



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8**

1595 Wynkoop Street  
Denver, CO 80202-1129  
Phone 800-227-8917  
www.epa.gov/region8

April 10, 2020

Via Email  
Ref: SEM-EMR

Mr. Doug Jamison  
Superfund/Brownfields Unit Leader  
Colorado Department of Public Health and Environment  
[doug.jamison@state.co.us](mailto:doug.jamison@state.co.us)

RE: Illinois Gulch Site, Summit County, Colorado Request  
for Identification of Potential State ARARs

Dear Mr. Jamison:

As you may know, the U.S. Environmental Protection Agency's Region 8 Superfund Removal Program is contemplating a removal action at the Illinois Gulch Site, located in Summit County, Colorado. To perform this action, EPA will attempt to comply, to the extent practicable, with all applicable or relevant and appropriate requirements (ARARs) of Colorado's environmental and facility siting laws. EPA requests that the Colorado Department of Public Health and Environment notify Paul Peronard, the On-Scene Coordinator for the site, of any State statutes or regulations that the State believes are potential ARARs for the contemplated removal action.

A description of site conditions and proposed actions are as follows.

**Site Description/Background:**

Historic mining activities in Breckenridge, Colorado, have left a legacy of mine-impacted lands and mine features such as shafts, adits, and waste/tailings piles. As the town-site has expanded, many of these features have been incorporated into residential areas. Mine Influenced Waters (MIW) produced by these mine features contribute metals-laden and low pH waters into fisheries and drinking water resources. Bioremediation of low pH, metals-laden water flowing from the Willard Adits #1 and #2 (Willard Adits) is considered a long-term and low-cost response option to address a long-standing contamination issue within a residential portion of Breckenridge, Colorado.

MIW discharging from Willard Adits form the initial source of impacted waters draining into Iron Springs Gulch. Iron Springs Gulch, in turn, flows into the lower Illinois Gulch and eventually into the drinking water source of Dillon Reservoir via the Blue River, approximately 7.5 miles downstream. The MIW discharge from these adits are fed by groundwater drainage into the Willard works, plus drainage from the Puzzle Extension Shaft (PES) and Cally Mine. The PES and Cally have subsurface works which connect directly into the Willard mine workings. Water entering the PES is largely generated from hydraulic infiltration from the upper part of Illinois Gulch. Also, Iron Springs Gulch is further degraded as water from the Willard Adits and surface flow/runoff filter through the Willard waste rock

pile (Willard Pile), which lies at the foot of the Willard mine adits. Surface waters flow through the pile, reacting with the inherent sulfide mineralization to produce additional low pH, metals-laden water. Consolidation and cover installation on the Willard pile, and remediation of additional low pH, metals-laden water flowing from the Willard adits, will improve habitat in the Blue River fishery as well as the drinking water resource in Dillon reservoir. In addition, the Removal Program, in conjunction with the State of Colorado, intends to divert water so that it does not enter the mine works that feed into the Willard Adits, thus reducing the amount of degraded water discharging from the adits. This work will be conducted by the TABR Realty Services, LLC, (TABR), a subsidiary of the TransAmerica Corporation, under the direction of an EPA Unilateral Administrative Order.

### **Proposed Actions:**

Representatives of TABR met with EPA Region 8 personnel on January 21, 2020, to discuss potential response actions that EPA has identified for implementation at the Illinois Gulch Site (Site) to reduce Site risks to human health and the environment. At the meeting, TABR provided EPA with a Draft Statement of Work (SOW) that outlined EPA's suggested actions at the Site. A summary of the TABR draft SOW is provided below.

### **Description of Work Activities**

The work activities are described in three phases. Phases 1 and 2 will begin in 2020 (sequentially) and be implemented over the next three to four years. Phase 3 will be initiated at a later time (2023 or 2024). Work activities associated with Phase 3 will be further refined based on Phase 1 and 2 analysis and results, and EPA's selection of a final passive water treatment technology. The accompanying Figure 1 illustrates the locations of Site features that are referenced in the work activity descriptions below as well as TABR's property ownership within the Site.

