

**From:** [Joey Pace](#)  
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**Subject:** Humboldt Smelter Project Work Plan (attached)  
**Date:** Thursday, December 9, 2021 4:19:44 PM  
**Attachments:** [Humboldt Smelter Project Work Plan.pdf](#)

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Jeff: Attached please find the DRAFT Humboldt Smelter Work Plan. We are targeting to compile all comments on Thursday morning, December 16, so please provide any comments you may have by close of business, Wednesday, December 15. There are only 15 text pages to review in the document.

Please feel free to use comment boxes in Adobe, so you don't have to write a whole separate comment letter (unless you want to write one). I just want to make it as easy for you as possible. If you want a Word version to do "track changes", let me know if you have a dropbox because it's too large to email with the embedded images.

Please note, the HASP is not included. It will be issued to ADEQ separately, as they are still working on it and did not want it to hold up the Work Plan review.

Thank you very much. **I am in the field tomorrow, just FYI.**

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**DRAFT**

# Humboldt Smelter Project Work Plan



## PREPARED FOR

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**December 10, 2021**

## PRESENTED BY

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## LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AB	Aggregate Base
ADEQ	Arizona Department of Environmental Quality
AHAs	Activity Hazard Analysis
AZPDES	Arizona Pollutant Discharge Elimination System
BMPs	Best Management Practices
CGP	Construction General Permit
dB	Decibels
dBA	A-Weighted Decibels
DCP	Dust Control Plan
EPA	Environmental Protection Agency
ft	feet
JSAs	Job Safety Analysis
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
NCP	Noise Control Plan
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIHL	Noise Induced Hearing Loss
NIOSH	National Institute for Occupational Safety and Health
NOI	Notice of Intent
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
Site or the Site	Humboldt Smelter
SWPPP	Stormwater Pollution Prevention Plan
Tetra Tech	Tetra Tech, Inc.

## 1.0 INTRODUCTION & BACKGROUND

The Humboldt Smelter (Site) is located in the town of Dewey-Humboldt, Yavapai County, Arizona. The Humboldt Smelter Smokestack project area occupies approximately 182 acres east of State Route 69 including an area along Chaparral Gulch and the property at the east end of Main Street in the town of Dewey-Humboldt. The Humboldt Smelter Smokestack portion of the Iron King Mine Superfund Site operated from the late 1800s until 1969. Peak production was during the early World War I era. Almost all the associated smelter buildings were taken down and removed long ago. During operations, lead and other metals were released from the smelter smokestack. The smelter smokestack property also contains large piles of dross, slag, and soils contaminated with lead and other metals (EPA, 2021).

The structure most visible from a distance is a tall brick smokestack (circa 1917) remaining from past smelter operations. The smelter smokestack consists of an attached rectilinear brick converter flue on elevated steel reinforced concrete piles. The converter flue measured approximately 140 feet (ft) long prior to its partial collapse in 2021. The large portion of the converter flue that collapsed caused destabilization of the structure and raised concern for public safety. According to a 2008 Cultural Resource and Historic Building Survey, the smokestack measures approximately 156 ft by 18 ft and is elevated 30 ft above ground level (ADEQ, 2021).

In late 2019, the Environmental Protection Agency (EPA) took actions to control fugitive dust originating from the smelter property. Community members informed the EPA that during periods of high winds, dross dust was being blown into neighboring residential areas. EPA applied a stabilizing cover material called Posi-Shell® on top of the contaminated dross material on the ground surface of the north end of the smelter smokestack property. Upon installation, the Posi-Shell® forms a hard, thick crust over the dross. This effort was designed to control fugitive dust until the EPA could select and implement a final cleanup remedy to address the contamination. The EPA placed many additional warning signs on or near these properties. All signs warn of toxic hazards and some also warn of unstable structures (EPA, 2021).

In early 2022, the Arizona Department of Environmental Quality (ADEQ) plans to disassemble both the Humboldt Smelter smokestack and the remaining attached brick converter flue in a controlled fashion. Additional fencing will be installed within the smelter plateau. In addition, if disturbed during project work, the dust-control cover (Posi-Shell®) previously installed by EPA will be repaired. This work plan outlines the approach, permits, and processes related to the takedown of the smelter smokestack and additional safety measures to further secure the site (ADEQ, 2021).

## 2.0 PLANS, PERMITS, AND PREMOBILIZATION ACTIVITIES

The following sections describe the plans, permits, and premobilization activities for the takedown action. These include but are not limited to: Site-Specific Health and Safety Plan, Stormwater Pollution Prevention Plan (SWPPP), Noise Control Plan, Fugitive Dust Plan, Takedown Plan, and Construction Schedules.

