



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAR 29 2016

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**MEMORANDUM**

**SUBJECT:** EPA Work Activities at Abandoned Hardrock Mining and Mineral Processing Sites in Preparation for the Fiscal Year 2016 Construction Season

**FROM:** Mathy Stanislaus  
Assistant Administrator  
Office of Land and Emergency Management

A handwritten signature in blue ink, appearing to read "Mathy Stanislaus", written over the typed name and title.

**TO:** EPA Regional Administrators, I-X

**PURPOSE:**

This memorandum's purpose is to assist the EPA regions in Fiscal Year (FY) 2016 planning for removal and remedial activities at hardrock mining and mineral processing sites with fluid hazards, and to share the Agency's expectations for the work that is done at these sites. In light of the August 2015 Gold King Mine fluid release, and because of the complexities involved in working at these types of mines, the Agency believes it is important to exercise extreme care before conducting field work to minimize the potential for uncontrolled fluid releases resulting from initiating and/or conducting response activities.

**BACKGROUND:**

In August 2015, the EPA conducted an internal review of the Gold King Mine release (<http://www.epa.gov/goldkingmine/internal-investigation-documents>). In October 2015, the Department of Interior released a report, *Technical Evaluation of the Gold King Mine Incident* (<http://www.usbr.gov/docs/goldkingminereport.pdf>). Both of these reports provided recommendations for Agency consideration when conducting activities that may pose fluid hazards at hardrock mining and mineral processing sites. One of the key recommendations is for the Agency to develop national guidance for addressing the risks of uncontrolled fluid events inherent in the activities carried out at these sites.

Based on these recommendations, I directed the Office of Superfund Remediation and Technology Innovation (OSRTI) and EPA's National Mining Team (NMT) to develop a "Best Practices and Approaches Report: Preventing Sudden, Uncontrolled Fluid Mining Waste Releases Prior to Conducting Response Actions at Mine Sites." OSRTI sent the draft report to the regions for review and comment on March 2, 2016, and is currently planning to conduct an external expert review of the report. I also directed

OSRTI and the NMT to develop, prior to the start of the FY 2016 construction season, an “Interim Checklist for Preventing Sudden, Uncontrolled Mining Waste Releases Prior to Conducting Response Actions at Mine Sites” based on the report’s information and other considerations.

In addition, the Office of Land and Emergency Management (OLEM) has taken steps to identify abandoned hardrock mining and mineral processing sites across the country that may pose a fluid hazard. In October 2015, OSRTI asked the regions to identify mining and mineral processing sites in the Superfund Enterprise Management System (SEMS), and to assess if any of the sites posed fluid hazards. From these sites, the regions identified approximately 140 mining and mineral processing sites at which either fluids exist but fluid hazard is not adequately characterized or is unknown, or there may be a probable fluid hazard (Attachment 1). The regions used Attachment 2 to assist in grouping the sites into those at which either fluids exist but fluid hazard is not adequately characterized or is unknown, or there may be a probable fluid hazard.

OSRTI reached out to the regions to identify which of those approximately 140 sites have work planned for FY 2016. The regions identified sites where work is planned in FY 2016 and the work activities could increase the fluid hazard (Attachment 3). These sites include those on the National Priorities List (NPL) and non-NPL sites where removal activities are planned; these include federal, state, tribe and potentially responsible parties (PRP)-lead sites.

## **REQUIRED ACTION:**

### Headquarters Consultation

For the FY 2016 construction season, I am establishing a headquarters consultation process for planned activities for sites in Attachment 3. Headquarters and the regions will complete this consultation before work begins at these sites. As part of the consultation process, headquarters will ask the regions to verify that the planned work follows recommended mining best practices, and that sufficient qualified technical staff will be on site to conduct and oversee planned work. The regions will also be asked to provide a technical assessment of the potential for a fluid release, written documentation of discussions with a state and/or tribe on the work the EPA is to perform, verification that a carefully designed and coordinated contingency plan is up to date and in place to address potential incidents, and assurance that necessary on-site communications equipment, e.g., satellite phones, will be available. For sites where the work will be led by a state, a tribe or another federal agency, the regions should be prepared to discuss what the EPA’s role will be while the work is conducted.<sup>1</sup> For sites where there are PRPs, the regions should document discussions of the PRPs capacity and willingness to conduct response actions.

