may be grouped). Procedures will include identification of the machine, equipment or process, listing of all required energy isolating devices and their locations, and specific procedural steps for shutting down, isolating, blocking, securing and relieving stored or residual energy. As well as specific procedural steps for the placement and removal of lockout devices and specific requirements for verifying that isolation and de-energization has been accomplished. Regular review hazardous energy control procedures not to exceed 3 years. When new processes/systems are installed or upgraded, any written procedures should be reviewed and amended as necessary. Inventory of as-builts and drawings of hazardous energy sources for equipment (when those sources are not obvious) , located in a common library (e.g. fuel lines, electrical lines, acid lines…)
FCX-HS05 Confined Space Entry	Risk Register and control plan. All spaces must be labeled and included on inventory regardless of permit status
FCX-HS06 Hot Work	Areas with known but not obvious combustibles, signage must identify need for Hot Work Permits. Sites will maintain documented list of fire safe designated areas.
FXC-HS12 HDPE Pipe Handling	Rigging inspection documents and engineering approval will be maintained for a period of at least one year.
FCX-HS19 Flagging and Barricading	none
FCX-HS24 Rolling Stock Management	none

FCX-HSX28 Sulfuric Acid Bulk Handling	The following program requirements must be in place: Security cameras installed at acid loading/unloading areas and monitored by a control room, with the ability to record. Conspicuously located emergency stop buttons, thus labelled. Positive communication system in acid loading/unloading area with clear and obvious signage. Signage must include: emergency contact number, responsible person, site radio channel information. Windsocks installed and visible to operators working in loading/unloading areas. Secondary shut-off devices installed outside tanker Hot Zone. Emergency wash stations that meet ANSI Z358.1-2009 or equivalent and the following: • Accessible units, within 50ft (15 m) of loading/unloading areas • Integration with site emergency communication or control room • Uninterruptible flow • Accessible on rail platforms and at ground levels Preventative maintenance schedule for the following when in use: • Eyewashes, showers and water supply systems • Camlocks, hoses, gaskets and support chains • Splash guards • Pumps • Level indicators, gauges and lights • Cameras and communication systems • Metering equipment • Emergency stop systems
FCX-HS29 Standard Safety Requirements	None

Appendix B –Audit Requirements

Policy	Audit Requirements
FCX-HS02 Working at Heights	**Periodic, but at least annual**: fall protection use, component condition and maintenance, stock of components and permanently installed fall protection systems. **Annually**: Review records associated with the maintenance of all fall protection components and systems. Review and update risk registers/inventory.
FCX-HS03 Electrical Safety Policy	**At least every 5 years:** Arc flash analysis and single line drawing review by site electrical leaders. **Annually**: FCX Electrical Safety Lead (or delegate) will perform audits on the site's electrical equipment database or drawings and the Arc Flash Engineer's model, if used.
FCX-HS04 Control of Hazardous Energy	**Annual:** program review, and inspection of energy control procedure(s) in progress. The inspection must be documented and include a review of the roles and responsibilities of each individual involved.
FCX-HS05 Confined Space Entry	**Annual**: review risk register, confined space inventory, cancelled permits and observe live entries.
FCX-HS06 Hot Work	**Periodic, but at least annual,** survey of hot work requirements.
FCX-HS12 HDPE Pipe Handling	**Quarterly** field audits by site team and/or project. **Annual** PSST audit.
FCX-HS19 Flagging and Barricading	None
FCX-HS24 Round Stock Management	None
FCX-HSX28 Sulfuric Acid Bulk Handling	**Quarterly:** Health and Safety and area supervisor, audit unloading/loading activities for Critical Control use and effectiveness. **Periodic, but at least annual:** Health and Safety, jointly with contractors/carriers inspect work areas (schedule based on volume of delivery and frequency of exposure).
FCX-HS29 Standard Safety Requirements	None

Appendix C – Training Requirements

Note: Not all courses may be required in all circumstances. See MTI SharePoint for most recent course list.

Policy	Training Required	Details	MTI Course Information
FCX-HS02 Working at Heights	Initial and Annual Refresher	Specialized equipment use. Must include evaluation of understanding.	SFT_FCX1012C Working at Heights MEQ_MTI2005C Aerial Work Platform
FCX-HSX03 Electrical Safety Policy	Initial and Annual Refresher	Specialized equipment use, and skills assessment. Must include evaluation of understanding.	SFT_FCX1013C Control of Hazardous Energy NFPA 70E (every 3 years) CPR / First Aid Contact Release Electrical Safety for Mining 600V Switching for Non-Electricians (initial only)
FCX-HS04 Control of Hazardous Energy	Initial and Annual Refresher	Training must include a review of past incidents and changes to the program, including new or altered equipment. Employees must be task trained to the written procedures for each unique piece of equipment/system.	SFT_FCX1013C Control of Hazardous Energy
FCX-HS05 Confined Space Entry	Initial and Annual Refresher	Specific training for various roles (entrant, attendant and supervisor). Must include evaluation of understanding.	SFT_FCX1003C Confined Space SFT_FCX1007C Minimalist Confined Space Rescue
FCX-HS06 Hot Work	Initial and Annual Refresher	Fire prevention. Task specific requirements. Must include evaluation of understanding.	SFT_FCX1022C Hot Work
FCX-HS12 HDPE Pipe Handling	Initial	Training to include: rigging, policy, awareness, use of permit, safe distances, proper use of substantial barriers, loading, off loading, storage, pulling and handling, fusing, inspection and failure prevention, incident review, hazard areas, mobile equipment use. Skills assessment required.	HYD_FCX2027C & HYD_FCX2024C HDPE Pipe Handling HYD_MTI1002C HDPE Pipe Fusing RIG_FCX1001C Technical Rigging HDPE Skills Training Datalogging
FCX-HS19 Flagging and Barricading	Initial and Remedial as Necessary	n/a	SFT_FCX1020C Flagging and Barricading
FCX-HS24 Round Stock Management		Training as required to perform duties.	n/a
FCX-HS28 Sulfuric Acid Bulk Handling	Initial and Annual Refresher	Training to include: overview of policy and regulation and new or existing hazards and mitigations.	Site specific training and operator technical training SFT_FCX1017C Bulk Sulfuric Acid Handling Training

FCX-HS29 Standard Safety Requirements	Initial and Remedial	Task training may be required for some activities covered in the policy. Reference national, regional and local regulation for additional information.	n/a

Appendix D – Variance Request Form

Complete this form with a detailed description of the area and reason for the variance request. A task review by an engineer or other qualified individual to consider other controls must be completed prior to submitting for approval. The approval authority for either long-term or temporary variance request is specified at the bottom of the form.	
Site / Operation:	Variance Duration: From Date/Time _____ To Date/Time _____
Type of Variance (Check Only One) Long-term Temporary	
Location of Activity:	Policy:
Purpose of Activity:	Division Manager:
Description of Request:	
Justification for Variance:	
Additional Control Measures:	
Action Plan to Comply with Policy:	
Responsible Party:	Expected Date of Completion:

APPENDIX R

FCX Weapons Policy

FREEPORT-McMoRan

Weapons Policy

CAMC – Former Satralloy Site

To provide all employees, contractors, subcontractors, vendors, and visitors a workplace that is safe and free of violence, the CAMC (Company) prohibits the use or possession of weapons while on Company-controlled property except as specifically authorized by this policy or as provided by law.

Company-controlled premises at the Former Satralloy Site include, but are not limited to: the exclusion zone, the support zone, the parking lot and all other lands within the property boundary. Lawfully possessed, transported, and stored weapons are allowable in **locked** personal vehicles in the **designated parking area only**.

Weapons include, but are not limited to: firearms, explosives, knives, bows of any kind and other substances and devices that may be considered dangerous or have the potential to cause harm to people or property. The policy applies to employees, contingent workers, contractors, subcontractors, consultants, vendors and visitors.

Employees whose position requires the use or possession of a weapon will be authorized, and given the conditions of such responsibilities, must abide by those conditions. Specifically this policy allows the hired security guard force through the Jefferson County Sheriff's Office to possess their service pistols anywhere on the Company property.

Any Company employees violating this policy are subject to disciplinary action up to and including termination of employment. Visitors, contingent workers, contractors, subcontractors, consultants and vendors violating the policy will be escorted from the property.

In accordance with Ohio Rev. Codes 2923.125 and 2923.16 Unless otherwise specified in this policy, no person shall knowingly transport or have a firearm in a motor vehicle, unless the individual has a valid concealed carry license, the firearm is **unloaded** and the firearm and ammunition are carried in one of the following ways:

- The firearm must be located in a locked, privately owned motor vehicle or in a locked compartment on a privately owned motorcycle;
- The firearm must not be visible from outside the vehicle or motorcycle;
- The firearm must be unloaded.

Transportation and storage of any firearm that does not meet such criteria will result in disciplinary action consistent with Company policy. This policy otherwise does not affect or limit the Company's right to search any motor vehicle or motorcycle on Company-controlled property or search any other Company controlled premises.

APPENDIX S

FCX-22 Industrial Railroad Policy

FCX Department of Occupational Health and Safety			
	SOP #		FCX-22
	Revision #		0: New
	Supersedes		New
Industrial Railroad Policy	**Task Risk**	X	**High**
			Medium
			Low
			NA
Approval Date: 3/1/15	**Original Date: 3/1/15**		

Contents

1.0 Policy

This document establishes the minimum requirements and procedures for the health and safety of Freeport-McMoRan employees and contract personnel working in, and in connection with, industrial railroads.

Policy	All Freeport-McMoRan (FCX) locations that have an industrial railroad will at a minimum adopt this policy and ensure that all site standard operating procedures are aligned with it.
Scope	This policy covers all FCX sites and to the extent possible the rail companies that operate on or within FCX property boundaries. Operation of the Industrial Railroad shall include the movement of all railcars from the point of receiving from external providers and within FCX rail yards, including overseeing safe car handling such as switching, weighing, spotting and processing railcars for loading when required.

2.0 Responsibilities and Duties

2.1 Management Responsibilities

It is management's responsibility to ensure compliance with this policy, procedure, and the expectations outlined below.

Maintain Equipment in Good Working Order	Ensure all equipment utilized in the site industrial railroad is in good working order and that regular preventative maintenance procedures are in place. Where a defect or equipment issue will not allow safe operation, ensure equipment is not operated until such repairs can be completed. For cars not owned by FCX, a procedure for noting issues and reporting to the owner for repairs will be developed and implemented.
Ensure Proper Employee Training	Ensure that all personnel involved with the industrial railroad are properly trained per the requirements outlined within this document and with pertinent other regional, federal and state regulations. Ensure employees are competent and qualified to operate the train and complete other tasks associated with the rail line.
Review Contractor Requirements	Ensure that contractors working on FCX property are aware of these requirements and have been trained.
Provide Equipment and Resources	Provide all necessary equipment and resources needed to implement and maintain safe industrial railroad operations.
Maintain Documents Control	Maintain all completed inspections and documentation according to the FCX records retention policy.

Identify Critical Risks and Critical Controls	Ensure that critical risks associated with industrial railroad activities are identified and critical controls to reduce or mitigate those risks are in place. Ensure that leadership conducts periodic audits of these controls to verify use and effectiveness.
Perform Periodic Audits of the Industrial Railroad Operations	Ensure that regular audits of tasks performed with industrial railroad activities are conducted by industrial railroad employees. In conjunction with the Health and Safety department, conduct periodic audits of the overall industrial railroad procedures to ensure compliance.

2.2 Health and Safety Department Responsibilities

It is the H&S Department's responsibility to support compliance with this policy, procedure, and the expectations outlined below.

3.0 Procedures

Each site with an industrial railroad will ensure that site-specific procedures comply with this policy at a minimum. All employees will comply with site-specific procedures.

3.1 Equipment Inspection

Self-propelled equipment that is to be used during the shift shall be inspected by the equipment operator before being placed in operation and defects corrected following site equipment inspection procedures.

Locomotive (self-propelled equipment) Inspection	Items affecting safety on the locomotive safety inspection list shall be corrected before placing equipment into operation by either calling a mechanic to the field, taking to the shop for repairs, or setting aside until repairs can be made: • Automatic air brakes • Engine (independent) brake • Air leakage test • Dynamic brake (if applicable) • Missing or damaged handrails or steps • Manual handbrake • Bell and horn • Fire extinguishers • Dead-man switch • Throttles • Gauges (water, oil fuel, pressure, etc.) • Couplers

Railcar Inspection	Every railcar brought onto FCX property will be visually inspected by a qualified individual for defects (to include load condition and balance). Railcars involved in a derailment will be inspected by a qualified individual prior to being put back in service. When locomotives coupled to railcars are being inspected or repaired in field, and persons are required to be on or in the car, the locomotive and train brakes will be fully applied. This will allow for proper brake inspection while preventing movement and protecting persons working in the area. If brakes are not working, the cars should be sent out for repairs at first available point, or proper procedures for train handling should be followed. After inspection, trainmen will confirm that brakes are operating properly. See Appendix for railcar inspection criteria.

3.2 Track and Supporting Equipment

Where track is located on FCX property and in its control, these minimum standards will be followed. Where track is not on FCX property but used as access to FCX, sites these standards will be shared with third-party providers for consideration and to set expectations.

Class II standards will be referenced as best practice.

General Track Requirements	At a minimum track shall be maintained to railroad standards set by the Surface Transportation Board or equivalent local country standards. Bolt holes on track shall not be torch cut except in emergencies. If torched, there must be a plan in place to replace and repair properly.
Maximum Grade Requirements	Switching on grade shall be avoided. If switching must be done on grade, other controls must be put in place to minimize the risk following the FCX- Global Risk Exemption Process. Special evaluation must be completed when operating on grades based on the load and braking capacity.
Road Bed	Must be maintained to railroad standards set by the Surface Transportation Board or equivalent local country standards.
Supers and Curves	The geometry of curves and supers shall be evaluated by a qualified individual to minimize wear and tear on the equipment and on the track. Speed, make-up of cars, and wheel tapers will also be factored into these evaluations.
Shoulders/ Walkways	A minimum 30” shoulder from the end of the tie shall be maintained along the track.
Gauge	The inside gauge of rails shall meet the standards outlined by the Surface Transportation Board railroad standards or equivalent local country standards.