### 2.1 SITE SPECIFIC HEALTH AND SAFETY PLAN

A site-specific health and safety plan will be prepared prior to smelter smokestack takedown activities. The health and safety plan shall meet the requirements of applicable federal, state, and local regulations. The site-specific health and safety plan will include information on the following:

- Work Areas
- Hazard Communication
- COVID-19 Recommendations and Requirements
- Site Specific Chemicals of Concern
- Personnel Protection Program
- Initial On-site Training for Personnel
- Emergency and First-Aid Requirements
- Personal Hygiene
- Activity Hazard Analysis

The health and safety plan shall address site worker and operator safety.

### 2.2 AZPDES CONSTRUCTION GENERAL PERMIT & SWPPP

The State of Arizona, Arizona Pollutant Discharge Elimination System (AZPDES), Construction General Permit (CGP), Permit No. AZG2020-001 authorizes stormwater discharges from large and small construction activities to surface waters either directly or by conveyance, such as a Municipal Separate Storm Sewer System (MS4) and are associated with:

- Construction activities that disturb 1 or more of acres of land.
- Construction activities that will disturb less than 1 acre but are part of a larger common plan of development or sale that will ultimately disturb 1 acre or more.
- Support activities from temporary plants or operations set up to produce concrete, asphalt, or other materials exclusively for the permitted construction project.

Construction disturbance caused by the takedown of the smokestack and installation of additional fencing will affect a total of 1 acre on-site triggering the requirement of a CGP and SWPPP. The CGP requires sources of potential pollutants that affect the quality of facility runoff due to construction activities to be identified and that practices be implemented by the facility to reduce or eliminate pollutants in facility runoff to protect water quality. Practices used to reduce potential pollutants in facility runoff are termed “control measures.” These measures will be documented in the associated site SWPPP Plan.

Filing for a CGP in the State of Arizona requires submittal of a Notice of Intent (NOI) to the ADEQ prior to the beginning of operations; preparation, and implementation of a SWPPP including completion of required monitoring,



inspections, and reporting. An NOI will be submitted to the ADEQ and the Site will be assigned an AZPDES Authorization Number. Specifically, the CGP requires:

- Development and implementation of a SWPPP.
- The elimination of unauthorized non-storm water discharges.
- Monitoring of stormwater discharges and authorized non-stormwater discharges.
- Completion of an Annual Report.

This SWPPP is intended to serve as the Master SWPPP for the clearing of whole or partial areas associated with the takedown project. The SWPPP will be maintained on-site during activities and available for review.

### **2.2.1 SWPPP Plan Elements**

The SWPPP is used to identify all potential pollution sources that could encounter stormwater leaving the site. It describes the Best Management Practices (BMPs) to be used to reduce pollutants to stormwater discharges, and it includes written record site inspections and the follow-up maintenance that is performed. The SWPPP will contain the following elements:

- Project and SWPPP contact information
- Site and activity description, inclusive of site map
- Identification of potential pollutant sources
- Description of controls to reduce pollutants
- Maintenance/inspection procedures
- Records of inspections and follow-up maintenance of BMPs
- SWPPP amendments and SWPPP certification

## **2.3 NOISE CONTROL PLAN**

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The Noise Control Plan (NCP) addresses occupational noise exposure, monitoring, hearing protection, information and training, and record keeping. Sound levels shall be continuously monitored in all potentially noise hazardous work areas. In addition to monitoring equipment on personnel and within the cabs of operating equipment, three separate monitoring stations at the border of the site will be in operation to assess noise and vibration to residential areas from takedown activities.

The NCP applies to all facilities and jobsites and to all staff on-site who are required to wear hearing protection due to the nature of their work. The Plan describes how to implement the required elements of a protection program in order to protect personnel's hearing and is supported by additional training resources. On-site personnel may have limited, unnecessary exposures to occupational noise during field work activities. The operation of excavation equipment or other equipment such as generators can cause elevated noise levels in the work area. Hearing protection will always be worn during work activities in the immediate proximity of generators. Symptoms of overexposure to noise are stress, tensing of muscles, headache, and temporary or permanent hearing loss.

The purpose of the NCP is to reduce employee risk for hearing loss due to over-exposure to noise in the workplace. This program is designed to ensure that all staff who are exposed to elevated noise levels are adequately protected and receive appropriate training.

## 2.3.1 Noise Control Plan Elements

The exposure limit for noise is 85 A-weighted decibels (dBA) for an eight-hour period. Most residential smoke detectors are set at 85 dBA. This exposure limit is in accordance with recommendations from the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH). Noise levels below 85 dBA averaged over an eight-hour period are not covered by the exposure limit and therefore are not subject to the details of this plan. Noise levels below 85 dBA do not require hearing protection. Exposure to impact and impulse noise should be limited. The threshold for noise induced hearing loss (NIHL) is 140 decibels (dB) and it should never be exceeded.

