DRAFT

DUST MITIGATION PLAN

FOR

REMEDIAL ACTION

CENTENNIAL M-1 PROPERTY

DTSC Site Code 102370

Nevada County, California

April 2021

1 INTRODUCTION

This Dust Mitigation Plan (DMP) describes material handling protocols to reduce the release of metals and asbestos into the atmosphere during remedial action at the Centennial M-1 Property in Nevada County, California. Remedial action procedures are set forth in the Remedial Action Plan (RAP) for the Centennial M-1 Property (NV5, 2021).

2 PURPOSE

The purpose of this DMP is to outline:

1. Engineering controls to be implemented during remedial action, including fugitive dust prevention, track-out prevention, surface and stockpile protection, ingress/egress development, vehicle movement, and implementation of best management practices (BMPs).
2. Protocol for confirming that engineering controls, as designed, are implemented during mechanical soil disturbance, including site clearing, site grading, transportation, placement and compaction, and off-site disposal activities.
3. Post-remediation stabilization controls to be implemented after excavation and removal of contaminated soil and placement of soil at a deed-restricted location.

3 NOTIFICATION OF COMMENCEMENT OF GRADING

The California Department of Toxic Substances Control (DTSC) shall be notified at least ten days in advance of commencement of grading. Contact information is provided below:

California Environmental Protection Agency
Department of Toxic Substances Control
Site Evaluation and Remediation Unit
8800 Cal Center Drive
Sacramento, CA 95826
Project Manager: Dean Wright
Phone: 916-255-3591
Email: dean.wright@dtsc.ca.gov

4 ENGINEERING CONTROLS

Engineering controls and dust control measures apply to all mechanical soil disturbances within the areas of concern as described in the RAW. Construction activities are defined in this document as any mechanical soil disturbance in the contaminated soil areas. Mechanical soil disturbance may result from activities such as clearing, grading, excavation, fill placement, compaction, and movement of equipment over unprotected surfaces.

4.1 SUMMARY OF GENERAL CONTROLS

The engineering controls described below shall be implemented during any mechanical soil disturbance associated with the proposed remediation activities. Alternate engineering controls proposed by the contractor that are not included in this DMP must be approved by the DTSC prior to commencement of any soil disturbance.

4.1.1 Area of Disturbance

The areas of disturbance should be delineated by staking or marking prior to commencement of construction activity, including vertical extent of excavation and fill placement.

4.1.2 Track Out Prevention

No soil is allowed to leave the work areas through vehicle track-out or any other means. Track-out controls shall be implemented as follows:

1. The ingress and egress route is to be developed prior to construction. If more than one ingress/egress route is used, track-out prevention protocol shall be maintained at each location.
2. Vehicles and equipment shall be visually inspected for soil or mud accumulation, and shall be washed or brushed down as necessary at the ingress/egress location before leaving the property.
3. A gravel pad or metal screen may be used to clean tires at the ingress/egress location. The gravel pad should be composed of gravel at least 1-inch or larger, with a silt content of less than 5 percent. The gravel pad, if used, is to be maintained in good condition, and repaired as necessary to maintain the integrity of the pad.
4. BMPs shall be implemented at the ingress/egress location. BMPs shall be adhered to during road wetting and rinsing of vehicles.

4.1.3 Soil Stockpiles

Whenever possible, contaminated soil will be loaded directly onto trucks for transport and on-site placement (or off-site disposal) without stockpiling. If temporary stockpiling of contaminated soil is necessary, stockpiling will be performed within the footprint of the existing contaminated soil stockpile area whenever practical. Any excavated soil to be temporarily stockpiled outside of the original contaminated footprint will be placed on heavy plastic sheeting to avoid contaminating the underlying soil.

If temporary stockpiling is necessary, the material will be kept adequately wetted or covered with plastic sheeting, which will be secured in place. Additionally, soil stockpiles will be bermed

with plastic lining or fiber rolls will be placed around the stockpiles to prevent run-on and run-off. These control measures will be inspected daily whenever stockpiling operations begin.

Active stockpiles are to be adequately wetted or covered with tarps. Inactive stockpiles (stockpiles that will remain inactive for more than seven days) shall be protected by (1) keeping the surface adequately wetted; (2) applying chemical dust suppressants or stabilizers according to manufacturer's directions; or (3) covering with tarps.

4.1.4 Traffic Control

Proposed travel routes, parking areas, and staging areas must be established prior to commencement of grading.