Switches	The employee handling the switch or derail, is responsible for the position of the switch or derail. The employee must not allow movement to foul an adjacent track until the hand-operated switch is properly lined. A switch that is tagged as inoperable (or Bad Order) shall not be operated until repaired. If the switch is spiked do not remove the spike unless authorized by the person or crew that placed it. See the Appendix for specific switching requirements.
Derailer for Control of Movement	Derailers shall be installed properly for the rail to which it is applied and maintained in good working order. Derailers shall be visible to train crew. All derailers shall be in the derail position to prevent uncontrolled movement of trains. Derailers utilized as part of a lockout tagout tryout (LOTOTO) process may have different requirements and will be included in site-specific training.
Re-railing	Rerailing shall be done in a manner appropriate to conditions. Pre-job risk assessment will be conducted to determine the proper equipment and controls that will be utilized for safe re-railing.
Signal Crossings	Signal crossings must be inspected monthly, quarterly, and annually for proper operation by qualified inspectors. Records of the inspections must be retained for review. If a signal is determined to be inoperable then the train must stop prior to entering the crossing. A crew member must disembark from the train and enter the crossing to warn approaching highway traffic. When clear to do so the train may proceed at normal speed. See the Appendix for specific switching requirements.

3.3 Rail Cars and Locomotives

Each operation with industrial railroad will follow these key operating practices at a minimum.

Securing Parked Railroad Equipment	There shall be no less than two hand brakes set on any train at any time. If in doubt of percent of grade set all operable hand brakes. Wheel chocks shall also be used in conjunction with handbrakes when it is necessary to protect personnel and/or equipment from runaway or moving railroad cars. Recommended minimum number of handbrakes to be set according to grade percentage: • 1% grade - one brake per 330 tons • 2% grade - one brake per 200 tons • 3% grade - one brake per 111 tons • >3% shall have all hand brakes set

	Where brakes are not functional, railroad cars must be blocked or otherwise secured to prevent movement. Wheel chocks or other adequate means such as chaining to the rail, use of wedges, etc. shall be used. **NOTE:** Single parked cars will have the handbrake set and will be chocked. Never park cars without air system being set into "emergency" mode. Sites shall conduct a grade study and sign or mark key areas along the track. When shutting down locomotives all handbrakes shall be set. Locomotive shall not be left unattended while on a grade except in the case of an emergency with additional controls put into place to prevent movement. The generator field switch will be left in the "off" position to prevent it from inadvertently being set into motion. Independent brake handle shall be left in the fully applied position when vacating the cab. The locomotive reverser and brake handles must be removed from the control panel when locomotives are left unattended outside the fenced boundary of FCX property.
Wheels	Locomotive wheels shall be turned periodically and evaluated by a qualified individual to ensure within tolerances (flange, diameter, and taper). If a wheel on a piece of equipment has a flat spot more than 2 ½ inches long, or if the wheel has adjoining flat spots that are each at least 2 inches long, the equipment must not be moved faster than 10 mph. This equipment shall be set out at the first available point. When overheated wheels are found on a train, the train must be stopped and held a minimum of 10 minutes to allow the heat to dissipate.
Dump Doors	Ensure dump doors on cars are closed after a load is dumped. If a car must be moved short distances with the dump doors open, ensure the doors and chains will clear tracks and crossings.
Maximum Speeds	Equipment operating speeds shall be consistent with conditions of track, grades, clearance, visibility, and congested work areas. Engineers are responsible for exercising caution and good judgment, maintaining safe and reasonable speeds and reducing train speeds for curves, and according to traffic and track condition. The train operator is to observe all posted speed limits or to the conditions on FCX property as well as on external rail. Speed limits should be posted in key locations. Limits will be set based on the specific hazards of the area.

	Suggested limits, not to exceed: • Yard Limit – 5 mph • Scale Limit – 5 mph • Downhill – 10-12 mph • Uphill – 15-17 mph • Max speed on a Class II track – 25 mph
Shoving Movements	Communication must be established prior to shoving. This may be in the form of radios and/or hand signals. Cars and engines must not be shoved until the operator knows who is protecting the movement and how protection will be provided. The employee providing protection for the movement shall not engage in any task unrelated to the movement. When cars or engines are shoved, crew members must be in position and provide visual protection. When shoving cars into a spur track, train slack will be controlled by use of an adequate brake application while pushing back to a berm or end of track to prevent damage at the end of the track.
Tonnage/Weight	Limitations should be set based on grade per manufacturer's specifications.
Excessive Dimension Loads	Place excessive dimension loads on or near the head of the train for best operator's vantage point. When handling excessive dimension equipment, ensure the equipment will clear nearby objects, buildings or structures, including equipment on adjacent tracks. Flat cars, open top cars, or cars with loads that protrude beyond the cars ends or if shifted, would protrude beyond the car ends must have proper tie-downs to secure the load.
Approaching Railroad Crossings	Trains and engines must be prepared to stop when they approach railroad crossings at grade. If a gate is lined against the intended route, trains and engines must stop and remain at least 50 feet from the gate, berm, signs, LOTOTO device, etc.
Sounding Whistle	The whistle must be at 96 dB at 100 feet. The whistle may be used at any time as a warning regardless of any whistle prohibitions. The required whistle signals are illustrated by "o" for short sounds and "----" for longer sounds.

	Sound	Indication
(1)	Succession of short sounds	Use when persons or animals are on the track at other than road crossings at grade. In addition, use to warn railroad employees when an emergency exists, such as a derailment. When crews on other trains hear this signal, they must stop their train until it is safe to proceed.
(2)	----	When stopped: air brakes are applied, pressure equalized.
(3)	---- ----	Release brakes. Proceed.
(4)	o o	Acknowledgement of any signal not otherwise provided for.
(5)	o o o	When stopped: back up. Acknowledgement of hand signal to back up.
(6)	o o o o	Request for signal to be given or repeated if not understood.
(7)	---- o	Regardless of any whistle prohibitions: Approaching men or equipment or other individuals on or near the track. After sounding the initial warning for men or equipment or other individuals, sound whistle signal (4) intermittently until the head end of the train has passed the men or equipment or other individuals. Whistle warning is not required: • When there is an adjacent track and men or equipment or other individuals are beyond the farthest rail of the adjacent rack • For members of the same crew associated with movement of their engine unless necessary to warn or alert a crew member Do not sound whistle in designated mechanical servicing or repair areas, unless for emergency or when approaching roadway workers. Within designated whistle quiet zones, whistle signal (7) must not be sounded approaching public crossings at grade except when: • Necessary to provide warning in an emergency • Notified automatic warning devices are malfunctioning • Notified automatic warning devices are out of service The whistle quiet zone is not in effect during specified hours.

Whistle at Railroad Grade Crossings	Two long, one short, and one long sound of the horn shall commence sufficiently in advance to afford warning when approaching all public and permanent railroad crossings. Ringing of locomotive bell shall commence sufficiently in advance to afford warning when approaching all public and permanent railroad crossings and continuing until crossing is occupied. If impractical to sound a warning, the crossing must be flagged or guarded by qualified trainmen. If designated railroad crossings are not posted with warning signs or signals, the crossings shall be guarded while trains are approaching into the crossings. When pushing railcars, trainmen will maintain visual contact with the end car until the train is stopped.
Whistle Failure	If the whistle fails to operate, continue movement with the bell ringing continuously. Stop the train before each public crossing so that a crew member on the ground can provide warning until the crossing is occupied by the train.
Protection during Repairs/Maintenance	During maintenance and repairs, railroad LOTOTO procedures specified by work of rail and train shall be utilized by all FCX and contract personnel. A qualified individual will set a signal along the line to communicate the track is out of service for any reason. Site procedures shall dictate additional communication and controls. The blue signal signifies that workmen are on, under, or between equipment and requires that: • Rolling equipment must not be coupled to or moved • Rolling equipment must not pass a blue signal on a track protected by the signal • Other rolling equipment must not be placed on the same track so as to block or reduce the view of the blue signal Blue signals may be removed only by the crew that placed them.
Brake Inspections	Locomotive and railcar brakes will be visually inspected daily. Locomotive inspections will be documented on a pre-shift inspection. Any defect to a railcar will be documented. Brake cylinders will be checked for function and proper travel. Brake shoes should be at least 0.5” with no signs of damage. Brake adjusters shall be locked in place and have no damage or missing parts. Hand brakes and linkage shall be inspected for proper adjustment and operation. (Testing by cinching down, placing it in gear and check to see if brake holds.)

	Air brake testing must be completed prior to operating the locomotive. See Appendix for air brake test specifics. Brake retainers shall be inspected prior to operation based on procedures found in Appendix. Locomotive dynamic brake (if equipped) shall be inspected prior to use according to the procedure found in the Appendix.
Switches and Switching	Personnel switching rail cars shall ensure that neither the locomotive, nor the freight carried in or on the cars is damaged during switching. Personnel shall ensure that a minimum clearance is maintained between any adjacent tracks and any structures or equipment at all times. Personnel should ensure that they maintain clearance from rolling stock, adjacent tracks, structure, and equipment at all times. Clearance points shall be clearly marked to support safe movement of trains. When engine is coupled to a train or cars standing on a grade, the hand brakes shall not be released until the air brake system is fully charged. A gravity switch move is permitted only where specifically approved through an exemption (See Appendix). Additional controls to prevent runaway must be identified and documented on the exemption form (ex., tethering, derailer, etc.). “Bottling” of air shall only be allowed in parked railcars on level track. Appropriate procedures must be followed to ensure air continuity through the entire train when cars are coupled. Air shall not be “bottled” within parked railcars on grades. Switches will not be thrown under a moving train. Always make sure switch points are closed and that switches are lined with targets indicating correct direction of travel. Switches that are difficult to throw or are excessively dirty should be reported to the maintenance crew or supervisor for corrective action. Runaway switches shall be left lined in runaway position, and locked for security purposes, if applicable. When traveling on lead end of a train, the engineer is responsible for checking that switches are properly aligned. Trainmen riding trailing unit as lead end are responsible for checking that switches are properly aligned. Trainmen provided a vehicle to aid in their duties are responsible to assure that the engineer has the train under control prior to alignment of runaway switches ahead of the on-coming train.

Coupling and Uncoupling	Before coupling to or moving cars or engines, the cars or engines will be properly secured. Coupling will be made at minimum tram speed. Clearance of loads will be inspected before coupling or moving cars on tracks where cars are being loaded. Only qualified, trained personnel will couple and uncouple cars. When personnel must go between uncoupled locomotives, or position themselves next to the knuckle on coupled locomotives, the locomotives shall be stopped and the locomotive engineer notified and the notice acknowledged prior to any movement. Prior to coupling or uncoupling, all crew members' location shall be confirmed. ***Horn will be blown.*** Pulling of railcars with a chain or cables will only be allowed in emergency situations. See Appendix for coupling procedure.
Break-in-two Procedures	When it is determined that a train separation has occurred, the engineer will immediately place the automatic brake valve in emergency and manipulate independent brake level to prevent sliding of wheels. See the Appendix for detailed procedures.
Clearance of Adjacent Tracks	Railcars shall not be left on side tracks or passing tracks unless ample clearance is provided for through traffic on adjacent mainline or passing tracks. Sufficient clearance will be left while parking railcars. If an inspection tower is utilized, limited clearance between top of cars and bottom of platform will be evaluated.
Chemical Transport Cars	Any obvious leaks, damage, or odor shall be corrected before continuing operation. The car shall not be utilized until inspected by a qualified person and deemed safe to move or repaired.
Flooring/Doors	Car interior and doors will be inspected for contamination and defects (excluding tank cars). Report any contaminations and defects to the supervisor for repair by a qualified individual. Prior to being released to the railroad, doors shall be closed and latched.
Headlight Display	Headlights shall be used in direction of travel.
Flags and Warning Signs	Flags or cones shall be used to communicate as indicated:

- A **RED** flag or cone indicates stop.
- A **YELLOW** flag indicates to proceed with caution.
- A **BLUE** flag or sign indicates do not move or couple for any reason.

Warning indicators (flags or signs) shall not be moved unless specifically authorized to do so. Mobile equipment will not be stopped or parked closer than 10 feet from the edge of the nearest rail track. Only authorized, qualified employees will climb over/under/between rail cars or get on rail cars or locomotives.

3.4 People

There are inherent risks associated with train operation. As trains travel through our communities there are risks associated with interactions with the public. The following section gives some general practices to minimize the risks. These risks must be evaluated along with the specific risks for each site.

Personnel Conduct	Employees shall be strictly prohibited from using any personal communication (e.g. cell phone), gaming or entertainment devices while operating or performing functions on the railroad. Employees will not sleep while on duty. Only authorized FCX and contracted personnel are to be in the cab or on any part of the train at any time. Allowing extra riders is prohibited, unless previously authorized by site management.
High Visibility Clothing	Employees working on or around the train will wear a high-visibility vest or shirt with reflective material.
Alert to Train Movement	Employees must expect the movement of trains, engines, cars and other moveable equipment at any time on any track and in either direction. Employees and others will not stand on the track in front of an approaching engine, car, or other moving equipment. Employees must be aware of location of structures or obstructions where clearances are close. Before initiating movement, a crew member will sound the horn.
Travel Around Railcars	Unauthorized personnel shall not go over, under, or between coupled cars. Train must be stopped prior to entering a red zone and communication must be made with engineer. Trainmen shall work in plain view of the engineer whenever possible and remain in continual communication at all times.

