

BLASTING PLAN

INTRODUCTION

This Blasting Plan describes the blasting operations that may occur during construction of the 650 Project. The purpose of this Blasting Plan is to provide project-specific information concerning blasting procedures, including the safe use and storage of explosives, and the measures and best management practices (BMPs) that will be implemented to prevent potential adverse impacts to human health, safety, and the environment from the use of explosives during blasting activities. Contractor shall comply with all conditions within this plan as well as all specifications detailed in **Mitigation Measure 4.10-2** in the Mitigation Measure tracking table for this project. Additionally, during any blasting, Contractor shall ensure full compliance of the Fire Prevention and Suppression Plan for this project.

REGULATORY OVERVIEW

The Federal Occupational Safety and Health Administration (OSHA) and numerous state and local jurisdictions regulate the use of explosives. The Federal Bureau of Alcohol, Tobacco, and Firearms (BATF) regulates explosives storage and commerce under the Organized Crime Control Act of 1970, Title XI (Public Law 91-452). The major provisions of this federal law are discussed in BATF publication P 5400.7 ATF-Explosives Law and Regulations (1990). The U.S. Department of Transportation (USDOT) also has laws pertaining to the storage of explosives, as well as the packaging, labeling, materials compatibility, driver qualifications, and safety of transported explosives. Provisions applicable to this project are included in this plan. State and local laws governing explosives may be more restrictive than the BATF regulations. Liberty Utilities' Prime Construction Contractor(s) and any pertinent sub-contractors will comply with the most stringent provisions of applicable federal, state, and local laws that pertain to use and storage of explosives.

OVERVIEW OF BLASTING OPERATIONS

Locations

Blasting will be limited primarily to rocky terrain (i.e., areas underlain by un-weathered volcanic bedrock or other hard, massive, or un-fractured geologic formations) where traditional excavation and earth moving equipment are not adequate to meet project specifications. Liberty Utilities will avoid blasting in potential rockslide/landslide areas to the maximum extent possible and will consult with a geologist before blasting in such areas. Blasting may consist of either implosion or explosion.

Procedures

Liberty Utilities' Prime Construction Contractor will contract a qualified, experienced, and licensed blasting contractor that will perform blasting using current and professionally accepted methods, products, and procedures to maximize safety during blasting operations. Blasting procedures will be carried out according to and in compliance with applicable laws, and will be closely monitored by Liberty Utilities and the Environmental Inspector(s).

Blasting procedures will be conducted according to the following four basic principles:

- The blast will produce fractured rock of appropriate dimensions.
- The blast will prevent/minimize production of flyrock and air blast hazards.
- The blast will minimize peak particle velocities.
- The blast will be scaled/sized to minimize overblasting that can result in excessive excavation and handling of excavated material, and increased drilling, excavation, and backfill costs.

Materials

The Blasting Contractor will determine the specific materials needed for blasting operations. These materials will be included on the hazardous materials list for the

project and their use and storage will comply with applicable federal, state, and local laws.

SAFETY MEASURES

Safe storage and use of explosive materials will be a top priority during construction. The safety measures discussed in this section are intended to prevent theft and/or vandalism of the explosive materials, protect them against fire, and to prevent personal injury and property damage. These measures are intended as general guidelines. For specific information on blasting safety, refer to Chapters 25 and 27 and Appendix B of the Blasters Handbook (ETI, 1980), and other pertinent regulations. Protection of environmental resources during blasting is discussed in the Environmental Protection Measures section.

Storage Requirements

As described above, many federal, state, and local agencies have laws pertaining to the storage of explosives. Additional storage facility requirements concerning construction specifications and locations are defined for various classes of explosive materials in the BATF publication P 5400.7 (1990).