1. Maximum vehicle speed for any vehicle or equipment on the site shall be 15 miles per hour. Slower vehicle speeds may be necessary to reduce soil disturbance or dust generation.
2. Vehicular and equipment travel should be limited to designated areas.
3. Only vehicles and equipment directly involved with site grading and utility work, including refueling and maintenance vehicles, should be allowed in the designated work area during excavation and grading activities. All other vehicles and equipment shall remain parked in a designated clean area on-site.
4. Access routes within the site must be stabilized by watering or applying chemical dust suppressants, according to manufacturer's directions, as necessary to control fugitive dust emissions.
5. The contractor is responsible for traffic control on-site and on public roadways. No soil transport on public roadways is proposed.

4.1.5 Earthmoving Activities

Dust mitigation measures shall be initiated prior to commencement of soil management activities, and should continue until confirmation that the contaminated soil has been removed from the proposed development area. Recommendations to be implemented during site grading are provided below.

1. Prior to and during any ground disturbance, water shall be sprayed to sufficiently wet areas of disturbance and stockpiled soil. The contractor shall supply a water truck of adequate size and capacity for this purpose. Wetting should fully extend to the anticipated depths of the excavation. All soil/rock material shall be adequately wetted such that no visible dust emissions occur. Sufficient moisture may be determined by the field test described below.
2. Grading operations shall be suspended when, despite application of dust mitigation measures, wind speeds are high enough to result in fugitive dust emissions.
3. BMPs shall be implemented during construction activities. All water that could potentially contain affected soil shall be retained on-site. All sediment collected shall be retained on-site.

4.1.6 Field Determination of Moisture

Field testing for determination of sufficient moisture content will be conducted as follows:

1. A one-quart soil sample shall be taken from the top 3 inches of the disturbed area or stockpile;
2. The sample shall be poured from a height of 4 feet above a clean hard surface; and
3. The material will be considered adequately wetted if no observable dust is emitted when the material is dropped.

4.1.7 On-Site Trucking

Hauled material must be adequately wetted to prevent dust from blowing out of the trucks. Additionally, the loads must be contained within cargo compartments that are covered with tarps, or loaded so that the material does not touch the front, back, or sides of the cargo compartment at any point less than 6 inches from the top of the compartment.

4.1.8 Air Monitoring

During the remedial activities, soil moisture content is to be maintained to reduce the potential for dust generation and the need for respiratory protection. If visible dust is observed, or if the DTSC determines that dust monitoring is required, dust monitoring shall be performed.

4.2 ENGINEERING CONTROLS BY TASK

The engineering controls noted below are provided to assist in task planning. Engineering controls shall be modified, if necessary, based on observation of fugitive dust emission or air sampling results.

4.2.1 Site Preparation

Prior to commencement of any mechanical disturbance at the site, the following engineering controls should be in place.

1. Proposed areas of disturbance, including the vertical extent of excavation and fill placement, should be clearly delineated.
2. Ingress/egress and wheel-wash areas should be constructed prior to commencement of grading. The ingress/egress and wheel-wash areas are to be maintained throughout all phases of the project.
3. BMP features such as jute mats, fiber rolls, basins, or silt traps should be installed.
4. Parking areas should be clearly defined outside the area of disturbance.

4.2.2 Clearing and Grubbing

The following engineering controls shall be implemented prior to and during clearing and grubbing.

1. Prior to commencement of clearing and grubbing activities, vegetation and soil surfaces within the areas to be cleared should be sufficiently pre-wetted to prevent generation of fugitive dust from clearing activities. A sufficient amount of water should be used and allowed to soak into the subsurface. No soil disturbance, including removal of vegetation,

may occur in any area that has not been sufficiently pre-wetted. Note that pre-wetting may need to occur over a period of days during dry weather, and that pre-wetting may also be necessary during or following periods of rainy weather.

2. Water application should continue throughout clearing operations. Water spraying should be fanned over the site, and directed at specific activities, as appropriate. Proposed routes of site access should be sprayed with an amount of water sufficient to prevent generation of visible dust from equipment travel.

4.2.3 Grading

Prior to any soil disturbance, the area of proposed disturbance must be sufficiently and repeatedly wetted, so that no fugitive dust is generated by the activities.

1. No soil disturbance may occur in any area that has not been sufficiently pre-wetted. Areas to be excavated should be sufficiently wetted to the depths of the excavation, so that no dust is generated by the excavation.
2. Any soil disturbance that results in generation of dust must cease immediately until the area has been sufficiently wetted to a depth necessary to prevent generation of fugitive dust.
3. Disturbed areas are to be maintained in accordance with this DMP.

4.2.4 Fill Placement

The following engineering controls shall be implemented prior to and during fill placement.