	Trainmen will advise the engineer when getting on or off in blind spots or limited visibility. Trainmen will ensure that cars and cargo are clear of all obstructions such as hoses, ramps, etc. prior to movement. Engineers will not move trains without receiving a signal to do so. Trainmen shall have knowledge that other coworkers are in the clear before signaling engineer to move.
Riding Trains and Locomotives	Trainmen shall not ride in beds of railcars, or on the top of loads unless provisions are made for secure travel. Trainmen will not ride in between cars. When necessary to perform their work trainmen may ride on the leading end of carbs but only on the platform. Switchmen will only ride on the leading end of railcars during pushing/shoving operations for spotting and only for short distances and slow moving speeds. Engineers shall inform trainmen when they will be vacating the cab. Trainmen shall not ride the lead end of railcars or locomotives on the side that exposes them to insufficient clearance. Trainmen shall face locomotive or railcars when mounting or dismounting, ensuring clothing does not catch on protruding train parts. Trainmen will not attempt to get on or off a train traveling in excess of 10 mph and will use proper locations such as switch landings or yards, where the ground is well graded and level for getting on or off a moving train (except for emergency). Trains will come to a complete stop when authorized non-railroad personnel are mounting or dismounting. All persons riding locomotives shall be provided with proper seating in the cab.
Communication	The train operator and all ground personnel shall have a radio programmed with the appropriate channels and frequencies to allow communication between the crew as well as with any other personnel necessary for safe operation of the train. All personnel will observe FCX communication policies for radio use and transmissions. An employee who does not understand radio communication or who receives a communication that is incomplete must not act upon that communication and must treat it as if it was a “stop” signal. The receiving party will ask the delivering party to repeat the transmission message. Contract companies working with FCX industrial railroads will have communication between workgroups when switching trains or working short lines within FCX property.

Emergency Calls	Emergency calls will be made using the established site emergency protocols (i.e., May Day, May Day, May Day). Types of issues considered to be emergency may include: • Medical Emergencies • Train Runaways • Collisions • Fires • Spills/Releases
Signals	Employees who give or display signals must have the proper signaling equipment. Equipment must be in good condition and ready to use. Proper signals will be used depending on existing conditions. To recognize and follow signals correctly, employees must: • Always be on the lookout for signals • Comply with the intent of the signal • Not act on any signal that they do not understand or that may be intended for other trains or engines Any object waved violently by any person on or near the track shall be a signal to stop.
Hazardous Materials	Certified hazardous material training will be provided to all personnel handling hazardous material. Hazardous material training shall be documented. In case of a spill, immediately contact supervisor regarding location and size of spill. Safety and Environmental will be notified according to site-specific procedures. All railcars containing hazardous material will have legible placards clearly visible on all four sides.

3.5 Train Make-up and Transit

Maximum Braking Formula	For transporting cars a recommended maximum of 325 tons per axle of operative dynamic brake and 130 tons per operative brake will be used as a guideline. See Appendix for formulas. After the number of cars to be transported has been determined, the locomotive engineer will ensure that all operative systems on the locomotives are working properly.

Air Test Procedures	After coupling locomotives to the standing cars, ample brake charging time must be allowed to permit full brake release. The locomotive engineer will ensure that the brake pipe pressure is fully charged at 90 PSI. Brake pipe pressure drop **cannot exceed 5 PSI**. See Appendix for air test procedures.
Initial Movement of Train Departure	Prior to initial movement, the operator will make a running brake test to give a feel for the braking of the trailing cars and operating dynamic brakes to determine that all locomotives are functioning properly.
Downgrade Speed	Maximum speed on a decent shall not exceed 10-12 mph. See Appendix for Downgrade Speed Procedures.
Brake Pipe Pressure	Initial brake pipe pressure shall be 90 PSI. (For every reduction, the brake cylinder pressure increases 2.5 times. Ex: 10 lb. reduction means a 25 lb. brake cylinder pressure.)
Brake Valve Handle Movement	Cycle braking (movement of brake handle to service application, then release and then back to service application) shall not be practiced during downgrade movement. Unintentional brake release may set up a critical operating condition. The amount of service brake pressure reductions shall be limited to permit the train to be powered through minimal grade sections without releasing the air brakes on the cars.

4.0 Equipment

The following equipment and any other equipment necessary for safe rail road operations will be provided and utilized.

Personal Protective Equipment	Personal protective equipment will be specifically selected for the hazards that the employees will be exposed to, so that they may safely perform the various tasks within the industrial railroad. Employees and contractors shall wear and must be trained and proficient in the use of that PPE.
Communication Devices/System	Communication devices will be provided to ensure continuous contact between all industrial railroad engineers, switchmen, brakemen and other ground personnel.
Altering Equipment	Without proper authority, employees must not alter, nullify, change the design of, or in any manner restrict or interfere with the normal function of any device or equipment on engines, cars or other railroad property, except in the case of an emergency. Employees must report to the proper supervisor changes made during the emergency so they can be repaired prior to utilizing the equipment again.

5.0 Training

Awareness training will be provided to all employees and contractors who may work near, or directly with the industrial railroad.	
Awareness Training Requirements	For sites that operate an industrial railroad, new employee and refresher training will point out the general risks and hazards of the railroad and define the basic rules that non-railroad employees will follow.
Task-specific training will be provided for all industrial railroad employees and contractors who will perform work on our property. All training shall be documented and contain the key elements listed below.	
General Safety Requirements	The general risks associated with tasks of the industrial railroad as well as site-specific hazards will be covered in training.
Specialized Training	Task-specific training will be given for each of the functional areas of the industrial railroad. Employees will be qualified in each task before being allowed to perform the work, according to site-specific and regulatory training requirements.

6.0 Variance Process

If any part of this procedure cannot be followed, an approved variance is required.	
Variance	Periodically there may be special circumstances that will take place and not allow all aspects of this policy to be completely followed. Where this policy cannot be followed, for both routine and non-routine work, variance form found in the FCX – Global Significant Risk Variance Guideline must be completed, approved and kept on file with a SOP or other work procedure established for future work.

7.0 Definitions

Definitions	
Air Brake System	All of the mechanisms and components necessary to formulate a pneumatic brake for retarding and stopping a locomotive and/or the individual cars of a train. Air compressors, reservoirs, control valves, piping, brake cylinders, and brake rigging are the major components of such a system.
Brakemen	An employee or contractor responsible for the safe and efficient switching of railcars and assisting with train operations.
Derailment	Anytime the wheels of a rail car or engine come off the rails.

Engineer	The operator of a locomotive.
Flat Car	An open car without sides, ends, or top.
Grade	The rate of rise or fall of track elevation.
Hand Brake	The brake apparatus used to manually apply the brakes on a car or locomotive.
Hazardous Material	A substance or material, which is capable of posing an unreasonable risk to health, safety, or the environment.
Head End	Beginning or forward portion of any train.
Hopper Car	A car with a sloping floor which will discharge its load by gravity through the hopper doors.
Knuckle (Part of the Coupler)	The pivoting hook-like casting that fits into the head of a coupler and rotates about a vertical pin to either the open position or to the closed position. Coupler knuckles must conform to a standard dimensional contour specified by the Association of American Railroads.
Knuckle Pin	The pin holding the knuckle in the jaws of the coupler. Sometimes called pivot pin.
Locomotive	A self-propelled unit of equipment, or combination of units operated under a single control, and designed solely for moving other equipment.
Qualified Individual	An individual who, through combined education, training, experience, and process knowledge, has demonstrated that he/she is capable of recognizing, evaluating, and effectively identifying controls.
Switching	The process of putting cars in a specific order (as in a classification yard), placing cars for loading or retrieving empties (industrial switching); or the process of adding or removing cars from a train at an intermediate point; or the movement of cars from one point to another within the limits of an individual plant, industrial area, or a rail yard.
Tank Car	A car in which the body consists of a tank for carrying liquids such as chemicals and compressed gases.
Trainman	A train service employee responsible for the safe and efficient switching of railcars and assisting with train operations.
Yard	A system of tracks other than main tracks and sidings. A yard is used for making up trains, for storing cars, and for maintenance.

8.0 References

References	General Code of Operating Rules 6th Edition, Apr 2010 Class II Railroad Standards – Surface Transportation Board FCX – Global Significant Risk Variance Process

9.0 Records

The following records must be retained according to the FCX Records Retention Policy	• Employee training records • Annual program review • Equipment inspection records • Variance documents

10.0 Revision History

Mar 2015 Rev 0	Initial Release

Appendix A Forms and Permits

LOCOMOTIVE SAFETY INSPECTION

DATE: _____ SHIFT: _____

Operator _____ # In Consist _____

EVERY OPERATOR MUST PERFORM INDIVIDUAL INSPECTION

Locomotive #												

Write NA if the item is not applicable

CRITICAL ITEMS	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**
Hand Brakes												
Automatic Brake												
Independent Brake												
Dynamic Brake												
Air Leakage Test												
Horns												
Bells												
Hand Rail and Steps												
If these items are defective, the Locomotive is not to be moved.												

GENERAL ITEMS	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**
Head Light												
Nose/Ditch Lights												
Step and Ground Lights												
Seats and Seat Stands												
Windshield Wipers												
Speed Recorder												
Fire Extinguisher (Cab)												
Fire Extinguisher (House)												
If these items are defective contact mechanic for repairs												

Additional Items	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**	**OK**	**BO**
Housekeeping												
Wheel Chocks												
Sand												
Red Flags												
Eye Wash												
2-Way Radio												
Fuel:												

Remember to check fluid periodically, especially Engine Oil, Engine Coolant also air test system with each new train.

OBSERVATION OR COMMENT

Appendix B Detailed Procedures

Rail Car Inspection Procedures

Inspection should include, but not limited to:

- Prior to coupling, inspect hoses for worn glad-hands, cracked hoses, missing glad-hand gaskets, and damaged knuckles and knuckle lock pins or any other obvious defect on the car being coupled to others
- When coupled, a rolling inspection of cars to be put into service will be performed (observe for obvious defects)
- Check for continuity of air at tail end of train with conformation from locomotive operator
- While weighing cars:
  - Visually inspect for proper working brakes and piston travel
  - Check brake retainers for broken pipes, missing valve handles, and air leaks
  - Ensure brake release lever is intact and functional
  - Audibly check air system for leaks
  - Ensure brake shoes make contact with the wheels
  - Check to ensure brake cut out cock is in proper position (this can be a reason for brakes not functioning)
  - Check wheels for defects (flat spots, high or sharp flanges, chips on wheel, etc.)
  - Check bearing caps
  - Check drawbars for damage
  - Check knuckles, pins, and pin lifters for damage
  - Ensure doors on hoppers are closed and locked
  - Check side walls of hoppers for damage
  - Check handrails and ladders for damage
  - Check hand brakes and rigging for damage
  - Check hoses, glad-hands, and angle cocks for damage and leaks
  - Audible leaks due to glad-hand gaskets will be repaired by gasket replacement
- Check for cutting out brakes – if two or more railcar brakes are out consecutively, it may negate emergency braking
- Upon completion of weighing (where railcars have been uncoupled) an air continuity check will be performed.

Cars will be checked for:

- Leaning
- Sagging
- Improper position on the truck
- Objects hanging or dragging from the car or extending from the side
- Insecurely attached doors
- Broken or missing safety items*
- Contents leaking from placarded hazardous material car
- Insecure coupling device
- Overheated wheel or journal
- Broken or cracked wheel
- Brake that fails to release
- Staff type brake not in fully raised position
- Any apparent hazard that could cause an accident

Switching Requirements

Employees handling switches and derails must ensure:

- Switches and derails are properly lined for the intended route
- The points fit properly and the target, if so equipped, corresponds with the switch's position
- When the operating lever is equipped with a latch, they do not step on the latch to release the lever except when throwing the switch
- After locking a switch or derail, the lock is tested to ensure secured

1. Self-aligning type switches: When raising the handles on self-aligning type switches, assume a position that will allow safe lifting to avoid muscle strains and being hit by the switch handle.
2. Spring tension switches: When releasing the handles on spring tension switches, always stand opposite from the direction of handle travel to avoid being struck by the switch handle.
3. Never attempt to throw a switch under a moving train.
4. When train has not passed completely through a switch, ensure that the switch is lined for direction of travel before moving in opposite direction.
5. Straight throw switches must be lined for the direction of travel. (Switches will not flop) Assume a safe position when locking and unlocking switch handle. All switches in Clifton Yard are straight throw switches.
6. Always make sure switch points are closed and that switches are lined with targets indicating correct direction of travel.
7. Switches that are difficult to throw or excessively dirty should be reported to the track crew or supervisor for adjustment and oiling.
8. Protective Switch Alignment.
   A.) Runaway switches shall be left lined in runaway position, and locked when traveling uphill from Clifton.
   B.) Locomotive Shop switch will be left aligned for the main and derailer in up position.
   C.) When possible all switches will be left lined to main line traffic. Notification of deviated switch position will be given.
9. When traveling on lead end of a train, the engineer is responsible for checking that switches are properly aligned. When trainmen are riding trailing unit as lead end, they are responsible for checking that switches are properly aligned.
10. When trainmen are provided a vehicle to aid in their duties, the trainmen are responsible to assure that the engineer has the train under control prior to alignment of runaway switches ahead of the on-coming train.

Coupling Procedures

1. Prior to being put into service, an inspection will be performed. Items found to be defective in reference to locomotive safety inspection list shall be handled accordingly.
2. Prior to coupling or uncoupling, locomotives shall come to a complete stop and proceed at minimum tram speed until coupling or uncoupling is complete.
3. Inspect draw bars:
   a) Check knuckle for cracks or excessive wear.
   b) Make sure knuckle pin is in place.
   c) Make sure pin lifter is hooked-up properly and in good working order.
   d) Make sure draw bar is properly lubricated to ease lateral movement.
   e) Verify that knuckles are closed and locked.
4. After it is determined that it is safe to couple, and couple is complete, prior to connecting hoses, cable, and chains, stretch locomotives to ensure couplers have locked. **NOTE:** Prior to connecting

hoses, inspect all airlines for defects, notify locomotive engineer, and proceed to couple hoses and slowly open angle cocks.
5. Couple main equalizing reservoir, actuating, and independent M.U. hoses and open valves.
6. Position cab controls according to position of locomotive.
7. Engineer shall observe the train line gauge indicator for movement when trainman conveys signal that the angle cock has been opened. Check tail locomotive/train for air continuity before moving.
8. Prior to uncoupling locomotives, trains shall come to a complete stop.
9. Reverse coupling procedures of hoses, chains, and M.U. cable.
10. Position body to avoid being hit by debris or air.
11. Once uncoupling is complete, secure parked railroad equipment.
12. Assure that all unused multiple unit air hoses are properly positioned on hanger brackets that are provided.
13. Store all unused multiple unit power cables in the long end of locomotives or place in cans where provided. **Do not leave cables obstructing walkways.**

Break-in-two Procedures

1. When it is determined that a train separation has occurred engineer will immediately place automatic brake valve handle in emergency, and manipulate independent brake lever to prevent sliding of wheels.
2. On level track, trainmen will close train-line angle cock at the separation, inspect cars for damage, if no damage is found, proceed to recouple with standard coupling procedures.
3. If damage is found, follow procedures to repair or set out damaged cars.
4. If separation is due to (or has caused) track damage take appropriate steps to repair prior to recoupling.
5. When on a grade, engineer will immediately place automatic brake valve handle in emergency and manipulate independent brake lever to prevent sliding of wheels due to loss of dynamic brake. Set all handbrakes.
6. At separation: Close train-line angle cock and notify engineer of steps taken.
7. Set handbrakes on separated portion of train. If unsure of grade percentage, set all handbrakes.
8. Trainmen will inspect cars and track for damage and relay information to locomotive engineer.
9. Engineer will ensure that slack has been controlled before placing automatic brake valve in the release position. (Ensure train line is fully recharged before reinitiating travel).
10. Depending on grade make appropriate service brake pipe reduction and keep independent brake valve fully applied.
11. Prior to releasing handbrakes, proceed with standard coupling procedures. If coupling uphill handbrake release may be necessary.
12. Once coupling of separated railcars is complete, engineer will follow appropriate train handling procedures.
13. Release handbrakes and proceed in direction of travel.