## **PHASE 1 – DESIGN AND CONSTRUCTION**

1. **Close the Willard waste rock pile (Figure 1, item 1) through the creation of an in-place repository.** This action will reduce exposure risks associated with elevated metals and arsenic concentrations and physical hazards to trespassers. In addition, this action will reduce the release of contaminants from the waste rock to surface water and the potential for airborne transport of metals to adjacent residential properties. A geotechnical investigation will be conducted during design to assess subsurface conditions in the Willard waste rock pile and to ensure that the pile will be stable over the long term after repository construction. Discharges from the Willard adits (Figure 1, items 2 and 3, respectively) will be appropriately re-routed during the excavation work. The Willard waste rock pile will be regraded to eliminate depressions and promote positive drainage. Final closure of the resulting repository will include the installation of a "clean" soil cover and revegetation. As described below, waste rock and soil from other areas of the Site will be hauled to and co-disposed in the repository prior to closure.

If in-place closure is found to be impractical due to adverse geotechnical conditions within the Willard waste rock pile, regulatory limitations on wetland disturbance, or other unforeseen circumstances, the Willard waste rock pile would be excavated and hauled a short distance to an alternative repository location on TABR property on the hillside adjacent to the wetlands (Figure 1, item 4). This would necessitate clearing 2-3 acres of timber and the construction of a repository foundation in the wetland area along with appropriately sized run-on and runoff control channels.

2. **Remove accessible portions of the Cally adit waste rock pile (Figure 1, item 5).** This action will reduce exposure risks associated with elevated metals and arsenic concentrations and physical hazards to trespassers. The Cally adit waste rock pile (Figure 1, item 5) is located on the north side of the Boreas Pass Road. It appears that the road embankment was constructed over the waste rock pile such that a portion of the pile protrudes from the northern road embankment. Accessible portions of the waste rock on the northern road embankment will be removed and transported to the Willard waste rock pile (Figure 1, item 1), or alternative repository location (Figure 1, item 4) for inclusion in its final closure. The remaining waste rock exposed in the road embankment will be covered with “clean” soil and revegetated to the extent practical given the steep slopes at this location.
3. **Remove “hot spots” in residential properties on Brooks Hill Drive to the south of Bright Hope Circle where lead in soil exceeds 400 mg/kg (Figure 1, items 6, 7, and 8) and possibly additional properties (Figure 1, items 9, 10, 11, and 12).** This action will eliminate exposure risks associated with soil lead concentrations that exceed EPA’s screening level at properties located in close proximity to and potentially affected by the Willard waste rock pile. Samples from three properties are known to exceed 400 mg/kg lead (Figure 1, items 6, 7, and 8). EPA reports that it has or will obtain access for the performance of response actions on these three properties (and the other actions described below that require access to third-party property). EPA may seek access to four additional properties on Brooks Hill Drive that are located south of Bright Hope Circle (Figure 1, items 9, 10, 11, and 12) for sampling and possible hot spot removal, depending upon the sample results. The excavated soil will be placed in the new engineered repository on TABR property (Figure 1, item 1 or 4). The excavated soil will be replaced with “clean” soil (in a manner consistent with EPA’s Lead Handbook (2003)) and the disturbed yard areas will be returned to conditions similar to those prior to excavation through the placement of sod and/or other vegetation. Mature trees will not be disturbed.
4. **Dewater and clean out wetlands (Figure 1, item 13) impacted by the Willard 1 and Willard 2 adit discharges (Figure 1, items 2 and 3, respectively).** This action, which requires access to third-party property, will reduce the transport of accumulated sediments from the wetland ponds during high-flow events. The removed sediment will be appropriately dewatered and placed in the new engineered repository (Figure 1, item 1 or 4).
5. **Remove the Puzzle Extension Shaft (“PES”) waste rock pile and plug the PES (Figure 1, item 14).** This action, which requires access to third-party property, will reduce potential risks to human health and the environment by relocating the exposed PES waste rock pile and will also eliminate physical hazards associated with the shaft. The waste rock will be placed in the new engineered repository (Figure 1, item 1 or 4) along with the Willard waste rock material, Cally adit waste rock, soil removed from residential properties, and impacted wetland sediment (Actions 2 through 4 above). Plugging of the PES will be implemented in consultation with the Colorado Division of Reclamation, Mining, and Safety (DRMS) and in accordance with DRMS technical specifications.
6. **Line the Illinois Gulch channel (Figure 1, item 15) adjacent to the PES.** USGS studies indicate that some of the streamflow in Illinois Gulch leaks into the PES (Figure 1, item 14) and thus contributes to discharge at the Willard 1 adit (Figure 1, item 2). Lining of Illinois Gulch for several hundred feet near the PES (Figure 1, item 15), which requires access to third-party property, should therefore reduce the discharge at the Willard 1 adit and potentially decrease