### 2.3.1.1 Exposure Assessment

In the event of noise in excess of 85 dBA, an exposure assessment will be performed. The Site Health and Safety Officer will determine the need for hearing protection. This will be accomplished by review of the job description, Activity Hazard Analysis (AHAs) and/or sampling. Exposure assessments will be conducted by the Health and Safety officer. Noise exposure is to be measured without regard to wearing hearing protection.

### 2.3.1.2 Initial Monitoring

Initial monitoring at the onset of takedown activities shall be conducted in coordination with supervisors to determine high noise areas and tasks associated with these high noise levels as they relate to personnel. Monitoring may also be conducted as a result of an audit, process changes, new or modified equipment, or at the request of any staff member.

Initial monitoring for noise and vibration will also be conducted prior to mobilization of equipment at the three stations near the perimeter of the site to establish a baseline. They will consist of an inground Geophone probe and attached A-Weight microphone affixed to a tripod. These stations will remain in place throughout mobilization, takedown, and demobilization of equipment to continuously measure noise and vibration effects to neighboring residential areas. All residential areas are in excess of 500 ft from activities, so impacts are not expected. See **Figure 1** below for approximate locations of monitoring equipment.





**Figure 1. Noise and Vibration Monitoring Stations**

All equipment used for monitoring will be calibrated within manufacturer's specifications to ensure that it is in good working order.

## **2.3.2 Control Measures**

### **2.3.2.1 Engineering Controls**

Engineering controls are defined as any modification or replacement of equipment, or related physical change at the noise source or along the transmission path that reduces the noise level at the employee's ear. If an assessment reveals that staff are being exposed to noise levels greater than or equal to the action level, engineering controls will be considered first to reduce noise exposure. Engineering controls may include, but are not limited to baffling; relocation of noisy equipment, processes; insulation; sound barriers; and substitution of equipment, materials, etc.

### **2.3.2.2 Administrative Controls**

Administrative controls are changes in the workplace that reduce or eliminate the worker's exposure to noise. Examples include:

- Operating noisy equipment and machines during working hours when fewer project staff are exposed.
- Limiting the amount of time any staff spends at a noise source.
- Restricting staff presence to a suitable distance away from noisy equipment.

Controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control. This control may be applicable when workers are present but are not actually working with a noise source or equipment. Increasing the distance between the noise source and the worker, reduces their exposure. In open space, for every doubling of the distance between the source of noise and the worker, the noise is usually decreased by 6 dBA.

### **2.3.2.3 Personal Protective Equipment (PPE)**

If engineering and administrative controls are determined as ineffective or unfeasible, employees will be required to use hearing protection as part of their mandatory personal protective equipment. Employees that are required to wear hearing protection are required to receive training on why and when hearing protection is necessary; how to select the proper device; how to wear them correctly; and how to maintain them. Employees who choose to wear hearing protections in areas that are below 85 dBA are considered voluntary and are not subject to training or medical surveillance. The Health and Safety Officer is a resource that is available to help select appropriate hearing protection for employees.

### **2.3.3 Site Specific NCP Requirements**

All staff and subcontractors will comply with the Town of Dewey-Humboldt Ordinance No. 05-18, Section 3, all active construction work shall be conducted from 7:00 am to 5:00 pm, Monday through Friday. Unless otherwise approved. Additionally:

- Proper PPE will be used by all staff and subcontractors i.e. hearing protection, including but not limited to earplugs, earmuffs, etc.
- All personnel will be expected to comply with the NCP.
- The NCP and the PPE chosen to meet staff standards of hearing protection should not interfere with safe and proper communication while working on site. Selection of hearing protection devices and training will include site specific evacuation points and signals determined by the on-site Health and Safety Officer in conjunction with the Project Manager and ADEQ representative.
- Levels of noise will be maintained within acceptable levels to be protective of the health and safety of on-site workers and the community, and to minimize potential nuisance to the community.

## **2.4 DUST CONTROL PLAN**

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A Dust Control Plan (DCP) has been written to identify the measures that will be taken to reduce the potential for dust particulate emissions during takedown activities. In accordance with A.R.S. § 49-457.05, this Dust Action General Permit identifies a series of BMPs for specific dust generating operations. When ADEQ predicts that a day is at high risk for dust generation, those dust generating operations that are not already required to control dust through a permit issued by the ADEQ are expected to choose and implement at least one BMP to reduce or prevent particulate matter (PM10) emissions. Implementation of a BMP is expected to occur as soon as practicable before and during the high-risk event. Although the BMPs in the Dust Action General Permit only apply to those sources that do not already have a permit, dust generating operations with an air quality permit are also expected to implement the dust controls in their permit at the same time.