Maximum Braking Formulas

Computing tons per axle of dynamic brake is:

- Multiply number of cars by weight (130 tons for loads) and (30 tons for empty hoppers and acid tanks), (35 tons for boxcars, diesel, and oil tanks)
- Divide weight of train (excluding locomotives) by number of axles for operative dynamic raking (4 axles per locomotive)

EXAMPLE: $\frac{2600 \text{ tons}}{16} = 162$ (for 20 loads with 4 locomotives)
(= 162 tons/axle of dynamic braking)

Computing tons per operative brake- Gross trailing tonnage of the train divided by the total number of cars having operative brake.

EXAMPLE: 3900 tons = 130 tons/ operative brake
30 loads

Air Test Procedures

The locomotive engineer will ensure that the brake pipe pressure is fully charged at 90 PSI. Make a 20 PSI service reduction with automatic brake valve then:

1.) Wait until brake pipe air exhaust ceases.
2.) After exhaust ceases wait no less than 30 seconds, then cut out pressure maintaining valve.
3.) Check brake pipe pressure gauge for leakage, no less than one minute. The pressure drop **cannot exceed 5 PSI**. (If the pressure drop is more than 5 PSI, take appropriate measures to correct.)
4.) After confirmed air leakage test, call for trainmen to slightly open the angle cock on the trailing car to confirm continuity of air; while observing train line gauge for movement, and acknowledge to trainmen for angle cock closure. Maintain brake set while trainmen walk from tail end to the head end, inspecting to verify that all brakes are working properly. Refer to "Equipment Inspection" section for specifics.
5.) Release brakes and recharge brake pipe pressure to 90 PSI.

Downgrade Speed Procedures

1.) The aim of the engineer is not to exceed 10-12 mph during the decent.
2.) If the engineer feels the speed is excessive at any time, the automatic brake valve is to be placed in the emergency position immediately in order to bring the train to a stop.
3.) An ample safety margin of braking capacity must be kept in reserve to allow stopping the train anywhere within reasonable stopping distances on the grade.
4.) Improper judgment in braking may permit the speed to get out of control in a very short time. When there is doubt as to whether or not the train can be properly controlled "go into Emergency". The engineer should evaluate the possible effects of an emergency application versus the effects of a service application and apply the method of which appears to be the safest. (Service applications react more slowly, but will retain the dynamic brake whereas emergency applications nullify the dynamic brake)
5.) After the train is brought to an emergency stop, (after it is deemed that the air in reserve for additional reductions is insufficient to bring the train to a stop):
6.) Place independent brake valve in full application position.
7.) Set handbrakes on cars according the following: A sufficient number of hand brakes shall be applied when there may be a possibility of movement. Recommended number of operable hand brakes for railcars to be applied according to grade percentage is; 1% grade, 1 brake per 330 tons. 2% grade, 1 brake per 200 tons. 3% or higher grade, 1 brake per 111 tons. With no less than 2 hand brakes set on any train at any time. If in doubt of percent of grade set all operable hand brakes.
8.) Place automatic brake valve in release position and recharge brake pressure.
9.) Allow time to ensure train brake pipe pressure is fully recharged.
10.) Depending on grade on which train is stopped, make appropriate service brake pipe reduction and keep independent brake valve in full application.
11.) Release handbrakes and proceed down grade, releasing the independent brake and varying the dynamic brake as required.

APPENDIX T

FCX RM SOP-01-19 MRAP Process

FREEPORT-McMoRan
Resource Management

Instructions Regarding Environmental, Health & Safety Product Approval for FCX Projects

Material Request Approval Process (MRAP): This product approval process is conducted electronically through the complyplus web page https://fcx.complyplus.com, You will need a username & password, which will be assigned to you by FCX personnel. In no case shall a new chemical be purchased and brought on site until a Safety Data Sheet (SDS) [Not a Material Safety Data Sheet MSDS)], and a Material Request Approval Form (attached) has been submitted and approved by the Health & Safety and Environmental Departments. SDSs must be available for all hazardous products/chemicals used on site in compliance with MSHA's Hazard Communication Standard: 30 CFR Part 47, and OSHA's Hazard Communication Standard: 29 CFR 1910.1200.

Step 1:

- To obtain a username and password for MRAP, email the following information to the FCX Health & Safety representative assigned to your project:
  a. First and Last Name
  b. Company Name
  c. Address
  d. Telephone Number
  e. Email address
- Put "MRAP - Request for a username and password" in the subject line of your email.

Step 2:

- The FCX Health & Safety representative will forward the information to Rob McLain (rmclain@fmi.com) and identify the site/project. Once this information is received by Rob, you will be sent a username and password.

Step 3:

- Complete one copy of the form below for each chemical or material that will be brought onto the project site.

Step 4:

- Contact the FCX Health & Safety representative and he/she will walk you through submitting an electronic request for product approval. Make sure you have the completed form and Safety Data Sheet (SDS) available (5 MB max. size).

NOTE: ALLOW A MINIMUM OF ONE WEEK FOR PRODUCT APPROVALS

FREEPORT-McMoRan
Resource Management

MATERIAL REQUEST APPROVAL FORM

REQUESTER'S INFORMATION

Division (if FMI) or Contractor's Business Name: _____

Phone #: _____ **email:** _____

Site/Project Identification: _____

Site Supervisor (if FMI) or Contractor's Site Supervisor: _____

MANUFACTURER INFORMATION

Product Name: _____ **Manufacturer's Name:** _____

Common Name: _____

From whom will you purchase this product? _____

PROCESS DESCRIPTION

Describe the work activity & process in which this material will be used (include any waste generated; rags, absorbent, waste product, etc.):

_____

_____

Will the product be sprayed or otherwise aerosolized? ☐ **Yes** ☐ **No**

Quantity used at one time? _____ **Where will the product be used?** _____

Will the product be used in a confined space? ☐ **Yes** ☐ **No**

How often will the product be used?: _____ **How long will the product be used?:** _____

Will the product be mixed or added to other chemicals/products? ☐ **Yes** ☐ **No**

If yes, what chemicals/products? _____

Where will the product be stored? _____ **Quantity stored on site?** _____

Are substitutes available? ☐ **Yes** ☐ **No** **If yes, describe:** _____

What are the physical hazards of the product - see Section 2 of SDS (check all that apply)?: ☐ **None**

☐ **Explosive**	☐ **Oxidizing Gas**	☐ **Pyrophoric Liquid**
☐ **Flammable Gas**	☐ **Oxidizing Liquid**	☐ **Pyrophoric Solid**
☐ **Flammable Aerosol**	☐ **Oxidizing Solid**	☐ **Self-Heating Chemical**
☐ **Flammable Liquid**	☐ **Gas Under Pressure**	☐ **Organic Peroxide**
☐ **Flammable Solid**	☐ **Self-Reactive Chemical**	☐ **Corrosive to Metals**
☐ **Combustible Dust**	☐ **Pyrophoric Gas**	☐ **Chemical Which in Contact with Water, Emits Flammable Gases**

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What are the health hazards of the product - see Section 2 of SDS (check all that apply)?: ☐ **None**

☐ **Acute Toxicity**
☐ **Skin Corrosion/Irritation**
☐ **Serious Eye Damage/Eye Irritation**
☐ **Respiratory or Skin Sensitization**
☐ **Germ Cell Mutagenicity**
☐ **Carcinogenicity**
☐ **Reproductive Toxicity**
☐ **Specific Target Organ Toxicity (Single Exposure)**
☐ **Specific Target Organ Toxicity (Repeated or Prolonged Exposure)**
☐ **Aspiration Hazard**
☐ **Simple Asphyxiant**

Are there other hazards not listed above (describe)? _____

What are the possible routes of exposure?: ☐ **Inhalation** ☐ **Skin/eye contact** ☐ **Ingestion**

How will you prevent inhalation exposure?:

☐ **Use in a closed system**
☐ **Use under local exhaust**
☐ **Use outdoors or in a well ventilated area**
☐ **Use wet or wet while using**
☐ **Use respiratory protection**
☐ **NA**
☐ **Other (describe):** _____

How will you prevent skin/eye contact?: ☐ **PPE** ☐ **Other (describe):**_____

Personal protective equipment (PPE) to be used (check all that apply)

Eye/face protection
☐ **Safety glasses with side shields**
☐ **Chemical splash goggles**
☐ **Face shield**
☐ **Other (describe):** _____

Hand protection
☐ **Nitrile**
☐ **Neoprene**
☐ **Butyl**
☐ **Leather**
☐ **Other (describe):**_____

Body protection
☐ **Standard work clothing**
☐ **Lab coat**
☐ **Chemical resistant apron**
☐ **Chemical resistant body cover**
☐ **Other (describe):** _____

Respiratory protection

☐ **Disposable (dust mask)**
☐ **½ mask**
☐ **Full-face**
☐ **Loose-fitting PAPR**
☐ **Tight-fitting PAPR**
☐ **Supplied-air**

Cartridge type (describe): _____

If respiratory protection is specified, do you have an FMI-approved written Respiratory Protection Program?

☐ **Yes** ☐ **No**

I fully understand that I must use this product only for its intended purpose and strictly in accordance with all Manufacturers' guidelines. Failure to do so could result in serious harm to myself, others or the environment.

Requestor Signature_____ **Date** _____

Submit the information above electronically, with no blank entries, and the respective Safety Data Sheet to the complyplus web page https://fcx.complyplus.com. You will need a username & password, which will be assigned to you by FCX personnel.

APPENDIX U

FCX-HS24 Round Stock Management Policy

Round Stock Management Policy

Health and Safety FCX-HS24 | Release Date 1/22/2020

POTENTIAL FATAL RISKS

Uncontrolled Release of Energy
Lifting Operations
Vehicle Impact on Person

CRITICAL CONTROLS

- Segregation, Guards, Barriers & Barricades
- Pipe Management
- Energy Isolation
- Mechanical Integrity of Lifting Equipment
- Vehicle Preoperational Inspection
- Positive Communication System
- Fundamentally Stable Parking

STORAGE REQUIREMENTS

Block all rolling materials from movement when stored. This list is not all-inclusive.
Pipe/poles/iron/steel greater than 12in. (0.3m) diameter: no more than two high
Pipe/poles/iron/steel less than 12 in. (0.3m) diameter: no more than 2ft. (0.6m) in height unless cradled
Conveyor Belt: chocked, never stacked
Spooled/Wound Material and Material on Reels: cradle, chock, berm, or place in wheel ditch
Rolled Liner greater than 12 in. (0.3m) diameter: no more than two high
Rolled Liner less than 12 in. (0.3m) diameter: no more than 2ft. (0.6m) in height
Drill Steel: no more than 2ft. (0.6m) in height unless cradled
Pulleys/Cylinders/Well Pumps: cradled

TRAINING

Safety Watch(es) will be trained in the requirements of the activity.

POLICY

OVERVIEW

This policy applies to the loading, unloading and storage of materials that can roll and crush employees. HDPE pipe is excluded from this policy; reference FCX-HS12 for more information about HDPE pipe. If in doubt, conduct a risk assessment and apply controls for rolling material.
All deliveries require a receiving/loading/ unloading checklist.

Including but not limited to:

Pipes (round and square)	Rolled Liner	Iron/Steel
Spooled/Wound Material	Conveyor Belt	Drill Steel
Material on Reels	Well Pumps	Cylinders
Pulleys	Poles	Concrete Pipe

ACTIONS TO STAY SAFE

- Conduct pre-job safety reviews and follow all SOPs.
- Verify that equipment in use has adequate lifting capacity.
- Task train employees for all equipment in use.
- All personnel must remain 50ft. (15.24m) or more away from material being moved or handled or utilize substantial barriers.
- Personnel involved in handling activities and within 50ft. (15.24m), must ensure material is controlled and blocked as necessary.
- Assign at least one Safety Watch to monitor and control drivers during loading/unloading and strapping activities.

RECEIVING, OFFLOADING AND STORAGE

- Complete load receiving/loading/unloading checklist, FCX-HS24.
- Prior to unstrapping, verify loads are securely strapped and not leaning.
- Establish 50ft. (15.24m) safe zone fully around truck being unloaded.
- Safe zones must be demarcated.
- Use barriers/blocking when unstrapping all material that can roll.
- Safety Watch has the sole responsibility to observe task activities.
- Truck drivers will stay with Safety Watch(es) outside the safe zone.
- A JSA is required if the truck must be driven from under the load.

LOADING AND TRANSPORTING ON SITE

- Complete load receiving/loading/unloading checklist, FCX-HS24.
- Establish demarcated 50ft. (15.24m) safe zone around truck being loaded.
- Place dunnage between layers of material.
- Strap material between layers and over entire load.
- Chock loads as necessary.
- Loads extending more than 10ft (3.3m) off a trailer will have a follow vehicle.