water treatment requirements. Lining may be accomplished using a flexible membrane liner, corrugated metal pipe, or other suitable conveyance that is sized to transmit estimated flows resulting from a large storm event. Groundwater in the Illinois Gulch drainage may also leak into the PES. The practicality of installing a groundwater cutoff wall in Illinois Gulch upstream of the PES will be investigated. The cutoff wall, if constructed, would be designed to force groundwater up and into the lined channel to possibly further reduce leakage into the mine workings.

## **PHASE 2 – MONITORING AND TREATMENT SYSTEM ASSESSMENT**

- 7. Conduct surface water monitoring and bench-scale testing to assess the efficacy of passive treatment for the Willard 1 and Willard 2 adit discharges (Figure 1, items 2 and 3, respectively).** EPA has identified passive treatment of the combined discharges from the Willard 1 and Willard 2 adits (Figure 1, items 2 and 3, respectively) as an appropriate technology for reducing metals concentrations in surface waters originating in Iron Springs Gulch. Such treatment could be implemented using a bioreactor. Surface water monitoring of the adit discharges and downstream stations will be conducted following lining of Illinois Gulch, clean out of the adjacent wetlands, and closure of the Willard waste rock pile to assess the effects of those actions on adit discharge rates and water quality. In addition, bench-scale laboratory testing of samples from the adit discharges will be conducted following lining of Illinois Gulch, clean out of the adjacent wetlands, and closure of the Willard waste rock pile to assess whether such treatment is feasible and, if so, how such a treatment system could be configured.

## **PHASE 3 – WATER TREATMENT DESIGN/CONSTRUCTION AND SITE OPERATIONS AND MAINTENANCE (O&M)**

- 8. Design, construct, and operate a water treatment system for the Willard 1 and Willard 2 adit discharges (Figure 1, items 2 and 3, respectively).** If bench-scale testing indicates that passive treatment of the adit discharges is viable, a suitable bioreactor (or other passive treatment technology) system will be designed, constructed, and operated. A possible location for a treatment system on the engineered repository following closure of the Willard waste rock pile is shown as Figure 1, item 16. Construction of a water treatment system at this location may require the use of low-permeability liners to limit seepage into the waste rock material if the Willard waste rock pile is closed in place. Treated water would be released to Iron Springs Gulch.

### **Timeline for Implementation of Work Activities**

An estimated timeline for implementation of the Site work activities is described below. The projected timeline is subject to change in the course of the project. The project timeline and sequence of work activities are subject to EPA's oversight and direction, and dependent upon factors such as weather conditions and success in obtaining access to third-party property for development of design work plans and construction activities.

**Phase 1: Design and Construction.** This phase will include preparation of draft and final removal action design reports and implementation of a geotechnical investigation, archeological and cultural resource survey, and addressing wetland issues (if needed), as required in early to mid-2020. Construction activities will be implemented in mid-to-late 2020 and will include waste rock grading and relocation, repository construction, wetland cleanout, residential yard remediation, removal of waste rock and plugging at the PES, lining of Illinois Gulch, and reclamation of areas disturbed by these

construction activities. Construction work that is not completed in 2020 will be carried forward into the 2021 construction season and likely completed in 2021.