Field work at the sites in Attachment 3 should not commence until the consultation process is complete. Should any field workplan changes of consequence occur after completion of the headquarters consultation process, the regions should immediately stop work, unless stopping work would present a near-term risk, and notify headquarters. Our goal in establishing this consultation process is to ensure we develop institutional capability to conduct work at mining and mineral processing sites with fluid hazards

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<sup>1</sup> Regions should continue their efforts to pursue Potentially Responsible Parties (PRPs) at all sites, including abandoned hardrock mining and mineral processing sites. Where a removal response is expected to exceed \$2M, Regions consult with the Office of Emergency Management (OEM) and the Office of Site Remediation Enforcement (OSRE) according to the “[Superfund Removal Guidance for Preparing Action Memoranda](#),” issued in September 2009. Part of that consultation is for OSRE to understand the Regions efforts to identify PRPs. See “[Checklist of Information to Include for Consultation on Time-Critical Removal Actions by the Office of Site Remediation Enforcement](#)” (July 8, 2005). For remedial responses, Regions provide PRP search materials as part of the National Prioritization Panel process.

in a way that minimizes the possibility of a release and adequately provides for contingency plans in the event of an unforeseen fluid release.

We are providing the regions with initial direction on the types of information they should gather and assess to determine the potential for a fluid release. Attachment 4 provides general considerations on the technical assessment that the regions should submit as part of their headquarters consultation package for FY 2016 planned activities that potentially could increase fluid hazard at mining and mineral processing sites.

If the regions identify additional mining or mineral processing sites where FY 2016 work activities could potentially increase the fluid hazard that are not included in Attachment 3, they should immediately notify headquarters and schedule a consultation.

#### Management Oversight

Regional Superfund division directors should be fully briefed on the planned work at the mining and mineral processing sites where there is an unknown or likely potential for fluid release.

#### Coordination with States and Tribes

During the development of the workplan, regions should closely coordinate with the state and/or tribe, as appropriate. There should be written documentation of discussions with a state and/or tribe on the work the EPA is to perform.

#### Contingency Planning

Should problems arise at a site, work should immediately stop, unless stopping work would present a near-term risk, to allow time to determine the appropriate action to take and to notify headquarters. The regions should have a carefully developed written contingency plan in place to address problems that might arise at a site. The contingency plan should include appropriate actions to take in the event there is an accidental release, and what could be done to contain or minimize a release. The contingency plan should also include an up-to-date notification plan identifying the local, state and tribal authorities who should be notified in the unlikely event of a release. The regions should also ensure that necessary on-site communications equipment, e.g., satellite phones, will be available.

#### Emergency and Time-Critical Removal Actions

The regions have recently reviewed policies, procedures and practices the Agency uses when making a decision to engage in emergency and time-critical removal actions, i.e., the “Engagement Review.” The Office of Emergency Management (OEM) will lead follow-up discussions with the Regional Administrators in the coming weeks on the various recommendations identified, including those involving opportunities for incorporating best practices and ensuring greater national consistency.

#### Fiscal Year 2017 Construction Season and Beyond

Attachment 1 includes the mining and mineral processing sites identified by the regions at which either fluids exist, but fluid hazard is not adequately characterized or is unknown, or there is a probable fluid hazard. The majority of these sites have work planned in the FY 2017 construction season and beyond. We expect to utilize our existing Superfund semi-annual programmatic regional work planning reviews to discuss the future work at these sites. We will take lessons learned during FY 2016, and make adjustments as necessary both in the regions and to the headquarters consultation process.

## **IMPLEMENTATION:**

I appreciate your dedication and hard work in complying with the process laid out in this memorandum as we carry out the EPA's mission to protect human health and environment at hardrock mining and mineral processing sites. I ask that each regional Superfund division director or deputy division director schedule the headquarters consultation calls with Dana Stalcup, Director, Assessment and Remediation Division (ARD), and Schatzi Fitz-James, Associate Director, ARD. Dana can be reached at 703-603-8702 or [stalcup.dana@epa.gov](mailto:stalcup.dana@epa.gov), and Schatzi can be reached at 703-603-8778 or [fitz-james.schatzi@epa.gov](mailto:fitz-james.schatzi@epa.gov). In addition, I ask that each Superfund regional division director submit a transmittal memo to Dana Stalcup and Schatzi Fitz-James with the information that will be discussed during the headquarters consultation calls no later than one week before the planned consultation. Consultations for removal assessments and actions will include OEM. Finally, the appropriate headquarters division director(s) will document the results of the consultation process and send them to the regional division director. Technical questions can be directed to Shahid Mahmud at 703-603-8867 or [mahmud.shahid@epa.gov](mailto:mahmud.shahid@epa.gov).

cc: EPA Deputy Regional Administrators, I-X  
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## Attachment 1