Technical Supplement

Receiving/Loading/Unloading Checklist | Round Stock Management Policy FCX-HS24 | Release Date 1/22/2020

Date:	BOL#:	Inspected By:
Driver:		Load Description:

Part 1 – Load Checklist

YES	**NO**	Dunnage is in place as needed.
YES	**NO**	The load is strapped and secured properly so that unstrapping will not permit material to roll from trailer.
YES	**NO**	Has the load shifted or is it leaning?
YES	**NO**	Was rigging inspected and in good condition when the load was strapped?
NOTE: If the material is not loaded properly or any of the above conditions have not been met (checked "No"), the truck will NOT be released for off-loading. The area receiving the material must be contacted immediately for further evaluation.		
Load Approved:		

Part 2 – Receiving Checklist

YES	**NO**	Has the load shifted or is it leaning?
YES	**NO**	The load is strapped and/or secured properly so that it will not roll from trailer during unloading..
YES	**NO**	Is proper size dunnage in place between layers (if needed) and chocks placed to prevent rolling?
YES	**NO**	Is load free from visible defects or damage?
NOTE: If the material is not loaded properly or any of the above conditions have not been met (checked "No"), the truck will NOT be released for off-loading. The area receiving the material must be contacted immediately for further evaluation.		
NOTE: All improper loads must be communicated to GSC or warehouse leadership.		
Receive and Approved:		

Part 3 – Unloading Checklist

YES	**NO**	Have all operators and safety watches been task trained?
YES	**NO**	Has operator completed a pre-use inspection for equipment?
YES	**NO**	Is unloading area free of other equipment, debris, and other hazards?
YES	**NO**	Is clear access established to both sides of the truck, where necessary?
YES	**NO**	Are truck wheels level and chocked?
YES	**NO**	Has a 50ft (15.25m) safe zone been established, where possible (or a substantial barrier is put in place)?
YES	**NO**	Is a safety watch(es) in place?
YES	**NO**	Is the driver with the safety watch or in the cab?
YES	**NO**	Is the area where material will be placed inspected and free from hazards?
NOTE: Do NOT proceed with unloading if any question above is answered "No"		

Loading/Unloading Approval Signatures

Driver	Safety Watch	Unloading Crew

APPENDIX V

FCX-HS29 Standard Safety Requirements Policy

Standard Safety Requirements Policy

Health and Safety FCX-HS29 | Release Date 1/18/2019

POTENTIAL FATAL RISKS

Identify Fatal Risks prior to performing any task or job

CRITICAL CONTROLS

Evaluate, implement and verify Critical Controls are in place prior to starting work, and throughout the work activity.

Immediately report any unsafe working conditions.

TRAINING REQUIREMENTS

Never perform a task unless trained and authorized.

POLICY

OVERVIEW

Sites are responsible for establishing general safety requirements that meet or exceed national, regional, local and Company regulations. The general safety requirements outlined here apply to all employees, contactors and visitors to Freeport-McMoRan properties.

ACTIONS TO STAY SAFE

- Stop the job if critical controls are not in place, not effective, or conditions change that would affect safe work practices.
- Perform pre-shift inspections and workplace exams prior to starting a new task or activity.
- Consult required documents (SOPs, JSAs, SDS Work Orders and Instructions) prior to performing tasks.
- Only use serviceable PPE that is free from modifications.
- Obey all posted warnings and instructions.

STANDARD SAFETY

Working with Suspended Loads

- Never allow anyone to stand under a suspended load.
- Fully extend outriggers before any boom movement.
- Lifting and rigging equipment must meet manufacturer's recommendations and load charts for the weight and configuration of the load.
- Plan lifts to address hazards including overhead and underground installations.
- Know and use hand signals appropriate to crane operations.
- Only one person shall give hand signals to the crane operator.
- Anyone can give the signal for an emergency stop.
- Use tag lines or a guide pole to guide a load into position.
- Securely crib or block all suspended loads before beginning any task under them.
- Never leave a suspended load unattended.

Stacking and Storing Materials

- Walkways between stacked or stored material must be at least three feet wide.
- Do not climb on stacked or stored material.
- Label racks with their capacity; do not exceed capacity of racks.
- Prevent round or cylindrical objects from rolling with blocking or chocking.
- Stacked drums or barrels must have cribbing between each layer and the top layer stepped back or offset.

Compressed Air

- Do not direct a stream of compressed air at anyone, or use to clean clothing or persons.
- Never use compressed air (use wet methods) to remove toxic materials (i.e. crystalline silica, heavy metals, etc).
- Reduce compressed air used for cleaning to 30 PSI or less.
- Quick disconnects larger than ¾in. (2cm) inside diameter must have safety pins and whip cables attached to the hose, pipe connection and between connected hoses, unless automatic shutoff valves are used.
- Whip checks are required for air hoses ¾in. (2cm) or larger.

- Do not use compressed air to leak test unrated pressure vessels, unless SOPs for such testing (e.g., pipes, fuel tanks, etc.) are reviewed and approved by a professional engineer (PE) or certified pressure vessel inspector. The review and approval process should include testing with properly calibrated regulators and gauges.
- Relief-valve flow capacities must match those of the air pressure-generating device, according to nationally recognized pressure vessel codes (ASME, API, NBIC, etc.).

Compressed Gas Cylinders

- Secure cylinders against falling at all times, whether in use or being stored.
- Cap compressed cylinders when not in use or protect from damage.
- Flammable and combustible cylinders shall not be stored with oxygen cylinders unless properly segregated.
- Never lift a cylinder by the valve protector cover.
- Store cylinders per SDS requirements based on content.
- Prevent oil and grease from coming into contact with compressed oxygen systems.

Hand and Power Tools

- Do not carry screwdrivers, hammers, or sharp-ended tools in pockets.
- When using utility knives or similar: cut resistant sleeves and gloves with a cut resistance rating of 5 (ANSI or equivalent) must be used.
- When cutting rubber line or conveyor belt, cut-resistant material must be worn over groin and inner thighs.
- Use grounded or UL-Approved (or similar national standard) double insulated portable tools in good condition.
- Do not remove or bypass the ground conductors on electrical equipment.
- When using electrical equipment in wet conditions, always use GFCI protection installed at the source.
- Do not use hand tools with a continuing action button.
- Do not modify tools.

Housekeeping

- Keep all walkways clear of any tripping hazards.
- All waste containers in eating areas must have a lid.
- Before a job is complete, remove all debris and return all tools and materials to the proper storage place.

Lifting Heavy Objects

- Size up the load. Tip/lift one corner. If it is too heavy, get help or use mechanical assistance.
- Before lifting, check the item for nails, sharp corners, splinters or jagged edges. Remove or cover sharp or rough objects.
- Check all floors and walkways in travel path, ensuring adequate space for the load to pass
- Use proper lifting method:
    1. Squat as close as possible to the load and draw load close to your body.
    2. Lift with your legs, and turn feet to avoid twisting while lifting.

Clothing and Accessories

- Long pants and shirts with sleeves in reasonable condition are required in operational areas.
- Secure loose clothing and long hair around moving equipment.
- Do not wear jewelry when there is potential of contact with tools and machinery.
- Earrings must have protective backs and not extend beyond the edge of the ear.
- Watches and medical alert bracelets must have break-away pin features.

Personal Protective Equipment

- Appropriate PPE is required in all operating areas.
- Hardhats must meet Z89.1 or equivalent standards. Protective eye-ware, including prescription, must meet ANSI Z87.1 or equivalent and include side shields.
- Respirator fit tests are required prior to use. Individuals must be clean-shaven when wearing respirators.
- Boots must have a 6in. (15.24cm) top, hard toe, and when climbing ladders, a well-defined heel.

Vehicle Operation

- Seatbelts must be worn by all occupants.
- Headlights will be on at all times in a mine.
- No one may ride in truck beds.
- Never allow anyone to stand on the running boards or hang from the side of a moving vehicle.

APPENDIX W

FCX-07 Property Entry Guidelines, Surface Mines, North America

FREEPORT-McMoRan

Department of Health & Safety Guidelines	GUIDELINES NO.	FCX - 07
	REVISION NO.	1
	SUPERSEDE	NAOMHS07/04-001
Property Entry – Surface Mines North America Operations	TASK CLASSIFICATION	Highly Critical
		Critical
		Non-Critical
APPROVAL DATE – 03/07/2011	**ORIGINAL DATE** – 11/16/2009	**RELEVANT SOPS** –

1. Purpose and Scope

The purpose of this property entry document is to provide guidance regarding the minimum training, personal protective equipment (PPE), and vehicle/equipment operation requirements when entering and traveling within the Freeport-McMoRan North American surface mine properties. This guidance document applies to all employees and contractors working/visiting the surface areas of "surface mining" operations.

2. Definitions

Contractor (Independent)

Per 30 CFR Part 45.2 (c) an independent contractor is "any person, partnership, corporation, subsidiary of a corporation, firm, association or other organization that contracts to perform services or construction at a mine."

Per 30 CFR Part 45.3 an independent contractor performing work at mine sites, or with contracts to perform at a mine(s) any of the nine types of services or construction listed below, are required by MSHA to have identification numbers:

1. Mine development, including shaft and slope sinking;
2. Construction or reconstruction of mine facilities; including building or rebuilding preparation plants and mining equipment, and building additions to existing facilities;
3. Demolition of mine facilities;
4. Construction of dams;
5. Excavation or earthmoving activities involving mobile equipment;
6. Equipment installation, such as crushers and mills;
7. Equipment service or repair of equipment on mine property for a period exceeding five consecutive days at a particular mine;
8. Material handling within mine property; including haulage of coal, ore, refuse, etc., unless for the sole purpose of direct removal from or delivery to mine property; and

9. Drilling and blasting.

Control Points Boundaries designated by the site.

Grade An obvious change in elevation.

3. Responsibilities

It is the responsibility of every person entering mine property to understand and comply with the requirements set forth.

Note: (b) denotes requirement for entire property, (m) for mine area of the property

4. Procedures

A. Signing In and Signing Out with Security (b)

All visitors (including FCX employees from other locations), vendors, and contractors will sign in and out with Security. The site must maintain an accurate log of non-employees on the property. Appointments will be confirmed by Security before an individual will be allowed to enter the property.

Prior to entering the mine site, personnel are required to show current proof that they have completed MSHA part 48 training, as applicable. Refer to the FCX Standard "MSHA Training Requirements for Contractors & Visitors", available on the DOHS intranet site, for details on MSHA training requirements.

B. Pit Driver Training (m)

Pit driver training is required at all surface mine properties for all unescorted visitors, vendors, contractors, and employees when their travel is such that any haul truck traffic routes will be encountered.

C. Escort Required for Vendors/Contractors (b)

An escort will be required for persons untrained in pit driving and/or hazard recognition and for vehicles not properly equipped. An escort may also be required in processing areas depending on the destination.

D. Personal Vehicles (b)

1. Personal vehicles entering surface mine properties must have, at a minimum, the following properly functioning equipment:
   - headlights,
   - rear lights,
   - brakes,
   - rear brake lights, and
   - seat belts.

2. ATV/UTV operators must utilize the PPE specified in the operator's manual.

3. Motorcycle operators must wear DOT approved head gear.

E. Personal Protective Equipment (PPE) (b)

The following PPE requirements will be standard for all surface mine sites:

- Wherever safety glasses are required, they must be equipped with side shields – this requirement includes prescription safety glasses.
- Reflective vests must be worn by all personnel when outside a vehicle in production areas or near roadways where vehicles or equipment may be in motion.

G. Buggy Whips (m)

Buggy whips shall be a minimum of 12 feet in height measured from the ground and are required on all light vehicles that travel in the mine area. They must have a brightly colored (orange with reflective stripes) flag. Lights and whips will be made available at the gates for contractors and vendors that enter the mine areas.

Some sites may require buggy whips in the processing areas if large equipment interacts with small vehicle traffic.

H. Properly Equipped Vehicle for Pit Driving (m)

Vehicles entering the mine must be properly equipped with a radio with appropriate channels once inside the designated control point. A buggy whip with the light on is required at all times when entering the pit.

I. Flashing Lights for Pit Entry (m)

FCX properties have adopted the following color assignments for flashing lights on vehicles:

- Blue – do not pass without direct verbal permission to do so.
- Amber – caution used for disabled equipment. This is also required for man vans.
- Red – do not pass at any time. This applies to blasting and emergency vehicles.

J. Wheel Chocks (b)

Mobile equipment will not be left unattended unless the controls are placed in the park position and the parking brake, if provided, is set. When parked on a grade, the wheels or tracks of mobile equipment will be either chocked or turned into a bank. Vehicles rated at one ton and above will have the wheels chocked and the brake set any time they are parked. Ditches or windrows may be used in lieu of wheel chocks.

K. Horn Signals for Movement of Equipment (b)

All vehicles will be equipped with a back up alarm or will use the horn to signal when backing up as follows:

- One blast – start
- Two blast – move forward
- Three blast – move in reverse

Blasting patterns may be exempt due to the congested but controlled environment.

L. Headlight Usage (b)

Vehicles will be operated with their headlights on at all times.

M. Left Hand Traffic (m)

Large haul trucks utilized in the mine areas have an extremely large “blind area” to the front and right side of their vehicle. Placing these haulage trucks on the left side of the road, not only separates the operator’s cabs, it places the driver on the edge of the road where there is better visibility. Left hand traffic is required on all sites in the mine areas. This requirement is optional in other parts of the property (i.e., processing areas) depended upon interaction with mine traffic.