**Phase 2: Monitoring and Treatment System Assessment.** Following the completion of Phase 1 construction and site reclamation activities, post-construction water quality monitoring and bench-scale studies / testing will be performed in Phase 2 of the project work to assess the effectiveness of passive treatment technologies and to support selection / design of future water treatment technology. EPA approval of the recommended technology will be required. One to two years of monitoring of the adit discharges following Phase 1 construction will be needed to assess the effects, if any, of PES plugging, Illinois Creek lining, and waste rock removal on the adit flow rates / water quality in adit discharges. Phase 2 is expected to occur in 2021 and 2022, possibly extending into 2023.

**Phase 3: Water Treatment Design/Construction and Site O&M.** Following review of the Phase 2 monitoring and bench-scale testing, TABR will prepare a water treatment technology alternatives analysis for EPA review and approval. The alternatives analysis will describe the monitoring and bench-scale testing results and a recommended permanent water treatment system for the Willard 1 and Willard 2 adit discharges (Figure 1, items 2 and 3, respectively). Design, construction, and O&M of that water treatment system would follow, likely to be located on the Willard waste rock repository (Figure 1, item 1). Phase 3 may be initiated as early as 2023 or 2024.

Please identify potential State ARARs on the attached form identified as chemical, action or location specific requirements. It is requested that you respond within thirty (30) days so that the requirements may be considered for the removal action. Please include exact references or citations to the statutes and regulations. Additional information about the site may be available on the OSC website at <https://response.epa.gov>. Also, please contact the On Scene Coordinator at [peronard.paul@epa.gov](mailto:peronard.paul@epa.gov) or 303 886-1638 if additional information is needed to identify potential State ARARs. Thank you for your attention to this matter.

Sincerely,

Laura Williams, Chief  
Emergency Response Section

cc: David Kreutzer, Colorado Office of Attorney General  
via Email: [David.Kreutzer@coag.gov](mailto:David.Kreutzer@coag.gov)

**CHEMICAL SPECIFIC REQUIREMENT**

<i>Action</i>	<i>Requirement</i>	<i>Prerequisite</i>	<i>Citation</i>	<i>Comment</i>