The purpose of the DCP is to identify the steps that will be taken to reduce the potential for dust particulate emissions associated with strategic smokestack removal. The DCP includes activity-specific dust control criteria and dust suppression procedures. BMPs will be implemented throughout the project. BMPs include wetting active remediation areas, minimizing or ceasing activities during periods of high wind, sweeping or wetting paved areas, wetting unpaved areas, possible application of palliative materials, and covering stockpiles. The DCP provides specific information about the generation and control of dust emissions during the strategic removal of the stack.

## 2.4.1 Objectives and Approach

Dust can be generated from vehicular traffic, excavation activities, and wind. Vehicles should not be operated on unpaved surfaces at speeds over 10 miles per hour (mph) to prevent dust generation. Other dust generating activities should be conducted using methods to prevent and control the generation of dust.

The subcontractor will control dust by watering or applying palliatives to disturbed areas, as described in this Plan, and by implementing standard excavation BMPs to reduce the potential of exposed soils to wind erosion. The subcontractor will take all reasonable precautions to prevent the generation of dust during the duration of the project.

The objectives of the DCP are as follows:

- Provide a plan for preemptively limiting and controlling respirable dust during excavation and loading activities. Levels of dust will be controlled in accordance with Yavapai County, ADEQ, Town of Dewey-Humboldt, and Tetra Tech, Inc. (Tetra Tech) whose requirements are to be protective of the health and safety of on-site workers, and to minimize potential health hazards and nuisance to the community
- Determine whether BMP's and controls are effective in reducing ambient air concentrations of specific compounds to below Action Levels and make appropriate and necessary adjustments.
- Track the total application of water, total amount of street cleaning and sweeping, instances of work-stopping weather events, results of the real-time air monitoring, and instances of dust approaching or exceeding the Action Levels.
- Provide air monitoring to notify employees when concentrations of respirable dust in ambient air are approaching Action Levels due to construction activities.

## 2.4.2 Dust Control Plan Elements

### 2.4.2.1 Air Quality Monitoring

Air Monitoring for dust and metals will be conducted during this project. The subcontractor will be responsible as it relates to the collection, evaluation, presentation, and data management of the air monitoring results. Other subcontractor responsibilities include maintenance of sampling equipment and developing on-site recommendations for response actions. The subcontractor will adhere to the requirements of Yavapai County, ADEQ, and the Town of Dewey-Humboldt.

- General dust monitoring will occur within the Support Zone, laydown yard, and property perimeter (See **Figure 2**).
- Dust monitoring frequency will be determined according to the type and location of operation.
- Metals monitoring will occur at three locations near the property boundary, based on on-site activities and prevailing wind directions.
- Metals monitoring will include asbestos, arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Monitoring will occur for a 24-hour period prior to controlled takedown activities, 24 hours a day during the duration of takedown, and a 24-hour period post takedown.
- All construction work will be suspended during periods of high winds, in excess of 15 mph.
- Documentation will include at a minimum: equipment calibration data, background concentrations, date, monitoring results, monitoring locations, source description, air temperature, and wind direction.

ADEQ will be responsible for conducting PM 2.5 and PM 10 air quality monitoring for the duration of the project.





Figure 2. Site Layout

#### 2.4.2.2 On-Site Dust Control

Control of dust will be a high priority during the takedown activities. The primary mechanism for dust control will be the use of water trucks with spray bar(s) and hose(s). Non-potable water will be used for dust control purposes. Water will be obtained from an off-site hydrant. Proactive controls, which include controlled productivities for the smokestack removal and the enforcement of low-speed limits for vehicular traffic will be instituted to reduce the amount of dust generation during Site activities. **No visible dust emission allowed.**

Primary Control Measures:

- Two 4,000-gallon water trucks will be dedicated to the Project and available for operation during all work hours when takedown-related activities are occurring, as necessary, to control dust. The water trucks will be available for use on site in the event that dust becomes a safety or air quality compliance issue during non-construction hours.
- A Cat Rainmaker will be dedicated to the stack removal with the capabilities of providing up to 300 gallons per minute misting over a 300' distance. The Rainmaker can pivot 180 degrees to place the mist in areas as required.
- Apply water before starting operations.
- Apply water during strategic stack removal activities and site improvements. No construction activities will take place without water available.
- Limit the amount of area disturbed at any one time.
- Restrict access on unpaved areas to vehicles and equipment that are necessary.
- Keep the speed under 10 mph on unpaved surface areas.