N. Records

MSHA Form 5000-23
Certificate of Hazard Training
Pit Driver Training Certificate or alternate record of completion

APPENDIX X

FCX Standard for Hazardous Gas Monitoring Systems and Appurtenances

Hazardous Gas Policy

Health and Safety FCX-HS17 | Release 03/26/2021 | Version 1

POTENTIAL FATAL RISKS

Exposure to Hazardous Substances – Acute
Exposure to Hazardous Substances – Chronic
Underground Hazardous Atmosphere

CRITICAL CONTROLS

Access Control
Alarm Systems
Engineered Controls (pH range, Ventilation, cell voltage, operating temperature, concentrations)
Handling Requirements
Loading and Unloading Protection
PPE
Mechanical Integrity of Storage and Distribution

TRAINING REQUIREMENTS

Site Specific Training
Task/Technical Training

TECHNICAL SUPPLEMENTS

Hazardous Gas Generation on Leach Stockpiles
Site Specific Hazardous Gas Program
Industrial Hygiene Technical Supplement

POLICY

OVERVIEW

This policy applies wherever a hazardous gas release event or an oxygen deficient atmosphere may be created (i.e. labs, confined spaces, leach pads, plant operations). This policy will also outline the requirements for a site-specific Hazardous Gas Program.

ACTIONS TO STAY SAFE

- Wear personal monitor in designated areas; bump test according to manufacturer specifications and regulatory requirements.
- Operate within required parameters, such as pH, temperature, etc.
- Be mindful of potential cross-sensitivities with gas sensors.
- Report any damage to ducting, fans, or entrainment.
- Inspect work area for signs of unintended releases or conditions where unintended mixing of chemicals/reagents can occur.
- Review SDS of chemicals being used to ensure compatibility and that hazardous gases will not be generated.
- Evaluate any process changes or equipment changes through a risk assessment process, such as Management of Change (MOC).
- Hoods/Ventilation should be utilized when possible while handing chemicals, especially within laboratory settings.

SITE REQUIREMENTS

Working with divisional leadership and the Industrial Hygiene/Health and Safety Departments, each site will develop a site-specific Hazardous Gas Program. The following information should be included in the program for each department/area:

- Gases of concern, including potential sources and methods of generation
- Specific details on site-specific Critical Controls clarifying; Access controls, handling requirements, PPE (including respiratory protection) and engineering controls

- Area Specific SOP requirements
- Area and Personal Monitor Alarm set points and locations- consideration of alarm set points should ensure employees:
    - know to take immediate action in response to upset conditions

PROCESS AREA REQUIREMENTS

- Use a combination of stationary monitors and/or personal monitors in areas where there are potentials for hazardous gas exposures to occur.
    - Consider areas near release/discharge points, along chemical delivery lines, and perimeter of process areas.
- Maintain legible labels of contents on lines, tanks, vessels, containers, etc.
- Install visual warning lamps with audio and gas-specific signage near fixed sensors. Further controls or procedures should be in place if all of these are not able to be present.
- Follow manufacturer's recommendations for fixed sensor life and preventative maintenance.
- Install windsocks in locations visible throughout the area in case evacuation is required.
- Demarcation of areas where potential upset conditions can occur.
- Maintain a PM schedule for alarms and equipment that distributes, stores, or entrains hazardous gases.

LEACH STOCKPILE AREA REQUIREMENTS

- Leach stockpiles require site-specific leach hazard recognition training and controlled access.
- Wear personal monitors in breathing zone at all times on active leach fields according to site specific policies.
- Stationary and Personal monitors should have sensors to detect the site identified/specified gases.
    - Any changes to this sensor array will require a MOC. The MOC approval should be routed to the Manager of Processing Operational Improvement for review by the Hydromet Managers Team.
- Install air relief valves at high point elevations and at the end of the main feed pipeline.
- Sites will develop and maintain a list of potential leach hazardous gas generation locations and activities. This list will be readily available and included as part of the site-specific leach hazard recognition training.
- Personal monitors should be carried by individuals in the vicinity of an acid dilution/delivery system that is open/vented to atmosphere.
- Additional information on leach best practices can be found in the "Hazardous Gas Generation on Leach Stockpiles" document.
- Information on requirements for inactive leach stockpiles can be found in site specific Haz Gas Program.

APPENDIX Y

FCX-HS19 Flagging and Barricading Policy

Flagging and Barricading Policy

Health and Safety FCX-HS19 | Release Date 1/18/2019

POLICY

OVERVIEW

Use flagging and barricading to warn and prevent access to hazards.

Flagging

- A warning that a hazard or unsafe condition exists
- Never to be used for a fall hazard
- Must extend around all access points to the hazard
- Yellow "CAUTION" flagging is used to indicate a hazardous condition that may lead to moderate injury
- Red "DANGER" flagging is used to indicate an immediately hazardous condition that could cause death or serious injury

Barricade

- Used to physically prevent access to a fall or other serious hazards
- Must be tall enough and of sufficient strength to bar access
- Reference FCX-HS02 Working At Heights Policy and Technical Supplement for fall prevention and guardrail requirements

Tags

Should be placed on all sides of the flagging and include:

- The nature of the hazard being flagged
- Contact information for the responsible person (consider shift and weekend work contacts)
- Any necessary PPE required for entry or work in the area
- The time and date installed

ACTIONS TO STAY SAFE

Unless necessary, and only with proper authority, do not enter into any flagged or barricaded areas.
Always install barricades before creating fall hazards (open holes).
Conduct a pre-release inspection to ensure hazards have been eliminated before removing flagging and barricading.
Never pass into a barricaded area unless you are authorized specifically in that area, and understand the hazards and controls required.
Plan flagging and barricading to ensure safe alternate routes for others in the area.

YELLOW: When entering into a yellow CAUTION flagged area, read the tags, don proper PPE, familiarize yourself with the hazards, enter with caution and watch for changing conditions.

RED: The only individuals authorized to work in red DANGER flagged areas include: persons performing work to mitigate the hazards, individuals in charge of the work being performed (ie: foreman, superintendent, project manager etc.), and other escorted personnel, authorized by responsible person listed on tag.

Escorts for red DANGER flagged areas must be authorized to be in the areas.

Remove all flagging and barricades when hazards have been eliminated.

TRAINING REQUIREMENTS

FCX DOHS Flagging and Barricading Course (STF_FCX1020)
Initial and remedial training as necessary

APPENDIX Z

Incident Reporting Forms

FREEPORT-McMoRan

Incident Report

Employee Involved		Department		People Soft	Date of Hire
Supervisor's Name		Date of Incident	Time A.M. P.M.	Date Reported	Time A.M. P.M.
Regular Job Title	Overtime	Shift Started	Shift length {hrs.}	Hours into rotation	Total hours this rotation:

Mining Experience: Please indicate total in years and months for:
In Industry: At Site: In Job:

Near Miss ____ Bodily Injury_____ Property Damage_____ Theft_____ Fire_____

Injury or Illness ***(Briefly describe.)***		
Part of body affected. (When applicable, indicate right or left.)	Equipment involved	Equipment Number
Name of safety representative contacted.	Estimated cost of damage/fire.	
Did employee go to industrial doctor or hospital? Facility:		
	Estimated value of stolen item.	

Description. *Describe clearly how the incident occurred*

Exact location of incident. (*Attach diagram if necessary*.)

Witnesses (*Attach statements*.)

Employee Signature	Date
Supervisor Signature	Date

Will this incident need further investigation at this time? Yes_____ No ____
If yes, please complete a *Root Cause Analysis*.

- Please send a copy of this report to: Superintendent - H&S Department - Human Resources – Leave Coordinator

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Witness Statement

Print Name	Phone #	PS#
Date of Incident:	Time a.m. p.m.	
Location of Incident:		
What Happened: (include names, equipment numbers, and use a time line- the sequence of events as they happened.)		

Signature:	Date:

APPENDIX AA

FCX RM Guideline 01-Hazard Communication Program

FREEPORT-McMoRan

Resource Management		GUIDELINE NO.	RM - 01
		REVISION NO.	
		SUPERSEDE	
Hazard Communication Program		TASK CLASSIFICATION	☐ Highly Critical ☐ Critical ☐ Non-Critical
APPROVAL DATE – 3/13/17	**ORIGINAL DATE –** 7/20/16	**RELEVANT SOPS –** MRAP	

1. Background

Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires, explosions and/or other serious accidents.

To ensure that employees know about the hazards of chemicals to which they are exposed and how to protect themselves, the Mine Safety and Health Administration (MSHA) and the Occupational Safety and Health Administration (OSHA) each issued a Hazard Communication Standard, also known as "The Right to Know" or "The Need to Know" standard.

Under the Standard, chemical manufacturers and importers are required to evaluate and classify the hazards of each chemical they produce or import and communicate this hazard information to the user through labels and safety data sheets (SDSs). Previously, they were required to determine and communicate this hazard information to the user through labels and material safety data sheets (MSDS's). FCX is required to:

- Identify and list the hazardous chemicals in the workplace;
- Ensure that all containers of hazardous chemicals are labeled and that SDSs are available for each chemical;
- Communicate hazard information to employees through labels, SDSs and formal training programs, and
- Provide an up-to-date written Hazard Communication Program.

2. Purpose

The purpose of this Program is to provide structured guidance for FCX Resource Management & Reclamation Services sites to reduce chemically-related illnesses and injuries at work and achieve compliance with the FCX Health and Safety Management System (HSMS) and MSHA and OSHA standards.

3. Who's Covered?

3.1 FCX Resource Management employees at MSHA and OSHA sites are covered by this Program if they:

- Work in a non-laboratory workplace where any known hazardous chemical is kept or used, and
- May be exposed to any hazardous chemical under normal working conditions or in a foreseeable emergency

3.2 FCX Resource Management employees who work with hazardous chemicals in laboratories at OSHA sites are governed by a different OSHA standard written specifically for laboratory workers (29 CFR 1910.1450 - Occupational Exposures to Hazardous Chemicals in Laboratories).

3.3 Contractors working on FCX projects or sites must follow the requirement of this Program or have a program that meets or exceeds the Program's requirements.

4. Responsibilities

Health and Safety are line-management functions. The core of the document is color-coded as below to clearly identify who is responsible for the various aspects of the Program:

4.1 Site Management is ultimately responsible for implementation of the Hazard Communication Program, including ensuring that those under their control have the authority and resources to implement the Program, and for ensuring that areas under their charge are in compliance with the Program.

4.2 First-line Supervision is operationally responsible for implementation of the Program.

4.3 Employees are responsible for following rules and working safely.

4.4 Health & Safety is a technical resource and service provider to line-management.

5. Explanation of Key Terms

5.1 Article - a manufactured item other than a fluid or particle: which is formed to a specific shape or design during manufacture; which has end use function(s) dependent in whole or in part upon its shape or design during end use; and which under normal conditions of use does not release more than minute or trace amounts of a hazardous chemical and does not pose a physical hazard or health risk to employees.

5.2 Globally Harmonized System of Classification of Labeling of Chemicals (GHS) - an international approach to hazard communication, providing agreed criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets (SDSs).

5.3 Hazardous chemical - any chemical which is classified as a *physical hazard* or a *health hazard*.

5.4 Health hazard - a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); aspiration hazard, or simple asphyxiant (see Attachment 8.1 for detailed explanations of these hazards).

5.5 Physical hazard - a chemical that is classified as posing one of the following hazardous effects: *explosive*; *flammable* (*gases, aerosols, liquids, or solids*); *combustible dust; oxidizer* (*liquid, solid or gas*); *self-reactive*; *pyrophoric* (gas, *liquid or solid*); *self-heating*; *organic peroxide*; *corrosive to metals*; *gas under pressure*; or *in contact with water emits flammable gas* (see Attachment 8.1 for detailed explanations of these hazards).

5.6 Safety Data Sheets (SDSs) – documents that explain in detail the hazards of chemicals and how they can be used safely. SDSs are recent replacements to formerly-used Material Safety Data Sheets (MSDSs). The information in the two documents is largely the same except SDSs are required to be presented in a standardized format (see Attachment 8.4 for more information).

6. How it Works

6.1 List of Hazardous Chemicals

6.1.1 **Site management** is responsible for ensuring that a current list of all hazardous chemicals is kept on site. The list must include the product identifiers for the hazardous chemicals as they appear on the labels and SDSs

6.1.2 **First-line Supervision** is responsible for ensuring that the list is entered into the IHS Comply Plus centralized database for reporting capabilities to check current inventories against regulatory lists and provide less hazardous substitutes. The list should be periodically checked against the current hazardous chemical inventory and updated, as necessary.

6.1.3 Before purchasing or bringing any hazardous chemical on-site, **employees** must request prior approval using the Materials Request and Approval Process (MRAP) through the IHS Comply Plus System (refer to the Resource Management Material Request Approval Process SOP #01-19).

6.2 Labels and Other Forms of Warning

Previously, all hazardous chemicals received from manufacturers, importers, or distributors were required to be labeled, tagged, or marked with at least the identity, appropriate hazard warning and name and address of the chemical manufacturer, importer, or other responsible party. Effective June 1, 2015, labels must be consistent with the Globally Harmonized System of Classification of Labeling of Chemicals (GHS) and include: product identifier; signal word; hazard statement(s); pictogram; precautionary statement(s), and name, address, and telephone number of the chemical manufacturer, importer, or other responsible party (see Sample GHS Label in Attachment 8.2). Effective December 1, 2015, distributor will no longer be allowed to ship containers labeled by the chemical manufacturer or importer unless it has a GHS label. In practice, OSHA is allowing manufacturers and product formulators of mixtures that have made reasonable and good faith efforts to meet the effective date but, due to circumstances outside of their control, have not been able to do so, will be allowed a reasonable time period to come into compliance. For this reason, either style of label is

acceptable on hazardous chemical mixtures until further compliance directives are issued by OSHA.

6.2.1 **Employees responsible for receiving hazardous chemical shipments** must verify proper GHS labels before releasing any container for use (with the one exception relating to mixtures described above).

6.2.2 In the workplace, **first-line supervisors** are responsible for ensuring that all hazardous chemicals remain properly labeled while in their work area of charge. Hazardous chemicals must be labeled, tagged or marked with their original label, as shipped, OR with product identifier and words, pictures or symbols, or combination thereof, which provide at least the general information regarding the hazards of the chemical, which in conjunction with the SDS and other information and training, provide employees with the specific hazards of the chemicals.

6.2.3 Portable containers into which hazardous chemicals are transferred from labeled containers, and which are under the control, and intended only for the immediate use, of only the employee who performs the transfer, are not required to be labeled.