1. Fill material and areas where fill is to be placed should be adequately wetted so that no fugitive dust is generated during fill placement.
2. Contaminated soil is to be placed in a designated fill area within the Site. The soil shall be sufficiently wetted prior to placement and throughout the work day, as necessary. At the end of each work day, the material should be wetted to enable crusting of the surface, or covered with plastic sheeting.

5 ADMINISTRATIVE CONTROLS

5.1 OCCUPATIONAL SAFETY & HEALTH ACT

The contractor and crew shall comply with OSHA and other safety regulations.

5.2 DMP COMPLIANCE MONITORING

DMP compliance monitoring is to be conducted during any mechanical soil disturbance activity. The contractor shall provide adequate advance notice and information to the lead agency, local enforcement agency, and H&K about site activities so that they may perform the following tasks:

1. Confirm implementation of engineering controls such as ingress/egress areas, wheel wash areas, and parking areas outside the area of construction.
2. Confirm that sufficient water is available and applied so that no visual evidence of fugitive dust is observed beyond the site boundaries.
3. Confirm on-site travel and wheel-wash protocols are regularly implemented.

4. Coordinate air sampling with the air monitoring contractor, if air monitoring and/or sampling is required.
5. Confirm that proper transportation protocol is observed by the contractor.
6. Confirm that affected soil is contained on-site and stockpiled according to the DMP specifications.
7. Confirm construction activities are in compliance with the guidelines of the DMP.

5.3 AIR MONITORING PROTOCOL

Based on the required application of water for dust suppression during soil excavation and other soil-disturbing activities, airborne levels of metals and asbestos are generally not expected to result in exposures to asbestos above the action level or metals in excess of the Cal-OSHA eight hour Permissible Exposure Limit (PEL) provided that proper dust control and soil management procedures are employed.

Airborne dust generally becomes visible at concentrations of approximately 0.5 milligrams of dust per cubic meter of air (mg/m^3). This level of dust represents approximately ten times the action level for suspended particulates (0.05 mg/m^3); therefore, real-time dust monitoring and air sampling for asbestos are required to demonstrate the effectiveness of engineering controls used to minimize exposures.

All results of air monitoring shall be reported to the DTSC within 48 hours.

5.3.1 Meteorological Station

A portable or temporary meteorological station installed at the site shall be used to collect and document weather data during soil disturbing activities associated with the remedial action. The meteorological station shall be equipped with the basic suite of sensors to measure the following:

1. Wind direction and velocity
2. Barometric pressure
3. Temperature
4. Relative humidity
5. Precipitation

A wind rose showing the dominant prevailing wind directions and wind speeds shall be generated for 12-hour episodes, once per work shift. Wind rose records and other data shall be recorded and maintained in the project records.

5.3.2 Dust Monitoring

Airborne dust levels shall be monitored using active, real-time, data-logging aerosol monitors (e.g., MIE pDR 1200 or TDI DusTrak 8532 with PM-10 inlet attached to a sampling pump). The dust monitoring instruments shall be calibrated daily, set to log dust levels over 5 minute periods and visually read every 15 minutes. At a minimum, units shall be placed at the following locations:

1. Upwind to monitor background airborne dust conditions;

2. On the equipment operator to provide worst case dust concentrations;
3. On the downwind property line; and
4. At the nearest sensitive receptor (residential) location.

In addition to the monitoring requirements described above, the Northern Sierra Air Quality Management District requires that no visible dust cross the property line.

As set forth in CCR Title 17 Section 70200, the action level for fence-line suspended particulate matter (airborne dust) is 50 micrograms per cubic meter (ug/m^3), which is equal to 0.05 milligrams per cubic meter (mg/m^3). This value is based on a 24-hour sample obtained using a PM10 sampler, determined by real-time air monitoring as the difference between upwind and downwind measurements. CCR Title 17 Section 70200 states that the PM10 sampler is intended to collect a range of particulates reflecting the characteristics of lung deposition, collecting approximately 50% of all particles of 10 microns (um) aerodynamic diameter, collecting a declining fraction of particles as their diameter increases, and increasing fraction of particles as their diameter decreases.