At a minimum, the following storage requirements will be implemented:

- Explosives must be stored in an approved structure (magazine);
- Explosives storage facilities will be bullet-resistant, weather-resistant, and fire resistant;
- Magazine sites will be located in remote (out-of-sight) areas with restricted access, kept cool, dry, and well ventilated, and will be properly labeled and signed;
- Detonators will be stored separately from other explosive materials;
- The most stringent spacing between individual magazines will be determined according to the guidelines contained in the BATF publication or state or local explosive storage regulations; and
- Both the quantity and duration of on-site explosives storage will be minimized.

The Prime Construction Contractor will provide the BATF's Regulatory Enforcement with a list of dates and locations for the explosives and blasting agent storage facilities to be used on the project at least 14 days before the establishment of such storage facilities.

The Blasting Contractor will handle and dispose of dynamite storage boxes in accordance with relevant federal, state, and local laws.

Personal Safety, Protection of Property, and Notification

All personnel responsible for handling explosives and present in and around blasting sites will be fully informed and trained in applicable safety precautions/procedures. Liberty Utilities will ensure project personnel's safety by requiring the Blasting Contractor to provide safety training to its personnel, provide experienced supervisors, use safety equipment, practice good communication, and adhere to notification procedures (including pre-blast and emergency notification). If an electrical storm approaches during blasting preparation, the Blasting Contractor will follow the appropriate regulatory procedures and delay or reschedule the blast, as necessary.

The Blasting Contractor will use a signaling system to alert workers of an impending blast. The signaling system will be comprised of the following components:

- **Warning Signal:** 5 minutes prior to the blasting signal, a 1-minute series of long, audible signals will be sounded at the blast site.
- **Blasting Signal:** 1 minute prior to a blast, a series of short, audible signals will be sounded at the blast site.
- **All-clear Signal:** Following inspection of the blast area, a prolonged, audible signal will be sounded at the blast site.

The Blasting Contractor will post signs explaining the signaling protocol at construction staging areas and other appropriate locations. All active blast zones will have clear warning signs located at key access points to ensure the public does not accidentally enter a blast zone. Before blasting, the Blasting Supervisor will make sure the blasting area is clear and access in and around the blasting area will be restricted to prevent people

from entering the blasting area. Following detonation, the blasting area will be inspected for undetonated or misfired explosives. The blasting area will also be inspected for hazards such as falling rock and rock slides. Once the area has been inspected and these issues have been addressed, the “all-clear” signal will sound, and personnel will be able to safely re-enter the blast zone.

Additional safety precautions will be developed to address site-specific conditions at the time of the blast. Special attention will be given to preventing potential hazards in the blasting area resulting from flying rock, destabilized walls, structures, presence of low flying aircraft, dispersion of smoke and gases, etc., as discussed in the Environmental Protection Measures section.

Fire Safety

The presence of explosive materials on the project site could potentially increase the risk of fire during construction. **As with the entire project, fire risk is of highest concern for all of the Tahoe Basin and surrounding area.** All blasting work will be conducted in compliance with the Project Fire Prevention Plan and all pertinent fire prevention laws and regulations. Special precautions will be taken to minimize this risk, including but not limited to:

- Prohibiting ignition devices within 50 feet of an explosives storage area;
- Properly maintaining magazine sites so that they are clear of fuels and combustible materials, are well ventilated, and are fire-resistant;
- Protecting magazines from wildfires that could occur in the immediate area;
- Posting fire suppression personnel at the blast site during high fire danger periods; and
- Prohibiting blasting during extreme fire danger periods.

Transportation of Explosives

Transportation of explosives will comply with all applicable federal, state, and local laws including Title 49 of the Code of Federal Regulations, Chapter III. These regulations are

administered by the USDOT and govern the packaging, labeling, materials compatibility, driver qualifications, and safety of transported explosives.