6.3 Safety Data Sheets (SDSs)

Effective June 1, 2015, chemical manufacturers, importers, or distributors are required to provide SDSs for each hazardous chemical to downstream users. MSDSs should no longer be provided and SDSs should be consistent with the GHS. In practice, OSHA is allowing manufacturers and product formulators of mixtures that have made reasonable and good faith efforts to meet the effective date but, due to circumstances outside of their control, have not been able to do so, will be allowed a reasonable time period to come into compliance. For this reason, either MSDSs are SDS for mixtures are acceptable in the workplace until further compliance directives are issued by OSHA.

6.3.1 **Site management** is responsible for ensuring that SDSs for all hazardous chemicals present on site (with the one exception relating to mixtures described above), are available for review by all employees during each work shift through the IHS Comply Plus System with backup in case of system failure (HIS or FCX). Acceptable backup includes hardcopy binders in each location where hazardous chemicals are used/stored; hardcopy files in the safety/security office, or on flash drive.

6.3.2 **Employees responsible for receiving hazardous chemical shipments** are responsible for requesting SDSs from manufacturers and distributors who continue to provide MSDSs instead of SDSs, or to replace existing MSDSs with SDSs.

6.4 Employee Training and Information

6.4.1 **First-line supervisors** are responsible for ensuring that hazard communication training is provided to their employees before they are assigned to work in areas

where the possibility of exposure to hazardous chemicals exist, and whenever a new hazardous material is introduced into their workplace.

6.4.2 **Health & Safety** is available to provide general information and training on:

- Categories of hazards (e.g., flammability, carcinogenicity);
- Details of the Hazard Communication Program, including its availability, an explanation of the labeling requirements, SDSs, how to obtain and use the appropriate hazard information, and
- The methods and observations that may be used to detect the presence or release of hazardous chemicals.

6.4.3 In addition to providing the above general Hazard Communication training to their employees, **First-line supervisors** are also responsible for providing the following additional site-specific information and training:

Additional **information** for employees must include:

- All operations and locations in the work area where hazardous chemicals are present, and
- The location and availability of the list of hazardous chemicals used in the area and SDSs.

Additional **training** for employees must include:

- The chemicals hazards in the assigned work area;
- How to protect against such hazards. Included must be specific FCX rules and procedures concerning work practices, emergencies, and care and use of protective equipment.

6.5 Hazardous, Non-Routine Tasks

6.5.1 **First-line supervisors** planning to do non-routine tasks involving the use of hazardous chemicals (jobs that are not routine for an employee because of infrequency, location, or type - for example: cleaning of tanks) must perform a risk assessment in consultation with **Health & Safety** prior to the commencement of work.

6.5.2 **First-line supervisors** must ensure that employees are informed of the hazards and required control measures, including safe work practices and proper personal protective equipment.

6.6 Chemicals in Unlabeled Pipes

6.6.1 Piping systems containing hazardous chemicals are not required to be labeled under the Hazard Communication standard. However, **First-line supervisors** are responsible for informing their employees of the hazards associated with chemicals in unlabeled pipes in their work area.

6.6.2 If piping systems are labeled, they should be labeled in accordance with: *ASME A13.1-2007, Scheme for the Identification of Piping Systems*. Contact the Industrial Hygienist for details.

6.7 Informing Contractors

FCX employees who oversee outside contractors are responsible for ensuring that contractors are provided with the following information:

- A list of hazardous chemicals to which contractor employees are likely to be exposed to while on the job site;
- Measures that contractor employees may take to lessen the risk of exposure;
- Steps FCX has taken to lessen the risks;
- The location and availability of SDSs for hazardous chemicals to which contractor employees are likely to be exposed, and
- Procedures to follow if contractor employees are exposed.

6.8 Contractors Informing FCX Employees

FCX employees who oversee outside contractors are responsible for requiring and training contractors to request prior approval to bring any hazardous material on-site (consumer commodities in consumer quantities are exempt) using the Materials Request and Approval Process (MRAP). Contractors must not be allowed to bring hazardous chemicals on FCX sites without prior approval.

6.9 FCX Chemical Manufacturers and Distributors

6.9.1 **Site management** is responsible for ensuring that GHS-compliant SDSs and labels are created and available for all hazardous chemicals manufactured at FCX sites and distributed off-site. SDSs and labels are created by completing and submitting an SDS and Label Development/Revision Form (submission instructions are on the form).

6.9.2 **First-line supervisors** are responsible for ensuring that chemical distributors and downstream users are provided an SDS with their initial shipment, and with the first shipment after an SDS is updated. The SDS must either be provided with the shipped containers or sent to the distributor or user prior to the shipment. SDS must also be provide to distributors or downstream users upon request.

6.9.3 **First-line supervisors** are responsible for ensuring that each container of hazardous chemicals leaving an FCX site is properly labeled. For solid metal, solid wood, or plastic items that are not exempted as articles due to their downstream use, the label may be transmitted to the user at the time of the initial shipment, and need not be included with subsequent shipments to the same downstream users unless the information on the label changes. The label may be transmitted with the initial shipment itself, or with the SDS that is to be

provided prior to or at the time of the first shipment.

7. Program Review

Health and Safety is responsible for reviewing the Program annually to ensure that it is effective in reducing chemically-related illnesses and injuries at work. Appropriate changes will be made as warranted.

8. Records

Document	Responsible for Control	Records Retention
Safety Data Sheets	**Site management**	Permanent on IHS Comply Plus
Training Records	**First-line supervisors** / **Health and Safety**	Duration of employment + 10 years

9. References

9.1 Freeport-McMoRan Health and Safety Management System

9.2 29 Code of Federal Regulations 1910.1200 – OSHA Hazard Communication Standard

9.3 30 Code of Federal Regulations Part 47 – MSHA Hazard Communication Standard

9.4 Globally Harmonized System of Classification and Labelling of Chemicals (GHS) 3rd revised edition

10. Attachments

10.1 Hazardous Chemical Definitions

10.2 Sample GHS Label

10.3 GHS Pictograms and Hazards

10.4 Safety Data Sheet (SDS) Format

11. Documentation of Review and Change

All Changes, modifications and /or revisions must be documented on the table below.

Date	Description of Changes to Document	Responsible Person
3-13-17	Section 1. Background, paragraph 3 (sentence added) Previously, they were required to determine and communicate this hazard information to the user through labels and material safety data sheets (MSDS's).	Frank Demer

Attachment 10.1

HAZARDOUS CHEMICAL DEFINITIONS

Physical Hazards

Explosive: An *explosive* chemical is a solid or liquid chemical which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings (e.g., black powder, nitroglycerin, trinitrotoluene or TNT, lead azide, potassium picrate).

Flammable Gases: A *flammable gas* means a gas having a flammable range with air at 20°C (68°F) and a standard pressure of 101.3 kPa (14.7 psi) (e.g., propane, acetylene, natural gas hydrogen).

Flammable Aerosols: *Aerosol* means any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, and fitted with a release device allowing the contents to be ejected as particles in suspensions in a gas, or as a foam, paste, powder, liquid or gas. Aerosols are considered flammable if they contain flammable liquids, flammable liquids or flammable solids (e.g., spray paints, lubricants, solvent-based cleaners).

Flammable Liquids: A *flammable liquid* means a liquid having a flash point of not more than 93°F (199.4°F) (e.g., diesel, acetone, lacquer thinner, petroleum distillates, kerosene, oils, gasoline).

Flammable Solids: *Flammable solid* means a solid which is a readily combustible solid, or which may cause or contribute to fire through friction (e.g., zinc powder, sulfur, benzoyl peroxide, picric acid, paraformaldehyde).

Combustible Dust: *Combustible dust* means a combustible particulate solid that presents a fire or deflagration hazard when suspended in air or some other oxidizing medium over a range of concentrations, regardless of particle size, shape or chemical composition (e.g., flour, grain dust, metal dust, sugar, wood dust).

Oxidizing Gases: *Oxidizing gas* means any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does (e.g., oxygen, chlorine, nitrous oxide).

Oxidizing Liquids: *Oxidizing liquid* means a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material (e.g., nitric acid, bromine, hydrogen peroxide).

Oxidizing Solids: *Oxidizing solid* means a solid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material (e.g., ammonium nitrate, calcium hypochlorite, potassium dichromate).

Self-Reactive Chemicals: *Self-reactive chemicals* are thermally unstable liquid or solid chemicals liable to undergo a strongly exothermic decomposition even without participation of oxygen (air) (e.g., methyl acrylate, vinyl acetate, epoxides, organic peroxides).

Pyrophoric Gas: *Pyrophoric gas* means chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130oF (54.4^{o}C) or below (e.g., silane, arsine, diborane). Pyrophoric Liquids: *Pyrophoric liquid* means a liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air (e.g., tert-butyllithium, triethylaluminum).

Pyrophoric Solids: *Pyrophoric solid* means a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air (e.g., white phosphorus, lithium, potassium).

Self-Heating Chemicals: A *self-heating chemical* is a solid or liquid chemical, other than a *pyrophoric liquid or solid*, which, by reaction with air and without energy supply, is liable to self-heat (e.g., linseed oil, other seed oils, rosewood oil).

Organic Peroxides: *Organic peroxide* means a liquid or solid organic chemical which contains the bivalent –O-O- structure and as such is considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals (e.g., methyl ethyl ketone peroxide, benzoyl peroxide).

Corrosive to Metals: A chemical which is *corrosive to metals* means a chemical which by chemical action will materially damage, or even destroy, metals (e.g., hydrochloric acid, nitric acid, potassium hydroxide).

Gases Under Pressure: *Gases under pressure* are gases which are contained in a receptacle at a pressure of 200 kPa (29 psi) (gauge) or more, or which are liquefied or liquefied and refrigerated (e.g., nitrogen argon, oxygen ammonia, liquid nitrogen, hydrogen, Freon, air).

Chemicals Which in Contact with Water, Emit Flammable Gases: *Chemicals which, in contact with water, emit flammable gases* are solid or liquid chemicals which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities (e.g., calcium carbide, sodium metal).

Health Hazards

Acute Toxicity: *Acute toxicity* refers to those adverse effects occurring following oral or dermal administration of a single dose of a substance, or multiple doses given within 24 hours, or inhalation exposure of 4 hours (e.g., paint thinner, xylene, phenol, sodium cyanide).

Skin Corrosion/Irritation: *Skin corrosion* is the production of irreversible damage to the skin (e.g., strong acids such as sulfuric acid and muriatic acid, strong alkalis such as sodium hydroxide and cement, phenol). *Skin irritation* is the production of reversible damage to the skin (e.g., weak acids, weak alkalis, solvents, detergents, disinfectants, oils).

Serious Eye Damage/Eye Irritation: *Serious eye damage* is the production of irreversible tissue damage in the eye, or serious physical decay of vision (e.g., strong acids such as sulfuric acid and muriatic acid, strong alkalis such as sodium hydroxide and cement,

phenol). *Eye irritation* is the production of reversible damage in the eye (e.g., weak acids, weak alkalis, solvents, detergents, disinfectants, oils).

Respiratory or Skin Sensitization: *Respiratory sensitizer* means a chemical that will lead to hypersensitivity of the airways following inhalation of the chemical (e.g., isocyanate paints, soldering resins, formaldehyde). *Skin sensitizer* means a chemical that will lead to an allergic response following skin contact (e.g., isocyanate paints, epoxies, formaldehyde, quaternary ammonium disinfectants, chromium).

Germ Cell Mutagenicity: A *germ cell mutagen* is a chemical that may cause permanent changes in the amount or structure of the genetic material (i.e., genetic defects), which can be passed on to offspring (i.e., heritable changes) (e.g., formaldehyde, coal tars and pitches).

Carcinogenicity: *Carcinogen* means a substance or a mixture of substances which induce cancer or increase its incidence (e.g., silica or sand and asbestos, which cause lung cancer, some wood dusts, such as oak and beech, which cause nasal cancer, and benzene, which causes leukemia).

Reproductive Toxicity: *Reproductive toxicity* includes adverse effects on sexual function and fertility in adult males and females, as well as adverse effects on development of the offspring (e.g., lead, mercury, chlorinated solvents and pesticides, polychlorinated biphenyls or PCBs, toluene).

Specific Target Organ Toxicity (Single Exposure): *Specific target organ toxicity – single exposure,* means specific, non-lethal target organ toxicity arising from a single exposure to a chemical (e.g., solvents, which affect the central nervous system).

Specific Target Organ Toxicity (Repeated Exposure): *Specific target organ toxicity – repeated exposure,* means specific, non-lethal target organ toxicity arising from a single exposure to a chemical (e.g., silica or sand, asbestos and chromium, which affect the lungs, and lead, which affect blood forming cells, the central nervous system and kidneys).

Aspiration Hazard: *Aspiration hazard* means the danger of drawing liquid or solid chemical into the lungs leading to sever acute effects such a chemical pneumonia, varying degrees of pulmonary injury or death. Aspiration can occur through the mouth or nose, or indirectly from vomiting (e.g., gasoline, kerosene, turpentine).

Simple Asphyxiant: *Simple asphyxiant* means a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death (e.g., argon, nitrogen, helium).