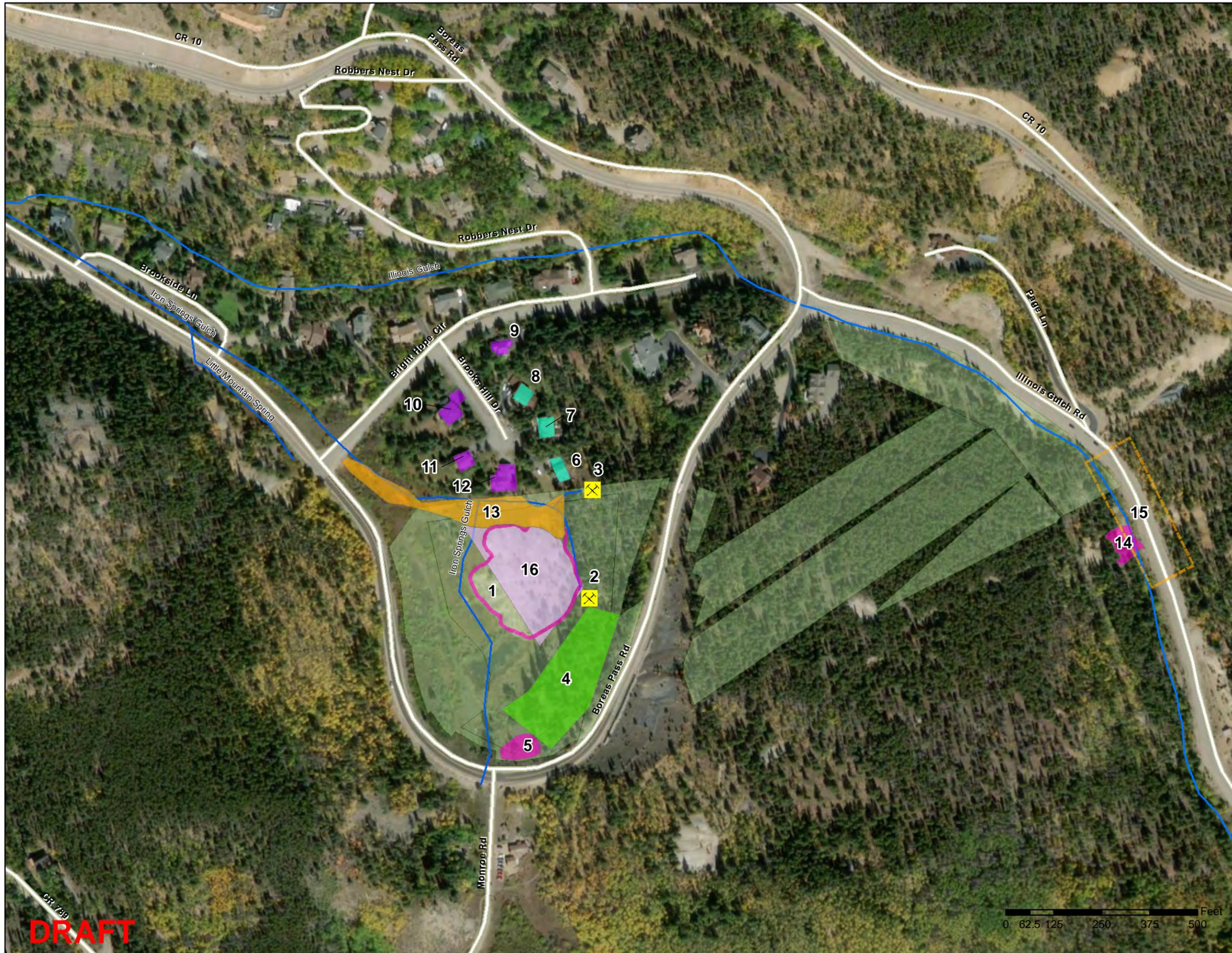
**LOCATION SPECIFIC REQUIREMENT**

<i>Location Subject to Requirement</i>	<i>Requirement</i>	<i>Prerequisite</i>	<i>Citation</i>	<i>Comment</i>

**ACTION SPECIFIC REQUIREMENTS**

<i>Action Subject to Requirement</i>	<i>Requirement</i>	<i>Prerequisite</i>	<i>Citation</i>	<i>Comments</i>
--------------------------------------	--------------------	---------------------	-----------------	-----------------

--	--	--	--	--



**Legend**

- 1. Willard Waste Rock Pile / Repository
- X 2. Willard 1 Adit Discharge
- X 3. Willard 2 Adit Discharge
- 4. Alternative Repository
- 5. Cally Adit Waste Rock Pile
- 6-8 Residences Adjacent to TABR Property with soil lead > 400 ppm
- 9-12 Residences Adjacent to TABR Property that may be sampled
- 13. Wetlands Affected By Orange Precipitate
- 14. Puzzle Extension Shaft and Waste Rock Pile
- 15. Illinois Gulch Adjacent to Puzzle Extension Shaft
- 16. Potential Passive Water Treatment Site
- TABR Parcels
- Rivers / Streams



**TABR REALTY SERVICES, LLC**

ILLINOIS GULCH SITE, SUMMIT COUNTY, CO

FIGURE 1

**SOW WORK  
ACTIVITY AREAS**



DATE: FEB 11, 2020

BY: DKG

FOR: BGH

**FORMATION**  
ENVIRONMENTAL

**DRAFT**

S:\GIS\arcproj\2067-001-AEGON-ironSpringsMill\_CO\pkr\TABR\_Map\TABR\_ActionsRequested.mxd