In general, these regulations require that:

- Vehicles carrying explosive materials must be well maintained, properly marked with placards, and have a non-sparking floor.
- Prior to loading a vehicle with explosives, the vehicle must be fully fueled and inspected to ensure its safe operation.
- Materials in contact with the explosives will be non-sparking and the load will be covered with a fire- and water-resistant tarpaulin.
- Vehicles must be equipped with fire extinguishers and a copy of the Emergency Response Guidebook (USDOT).

Liberty Utilities will also implement the following restrictions on vehicles carrying explosives:

- Refueling of vehicles carrying explosives will be avoided.
- Smoking will be prohibited during the loading, transporting, or unloading of explosives.
- Vehicles carrying explosives will not be parked or left unattended except in designated parking areas with approval of the State Fire Marshall.

The following restrictions will apply to the transport of other items in vehicles carrying explosives:

- Tools may be carried in the vehicle, but not in the cargo compartment.
- Detonation devices can, in some cases, be carried in the same vehicle as the explosives, but they must be stored in specifically constructed compartments.
- Batteries and firearms may never be carried in a vehicle with explosives.
- Vehicle drivers must comply with the specific laws related to the materials being transported.

Every effort will be made to minimize transportation of explosives through congested or heavily populated areas.

ENVIRONMENTAL PROTECTION MEASURES

Blasting has the potential to cause adverse impacts to sensitive environmental resources, including biological and cultural resources, wells and springs, and cause noise disturbances to nearby residents. If sensitive receptors (i.e., occupied residences), wells/springs/seeps, or biologically and culturally sensitive resource areas are discovered during preconstruction field surveys or during the course of construction, an interdisciplinary team will be assembled to evaluate potential resource impacts. Liberty Utilities' Contractor will be required to implement the following measures to mitigate these potential impacts:

- In accordance with **APM NOI-04**, construction activities, including any blasting and helicopter flights, will occur during the times established by local ordinances (and allowing for any exceptions that local agencies and ordinance conditions may provide); 6:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 8:00 p.m. Saturday and Sunday in Placer County.
- In accordance with **APM NOI-05**, no blasting shall occur within 50 feet of any existing structure, or within 250 feet of a residence or other occupied structure. If large rock outcroppings need to be removed and are within 50 feet of a structure or 250 feet of an occupied structure, alternative methods to blasting, such as silent chemical demolition, may be used to break apart and remove the rock.
- Blasting mats will be used to prevent or reduce the number of rock particles thrown into the air following detonation.
- No blasting will be allowed between Pole #291034 and Pole #291080 due to protection of natural resources.

- Blasting will be scheduled to avoid sensitive wildlife areas and comply with seasonal restrictions. This will be completed through coordination with the on-site inspection Biologist and reference to the pre-construction surveys. If conflicts between the blasting schedule and wildlife seasonal restrictions arise, an alternative method will be explored. If blasting is determined to be the only option, Liberty Utilities will coordinate with the CPUC (and USFS if applicable) regarding possible solutions.
- Prior to any blasting, Contractor will review all mapping, including the wetland delineation report completed for the project to identify all springs and water wells, within 1,000 feet of blasting zone. Contractor will avoid blasting within 100 feet of wells/springs to the maximum extent possible without implementing BMPs.
- Only size limited blasting will be allowed within 1,000 feet of a well or spring unless a qualified hydro geologist could demonstrate that no effect on the well or spring could be reasonably expected or that the effects could be reasonably mitigated.
- Where blasting is conducted within 1,000 feet, the well or spring will be monitored before and after blasting to evaluate possible changes in flow.
- Blasts will be designed to minimize ground vibrations that can cause slope instability and impact wells and springs

Since blasting for this project will not entail large blasts, blasts will be designed to minimize vibrations, and blasting is not expected to occur in close proximity to occupied structures, monitoring of blast vibration and airblast is not recommended. However, if any complaints attributed to blasting are received from residents, blast vibration and airblast will be monitored to determine the actual levels experienced and limits for blast vibration and airblast will be established as necessary to minimize annoyance to the affected residents and to ensure that nearby structures are not damaged.