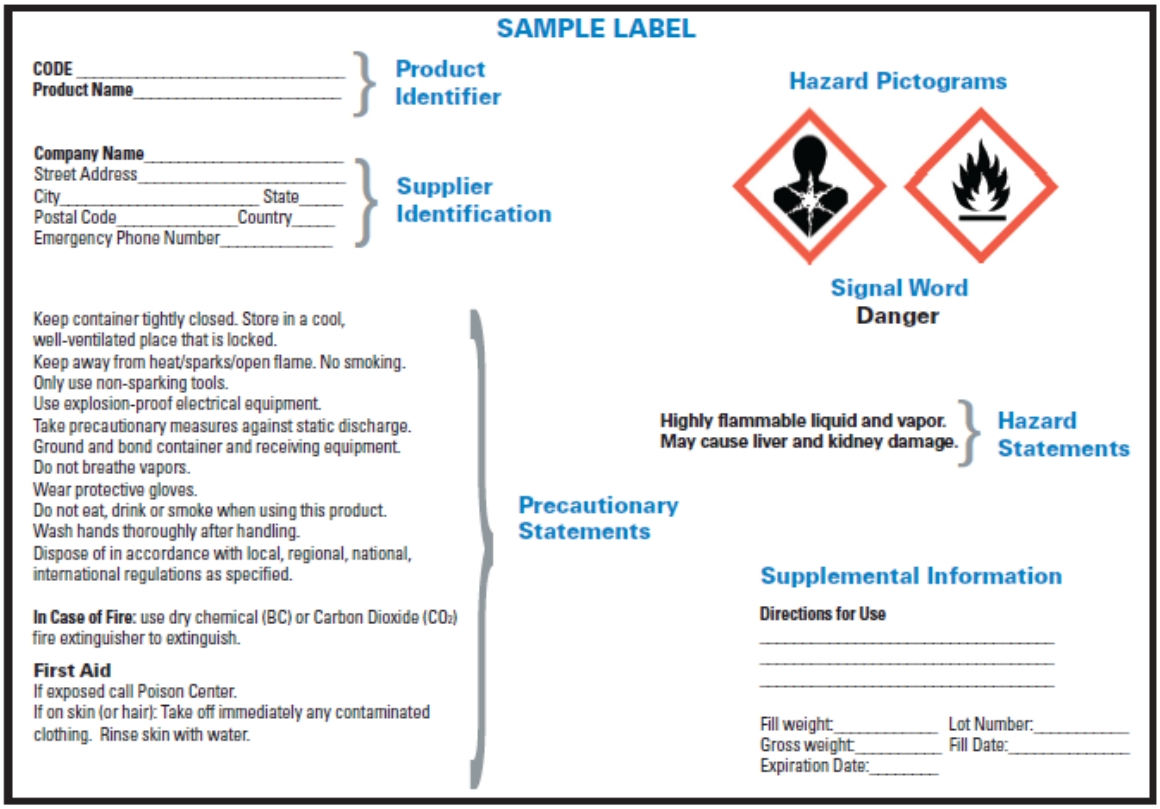
Hazards Not Otherwise Classified

Hazards not otherwise classified means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes.

Attachment 10.2

SAMPLE GHS LABEL

As of June 1, 2015, all hazardous chemical labels will be required to have the product identifier and supplier information and GHS-standardized: pictograms (see Attachment 8.3 GHS-Standardized Pictograms and Hazards); a signal word, and hazard and precautionary statements. Supplemental information can also be provided on the label, as needed.



Attachment 10.3

GHS PICTOGRAMS AND HAZARDS

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

Attachment 10.4

SAFETY DATA SHEET (SDS) FORMAT

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*
Section 13, Disposal considerations*
Section 14, Transport information*
Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12–15.

APPENDIX BB

FCX-13 Blue Stake Policy

FREEPORT-McMoRan

FCX Department of Occupational Health and Safety	SOP #		FCX-13
	Revision #		
	Supersedes		
Blue Stake Policy	**Task Risk**	X	**High**
			Medium
			Low
			NA
Approval Date: 12/10/2013	**Original Date: 9/17/2005**		

Contents

1.0 Policy

Purpose	Due to the high level of risk during excavations and penetrations of building surfaces, this policy has been developed to minimize risk for injuries, harm to the environment and production losses during such work.
Scope	All Freeport-McMoRan employees and contractors shall follow this policy.

2.0 Procedures

2.1 General

Blue Staking is the act of identifying and marking utilities such as electric, gas, water, telephone, fiber optic, etc., so that they do not pose a risk of injury to workers or a risk of being damaged during penetration, excavation, trenching, or digging activities in buildings, surface excavations and underground workings.

Blue Stake Representative	A Blue Stake Representative is an engineer, technician, or other qualified individual that has the ability to review drawings or prints and mark out utilities and pipelines accordingly.
Underground Utility Work	When installing, rerouting or repairing an underground utility the work must comply with local and regional buried utility/new installation requirements.
Hand Digging/Pot Holing	Hand-digging/pot-holing will be done when working within 24 inches (24”) of known utilities.
Broken/Ruptured Utility Occurs	If a utility is ruptured or broken during an excavation, the requestor or party performing the excavation must notify a Blue Stake Representative and project manager immediately.
Unidentified Utility Discovered	If an unidentified utility is discovered, the requestor or party performing the excavation must immediately notify a Blue Stake Representative(s) and the Project Manager and stop work immediately.
Excavations Requirement	All excavations must comply with the federal, state, local or country excavation and trenching requirements.
Environmental/Safety Issues	If at any time during the process of digging a safety and/or environmental concern arises, the work must stop. The individual(s) recognizing the concern will immediately contact their

	supervisor. The concern must be addressed prior to continuing with the excavation.
Exemptions – Do not Require Blue Stake Permit	**The following do not require a Blue Stake Permit:** A. Emergency Procedure - In the event that an excavation must commence due to a safety, environmental or facility operation emergency, the area supervisor shall visit the site and determine if the problem is an immediate hazard. If determined to be an emergency, a Blue Stake Representative(s) or a manager must be notified. These persons may authorize the area supervisor to proceed with the emergency excavation. If there is any doubt, the job must be stopped immediately. B. Native ground, top surface of active leach and waste stock piles, active mining areas where utilities have never been present. C. Residential and commercial lessees of Freeport-McMoRan owned town sites will not be issued a Freeport-McMoRan Blue Stake Permit. These individuals must contact the appropriate entities per the lease agreement and in accordance with local laws.

2.2 Blue Stake Permit

The Blue Stake Representative(s) will determine the necessity for a permit.	
Purpose	Completing a permit signifies that, to the best of the Blue Stake Representative's knowledge, inspection and information available, all known utilities have been identified and marked in the designated area.
Initiating/Completing	The permit requestor is responsible for initiating and properly completing the permit.
Issuing	Only a Blue Stake Representative(s) can issue a Blue Stake Permit. A permit may not be required upon consensus of the Blue Stake Representative(s), the requestor, the area General Supervisor/Superintendent, and/or the person(s) performing the excavating (i.e., hand digging to expose a valve or pipeline for repair, etc.).
Review Requirements	A Blue Stake Representative(s) must review the Blue Stake Permit on site

	with the permit requestor and/or individual performing the work. The supervisor and Blue Stake Representative(s) will determine the need for additional site visits if conditions change or if the operator performing the excavation changes.
Permits Needed	Each excavation area in a project scope must have an individual permit for that location.
Numbering	Each Blue Stake Permit shall be uniquely numbered.
Expiration	Once approved, the Blue Stake Permit will be valid for 30 days from the date of issue. If a Blue Stake Permit expires before the renewal is granted, the work must stop until a new blue stake permit is issued or renewed.
Extensions	If the duration of the excavation requires more than 30 days, it is the responsibility of the requestor to contact the Blue Stake Representative(s) for an additional 30-day extension. The Blue Stake Representative(s) may require the area to be resurveyed if an extension of the permit is requested. NOTE: This does not apply to Long-term Agreements. (i.e. road grading).
Long-term Permits	Long-term Blue Stake Permits may be issued for one year. Excavations in these areas are unlimited based on the restrictions of the permit, but must be performed by the designated operator(s). The operator(s) must be listed on the Long-term Permit at the time of initial request or renewal and a copy of the permit must be with the operator while the work is being performed
Changes/Deviations	If the conditions or the scope of the excavation expands a new permit must be requested Any deviations, additions or changes to the Blue Stake Permit must be approved by the Blue Stake Representative(s).
Location of Permit While Work is Performed	The approved Blue Stake Permit must stay on site while the work is being performed.
Location of Permit when Work is	Once the work is completed, the permit must be returned to the Blue Stake Representative(s).

Completed	
File Retention	The Blue Stake Permit, with any attached drawing/documents, will stay be filed according to the **FCX – Records Retention Policy**.

2.3 Procedure for Floor, Roof, Ceiling and Wall Penetrations

This policy is the minimum standard and does not preclude a person from utilizing the full process at any time anyone is not comfortable in proceeding without a full investigation.

Less than one-inch Penetration	If the penetration is one inch (1”) or less, a Blue Stake Permit is not required.
Greater than one-inch Penetration	Contact the site environmental representatives prior to penetration greater than one inch (1”) in any surface.
Asbestos	Contact the site environmental and/or industrial hygiene representative if materials are uncovered that are suspected to contain asbestos.
Hazard Review	Perform a review of all known utilities, gas, water, air, sewer, or communications lines. Examine both sides of wall surfaces and ceilings, when possible, to see if there are any utilities that have been installed in the wall joints or studs without making wall penetrations.
Renovations/Demolitions	Renovation or demolition projects require coordination with site environmental at least 30 days in advance of the start of the project so that proper testing of materials can be done.
Sawing Into Floors	Sawing into floors requires a permit at all times.
Drawing/Print Requirements	Drawings or prints applicable to the work areas will be obtained when doubt exists concerning the location of utilities within structures. The use of drawings or prints does not take the place of a reasonable and personal assessment by all employees.
Marking Proposed Area	Persons requesting a digging permit will outline the area of proposed excavation with white paint prior to scheduling representative(s) to check the area.
Paint Colors for Marking	When the Blue Stake Representative marks the area, colors other than

	white shall be used and typically the color will be relative to the utilities. The following color-coded marking of underground utilities and proposed excavations shall be utilized for ground marking paint, whiskers and flags. RED - Electrical Power YELLOW - Gas-Oil-Product, and Air Lines ORANGE - Communication Cable BLUE - Water Systems GREEN - Sanitary Sewer Systems, Drains, Slurry Pipelines PURPLE - All Solvent Extraction, Electro winning Lines & Process Water WHITE - Perimeter of Excavation/Boundary
Marking Underground Utilities	All underground utilities, in use or abandoned, will be marked.
Marking Utilities/ Content	The name of the identified utility or content, if known, will be written along the painted lines.
Marking Absence of Utilities	If it is determined there are no utilities in the proposed area of excavation, the word "OK" will be written in white paint inside the area.

3.0 References

Reference	FCX – Records Retention Policy

4.0 Records

The following records must be retained according to the FCX Records Retention Policy	• Employee Training Records • Annual program review • Blue Stake Permits • Exemption Documents

5.0 Revision History

2005 Rev 0	• Minor edits
2008 Rev 1	• Minor edits
2013 Rev 2	1. Formatting changes. 2. Removal of NAOM references

Appendix A – Forms and Permits

Freeport-McMoRan Blue Stake Permit

Date issued: _____ Expiration Date: _____

Requester: _____ Phone: _____

Division/Department: _____ Location: _____

Short Description of the Project:

_____

_____

_____

_____

Permit issued by (print name): _____ Signature _____

THE REQUESTER IS RESPONSIBLE FOR ALL PROPERLY COMPLETED PERMITS NEEDED TO SAFELY COMPLETE JOB.

Detailed Scope of Work (use added sheet if needed):
Cautions/Markings
Site Visit Schedule

	Check one	YES	NO
Is this excavation for a new installation?			
Is this excavation to repair an existing buried line?			
Is a site investigation required?			
Do outside utilities need to be contacted?			
Are copies of applicable drawings and prints attached?			
Is a Confined Space Entry Permit Required? (If yes, attach signed copy) To be determined by Requestor			
Is a Hot Work Permit Required? (If yes, attach signed copy) To be determined by Requestor			
Is a LOTOTO procedure required?			

Approval	Name	Signature	Date
Project Supervisor			
Responsible Area Supervisor			
Supervisor of equipment operator			
Equipment Operator(s)			
Contractor Representative			
Others:			
Freeport-McMoRan Blue Stake Representative			

Underground Utility Requirements

These specifications apply to all repaired, rerouted and newly installed underground utilities. (Note: A Blue Stake Team member may waive the requirement for these standards. Explain below)

UG Requirements shall be completed by the persons installing the line unless otherwise specified by Requestor:
Location:
Type of Utility to be Installed:

Circle items that must be accomplished to complete this job:

1. Survey: Location by Surveyor for mapping and future location references.
2. Visual markers for Buried Utilities
   - Buried or covered pipelines running along or under a roadway may require visible pipe location markers at the time of installation.
   - Pipe location markers may consist of 4" HDPE, or commercial markers. Markers will be approximately 10' tall in large equipment traffic areas.
   - Enter and exit points for buried lines under roadways shall be at least 6 ft. outside designated roadway to allow for required depth under roadway.
3. Tracer wire installation
   - All new U.G. utilities must have a tracer wire buried with utility line during installation.
   - Tracer wire must be an 18 gauge or greater insulated wire.
   - If a tracer wire must be spliced, the splice must assure an uninterrupted circuit along the entire length of the tracer wire. The wire must be properly insulated from the ground by being wrapped or sealed to make it water tight.
   - Tracer wire shall extend at least three feet beyond the exit point of line and be attached vertically, to the pipe location marker, or the utility line itself, if exposed, to assure future accessibility.
4. Underground Caution tapes (Caution tapes may be normal flagging tape unless otherwise specified)
   - All gas lines will have yellow caution tape laid in three inches of sand, twelve inches above line.
   - All communication/fiber optic lines will have an orange caution tape twelve inches above line.
   - Buried acid lines will have yellow caution tape installed twelve inches above line.
5. Depth requirements: Specific burial depths according to the pipe diameter may be obtained from the Mine or Plant Engineering Department
   - Three feet from top of pipe for normal vehicular traffic and six to eight foot from top of pipe for heavy equipment or haul truck traffic.
   - Gas lines must have a minimum of 28" of fill from top of pipe to grade
   - Communications cables shall be a minimum of 28" of fill from cable to grade.
   - Gas lines and communication /fiber optic lines will be bedded within 12 inches of washed sand, or other approved fines material.
6. All UG electrical installations are to be encased in red dyed concrete and a red 6" foil backed caution tape will be installed above the installation according to the specific site instructions. For instruction on any buried electrical lines, contact an Electrical Engineer in the Plant Engineering Dept.

*PLEASE NOTE:
Please be advised that these specifications do not alleviate compliance with any State, Federal or site specific regulations. If minimum requirements cannot be met, clear with a Blue Stake team member.

All excavations for underground utility installations/repairs must be left open until line has been inspected and located (which may include activation of line). This form must be signed by a Surveyor from Plant Engineering, Mine Engineering, or a Blue Stake Team member before excavation is covered.	
Specifications meet:	Date:

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