- Prevent and control trackout; sweep and clean any trackout as needed or at end of the workday.
- Stabilize disturbed surfaces as soon as possible.
- Apply water at the end of the day.
- Do not over-water as muddy conditions increase trackout.
- Evaluate dust control procedures periodically to identify issues that may develop as the job progresses.
- Terminate soil disturbances and excavation activities when winds exceed 15 mph or dust cannot be adequately controlled.
- Discontinue work when winds are in excess of 15 mph for safety and dust control.

The subcontractor shall conduct operations and maintain the Site as to minimize the creation and dispersion of respirable dust. Clean water shall be applied to the Site as necessary to prevent dust during excavation, loading/unloading, and backfilling activities. Laydown areas and on-site roadways will be kept damp, as necessary, without creating ponding or mists that travel beyond the Site boundaries. The watering operations shall be sufficient to control dust. Water shall be applied in a manner to prevent runoff. To avoid trackout onto public roadways, a "broom-clean" condition will be maintained at the Site. A skid steer loader equipped with a power broom or manual tools (e.g., push broom, shovels, etc.) will be used daily.

Contingency Control Measures if Required:

- Dust palliatives, products that are applied to soil surfaces in order to limit the creation of fugitive dust emissions, will be used. For many projects, dust palliatives can be an effective and economical alternative to watering.
- If the area is inaccessible to water trucks due to slope conditions or other safety factors, watering should be conducted with water hoses or other systems.
- In the event the rainmaker experiences a failure, work will be stopped until repairs are completed.
- Additional water trucks will be available on an as-needed basis.
- A backup off-site water source will be available should the primary source become unavailable during takedown activities.

If the primary or contingency control measures do not result in effective control, a stop work order will be issued, and the dust control plan must be revised.

## **2.5 OTHER PERMITS AND CLEARANCES**

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### **2.5.1 Additional Required Permits**

Prior to initiating site activities, all applicable permits will need to be obtained. These may include, but are not limited to:

- ADEQ National Emission Standards for Hazardous Air Pollutants (NESHAP) for demolition.
- Town of Dewey-Humboldt Demolition Permit (if required).
- Water Permit.

Copies of permits will be submitted in advance of mobilization and copies will be available on-site during the construction activities.

## 2.5.2 Underground Utility Clearance

Prior to any construction activities at the site, the subcontractor shall call AZ811 for utility location to identify any potential subsurface conditions that may exist before any construction activities commence on-site. The subcontractor will field check the jobsite to verify that all utility companies have located their respective utilities. A copy of the AZ811 utility locate ticket will be kept on-site and updated every fifteen (15) working days or sooner if locate marks are no longer visible. Should an unexpected utility be encountered on-site during subsurface work involving the fencing installation activities, work will be stopped, and the utility will be attempted to be identified. Arizona Blue Stake and/or the utility company will be called to mark out and further identify.

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## 3.0 MOBILIZATION, SITE PREPARATION, AND TEMPORARY FACILITIES

The following section describes the mobilization and site preparation activities involved with takedown activities.

### 3.1 MOBILIZATION AND SITE PREPARATION

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The subcontractor will provide all personnel, equipment, and materials to perform work zone improvements and smokestack take down activities. All equipment mobilized onto the site will be in clean, good, working condition. Mobilization of equipment is expected to take one week, 5 working days, to complete. The contractor will establish designated work zones, exclusion areas, and support zones. The zones will be moved and re-established as necessary based on location and phase of work being performed. Access to each specific area will be restricted during work activities and divided into an exclusion zone and a support zone. The exclusion zone will be maintained around the work area and communicated to all persons working on the site. The size and the shape of each exclusion zone will be determined by the site conditions. To prevent unauthorized entry, the gate will be locked when personnel are not on-site and closed during working hours unless deliveries or trucks are entering/exiting the site.

### 3.2 WORK ZONE IMPROVEMENTS

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Prior to the large-scale stack and flue dismantling, the contractor will delineate the work pad requirements and position for the 5130B excavator and dust mitigation equipment required to takedown the stack and flue. The laydown yard is anticipated to be approximately 200 ft long by 150 ft wide and will be located inside the property gate near the existing roadway to the stack location (**Figure 2**). Vegetation may be removed in this area and leveling could be required to provide an appropriate area to assemble the Cat 5130B. Any vegetation removed in this area will remain on-site. The existing soil identified in the pathways and equipment pad area will be leveled prior to the placement of import fill to plate the pathways. The contractor will cover the contaminated material with an aggregate base (AB) import and compact prior to mobilizing the equipment in-place. The contractor estimates approximately 300 tons of import material placed in the designated areas (Figure 3).