The Section 70200 action level described above is generally lower (more conservative) than the benchmarks described below:

- The Cal-OSHA Permissible Exposure Limit (PEL; 10 mg/m^3) for airborne dust.
- An action level based on the Office of Environmental Health Hazard Assessment (OEHHA) 1-hour acute reference exposure level (REL) for arsenic (0.2 µg/m^3). The 1-hour acute REL is considered as a not-to-exceed value and can be used as a level of concern (LOC) in the Marlowe Equation [AL (µg/m^3) = LOC (µg/m^3) x 1,000,000/Concentration in soil (mg/kg)] to calculate a dust action level (AL). Using the central-tendency exposure point concentration (EPC) for arsenic in soil/dust within the ETP-E assessment area (UCL = 1,246 mg/kg), an AL of 160 µg/m^3 can be calculated. Using the maximum detected soil arsenic concentration of 4,900 mg/kg, the suspended particulate AL would be 40 µg/m^3.
- An action level based on the Cal-OSHA action level for arsenic in air (5 µg/m^3). Dividing the Cal-OSHA action level for arsenic in air (5 µg/m^3) by the central-tendency value for arsenic in soil/dust within the ETP-E assessment area (UCL = 1,246 mg/kg) yields a suspended particulate AL of 4.0 mg/m^3.

5.3.3 Air Sampling and Analysis for Metals

The lead agency or local enforcement agency may require additional dust monitoring and may also require air sampling and analysis at any time during the remedial action. If conditions arise such that additional monitoring is required, the monitoring shall be conducted in accordance with these guidelines. Air sampling and analysis, if required, is to be performed in accordance with NIOSH Method 7082, with analysis by flame atomic absorption spectroscopy (FAAS).

5.3.4 Air Sampling and Analysis for Asbestos

Air samples shall be collected at the following locations at least once per work shift:

1. Work location,
2. Upwind site perimeter,

3. Downwind site perimeter, and
4. Nearest sensitive receptor location (e.g., residential area).

Sample locations shall be identified by prevailing wind direction and local ground effect. Meteorological monitoring is described above in Section 5.3.1.

Air sample analysis shall follow the analytical method specified by the US Environmental Protection Agency, Asbestos Hazard Emergency Response Act (AHERA) criteria for asbestos (40 CFR, Part 763, Subpart E, Appendix A (adopted October 30, 1987) with the following exceptions incorporating California Air Resources Modified Transmission Electron Microscopy (TEM) requirements:

1. The analytical sensitivity shall be 0.001 structures per cubic centimeter (0.001 s/cc), and
2. All asbestos structures with an aspect ratio greater than three to one (3 to 1) shall be counted irrespective of length, and
3. The results of the analysis of air samples shall be reported as transmission electron microscopy (TEM) asbestos structures per cubic centimeter (s/cc).

Air sample analysis shall be performed as quickly as practical to facilitate corrective actions, if needed. The turn-around time from sample collection to delivery of analytical results should be no longer than three (3) days.

Air monitoring results shall be reported to the DTSC within 48 hours. All air samples with a detected concentration at or above the Action Level of 0.005 fibers per cubic centimeter of air (0.005 S/cm^3) of regulated asbestos structures shall report the results immediately to the DTSC.

5.3.5 Corrective Action

If airborne dust monitoring results exceed the action level for dust in air (0.05 mg/m^3), or if asbestos is detected in air samples above the action level of 0.005 fibers per cubic centimeter of air (0.005 S/cm^3), then the results are to be reported immediately to the DTSC, additional water is to be applied to the soil, and additional engineering controls for dust suppression are to be performed as required to maintain dust concentrations below the action levels.

5.3.6 Recordkeeping

Chain-of-custody documentation shall be maintained for all air samples. Sample identification, chain-of-custody (COC) records, receipt for sample records and other field records shall be legibly recorded with waterproof, non-erasable ink, unless otherwise specified. If errors are made in any of these documents, corrections will be made by crossing a single line through the error and entering the correct information. All corrections must be initialed and dated. The following information shall be included on the COC using waterproof, non-erasable ink:

1. Project number.
2. Field identification or sample station number.
3. Data and time of sample collection.
4. Designation of the sample as grab or composite.
5. Whether the sample is preserved or unpreserved.
6. The analysis to be performed.

All records of meteorological monitoring, dust monitoring, air sampling and laboratory analysis are to be maintained and presented in a final report as described below.

5.3.7 Reporting

All monitoring results shall be presented in the Remedial Action Completion Report (RACR) and submitted to the DTSC for review. The report shall include the following:

1. A written narrative describing the sampling procedures and methodology, including sample times/rates/volumes, field and laboratory methods, equipment and procedures;
2. A list and map of sample locations;
3. Photographic documentation;
4. A summary of air sampling equipment malfunctions, if any, and corrective actions;
5. Laboratory analysis summary table;
6. Laboratory reports and chain of custody documentation;
7. Meteorological data and daily wind rose records;
8. Summary of weather pattern and storm events during the remedial action;
9. Discussion of potential offsite air contaminant events; and
10. Summary of changes to proposed sampling locations or methodology, if any.

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