Figure 3. Import Material Plating Areas

### 3.2.1 Site Control & Site Security

Site control measures will be implemented to limit site access to only necessary, authorized personnel. Ensuring that personnel are certified and trained in site-specific safety, technical, and quality control measures. Unauthorized personnel will not be allowed access into the Site Work Zone delineated by the fence around the site. Site security is of the utmost importance to protect the public, protect the installation property, secure equipment, materials left on-site, and eliminate the chance of equipment vandalism. Security will inspect the fence around the site daily. During work hours, the front gate will be attended by site security as provided by the contractor. A sign-in and sign-out sheet will be maintained for all personnel and visitors to the site. Twenty-four-hour site security monitoring will be maintained during controlled smokestack takedown activities inclusive of mobilization, takedown, and demobilization.

### 3.2.2 Temporary Facilities

The contractor will establish a temporary construction laydown area for equipment. In addition, project signs, toilets, and wash stations will be installed and maintained at the work site. The contractor will provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, the contractor will dispose of such waste materials, debris, and rubbish off-site.

## 4.0 FIELD ACTIVITIES

The following sections describe the field activities that will be completed during the controlled smokestack takedown action.

### 4.1 CONTROLLED SMELTER SMOKESTACK TAKEDOWN

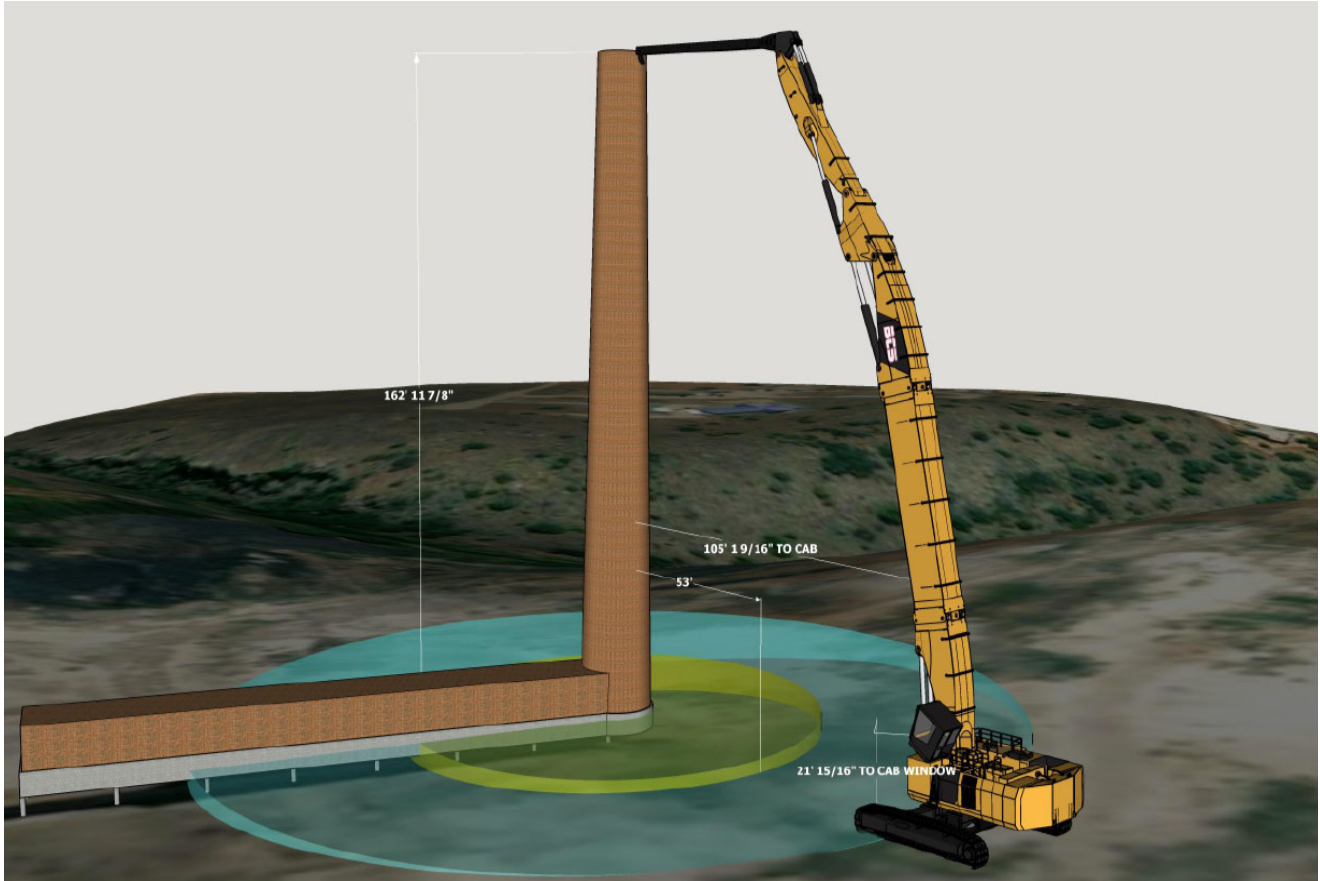
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Preceding any strategic controlled smokestack takedown activities, the Cat 5130B High Reach will be assembled in a laydown yard designated on the property near the entry gate. The assembly of the Cat 5130B is anticipated to take one week. Once assembly is complete, the machine will be tracked into position and the dust control equipment will be placed in a strategic location considering wind direction and any safety concerns for falling debris.

Prior to the start of the controlled takedown activities, a tailgate safety meeting will cover the Smokestack Survey Plan and it will be reviewed for any safety concerns and any deficient Job Safety Analysis (JSAs) or missing JSA's. Any deficient or missing JSA's that are identified during the meeting will be updated for that procedure and added to the overall Site Safety Plan.

Any wind conditions that are identified above 15 mph will be classified as an unsafe condition and it will be required to have the construction activities stopped and assessed prior to restarting the smokestack takedown. Any storm weather conditions that have lightning within 10 miles of the project will require all activities to stop and all operators of the machinery to exit their machines and wait in an appropriate location identified in the health and safety plan until the safety concern has passed.

The placement of the Cat 5130B will be outside the drop zone of the stack bricks and the cab approximately 105 ft from the stack (Figure 4). It is calculated that the Cat 5130B will be placed outside the catastrophic failure zone of 80' if the stack integrity were to experience a complete failure. The operator of the Cat 5130B will be at a level of 21 ft above grade surface during the machine operation and will be protected by debris bars and 1 5/8" shatterproof glass. In addition, a catch fence will be placed in front of the machine for added protection from debris.



**Figure 4. Cat 5130B Approximate Location**

The Cat 5130B will start at the top of the smokestack and take down the brick structure by pushing away from the machine to collapse the bricks into the center and sides of the smokestack. This process will continue from the top to the bottom in 3 ft increments. The Cat 5130B is equipped with several different cameras to monitor work from numerous angles. In the event the smokestack should experience a total failure, due to the structural integrity, it is anticipated the smokestack will implode on itself straight down. All equipment and personnel will remain outside of the failure zone.

During the controlled takedown of the smokestack, the process will be conducted under a continuous water mist from a Cat 345 Rainmaker. The Cat 345 Rainmaker has a maximum misting capacity of 300 gallons per and can pivot 180 degrees side to side. The Cat 345 Rainmaker will be supplied water from an offsite source in 4,000-gallon water trucks.

Smaller excavators will be utilized to take down the converter flue and a dozer will manage debris. All equipment will operate on the AB material installed prior to takedown. Care will be taken to minimize impact to the Posi-Shell® cover in the area surrounding the smelter smokestack. Should the Posi-Shell® be disturbed, it will be repaired during fence installation activities. All brick debris will remain encapsulated in-place around the stack foundation. AB surfacing will remain in-place after the controlled takedown activities are complete.

#### **4.1.1 Demobilization**

The entire site will be inspected for completion and cleanliness prior to any demobilization from the site. Any deficiencies will be corrected. All equipment and temporary facilities will be removed from the site.



## 5.0 FENCING

To further secure the site, additional fencing will be installed. **Figure 5** delineates existing fencing and proposed additional fencing. The fencing alignment will be surveyed prior to installation. Approximately 3,700 linear ft of 6 ft high chain link fencing with 3 strands of barbed wire will be installed as follows:

- Install 2 3/8" corner posts and 1 1/5" line posts on 13 ft centers.
- Install 6 ft high chain link fabric with a bottom wire and top rail.
- Install 3 strands of barbed wire on top.
- Fencing would be tied into existing fencing northwest and east of the property.

The existing front gates will be repaired to further prevent entry by installing a concrete footer and replacing the barbed wire. Two sets of new double 6 ft high, 8 ft wide chain link swing gates with 1 ft of barbed wire on steel posts to accommodate entry and exit of equipment will be installed along with the fencing at two separate locations near the centroid of the property as shown in **Figure 5**.

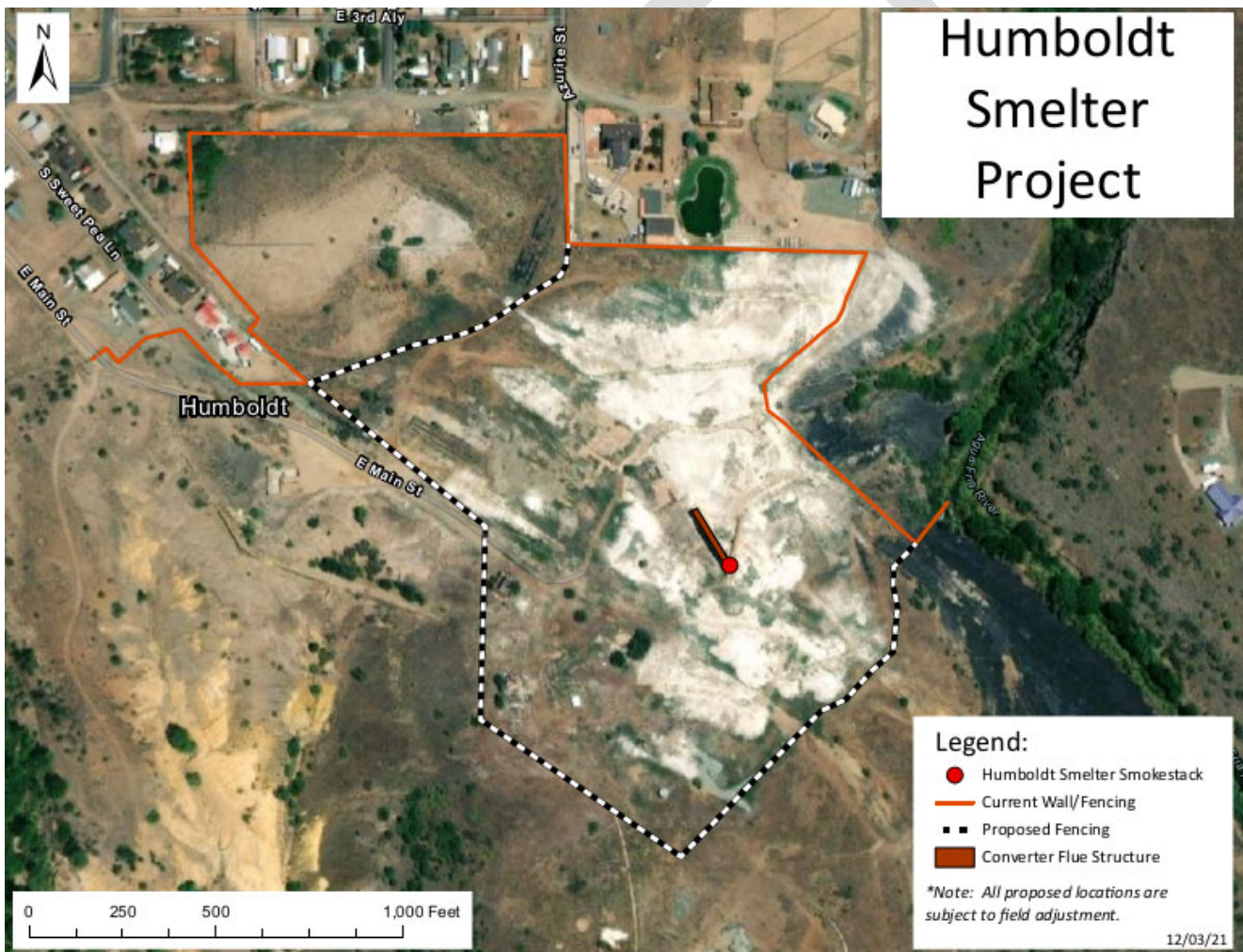


Figure 5. Existing and Proposed Fencing Alignment

## 6.0 SITE CHARACTERIZATION PLAN SUMMARY

This Humboldt Smelter Project Work Plan has been developed to guide each work element of the overall site activities as cited herein. In early 2022, ADEQ plans to disassemble both the Humboldt Smelter smokestack and the remaining attached brick converter flue in a controlled fashion. Additional fencing will be installed within the smelter plateau. This work plan outlines the plans, permits, and activities related to the controlled takedown of the smelter smokestack and additional safety measures to further secure the site.

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## 7.0 REFERENCES

ADEQ. (2021). *Humboldt Smelter Project* | ADEQ Arizona Department of Environmental Quality. Available at: <<https://www.azdeq.gov/dh-stack-project>> [Accessed 8 December 2021].

ADEQ. (2021). *Iron King Mine and Humboldt Smelter | Site History* | ADEQ Arizona Department of Environmental Quality. Available at: <<https://azdeq.gov/IronKingMine/SiteHistory>> [Accessed 8 December 2021].

EPA. (2021). *Site Profile - Iron King Mine / Humboldt Smelter - EPA OSC Response*. Available at: <[https://response.epa.gov/site/site\\_profile.aspx?site\\_id=11828](https://response.epa.gov/site/site_profile.aspx?site_id=11828)> [Accessed 8 December 2021].

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