### Hydraulic Hazards Identified by the Regions

- Category 2 (Sites where fluids exist but fluid hazard is not adequately characterized or is unknown)
- Category 3 (Sites where there is a probable fluid hazard)

#### Category 3 Sites, 15 total:

Region	State	EPA ID	Site Name
01	VT	VTD988366621	ELIZABETH MINE
01	VT	VTD988366571	ELY COPPER MINE
07	MO	MOD981126899	BIG RIVER MINE TAILINGS/ST. JOE MINERALS CORP.
08	MT	MT0012694970	FLAT CREEK IMM
08	CO	CON000802460	GOLD KING MINE RELEASE
08	CO	CON000802652	PENNSYLVANIA MINE
08	CO	CON000802805	SCHWARTZWALDER MINE
08	CO	CO0001411347	UPPER ANIMAS MINING DISTRICT
09	CA	CAD983650011	ARGONAUT MINE
09	CA	CAD980638225	COPPER BLUFF MINE (BOLIVAR MINE)-HOOPA
09	CA	CAN000905991	EMPIRE MINE
09	CA	CAD980736060	MARSH CREEK RD ABANDONED DUMP SITE
09	CA	CAN000905978	PIONEER PIT AND GARDNER'S POINT PLACER MINES
10	ID	ID0002007250	TALACHE MINE
10	ID	IDD984666024	TRIUMPH MINE TAILINGS PILES

#### Category 2 Sites, 121 total:

Region	State	EPA ID	Site Name
01	VT	VTD988366720	PIKE HILL COPPER MINE
04	MS	MSN000403508	MISSISSIPPI PHOSPHATE CORPORATION
04	NC	NCN000409895	ORE KNOB MINE
05	OH	OHD056743933	ASARCO
05	IL	ILN000508903	MINERVA MINE #1
05	IL	ILN000508137	ROSICLARE MINES
06	AR	ARD980869580	MAGCOBAR MINE
06	NM	NMD981600471	NACIMIENTO MINE/MILL
07	MO	MON000705784	BIG RIVER HILLS LEAD TAILINGS
07	MO	MOD985808070	FEDERAL MINE TAILINGS
07	MO	MOD098633415	MADISON COUNTY MINES
08	MT	MT6122307485	BARKER HUGHESVILLE MINING DISTRICT
08	MT	MTD982572562	BASIN MINING AREA
08	CO	COD980717938	CALIFORNIA GULCH
08	CO	COD981551427	CAPTAIN JACK MILL
08	MT	MT0001096353	CARPENTER SNOW CREEK MINING DISTRICT
08	CO	CON000802855	CARRIBEAU MILL TAILINGS
08	CO	COD980717557	CENTRAL CITY, CLEAR CREEK

08	CO	CO0006875906	CHALK CREEK MINING DISTRICT
08	CO	CO0001992577	CREEDE MINING DISTRICT
08	CO	COD081961518	EAGLE MINE
08	CO	CON000801084	EAGLE RIVER ABANDONED MINES
08	CO	CON000802651	EVENING STAR MINE
08	WY	WYD988874707	FERRIS HAGGERTY MINE
08	CO	CO0001093392	FRENCH GULCH
08	CO	CON000802886	GAMBLE GULCH MINING DISTRICT
08	CO	CO0000284422	GILLETTE GOLD EXTRACTION CO
08	CO	CON000803078	ILLINOIS GULCH
08	CO	CO0001916360	IRON SPRINGS MINING DISTRICT
08	CO	CO0000075200	KENDRICK & GELDER SMELTING CO
08	UT	UTD070926811	KENNECOTT (NORTH ZONE)
08	MT	MTD986069920	KING CREEK
08	CO	CON000802203	LITTLE BEAR MINE RELEASE
08	UT	UT0002241917	MAMMOTH MILLS AND SMELTER
08	UT	UTN000802786	NAVAJO NATION URANIUM MINES
08	CO	CON000802630	NELSON TUNNEL/COMMODORE WASTE ROCK
08	MT	MTD980666523	PHILIPSBURG MINING AREA
08	UT	UTD980952840	RICHARDSON FLAT TAILINGS
08	MT	MTD980502777	SILVER BOW CREEK/BUTTE AREA
08	CO	CO0002378230	STANDARD MINE
08	CO	COD983778432	SUMMITVILLE MINE
08	CO	CON000802834	TALLAHASSEE CREEK
08	MT	MTSFN7578012	UPPER TENMILE CREEK MINING AREA
09	CA	CAN000908401	ABBOTT/TURKEY RUN MINE
09	CA	CAN000908808	AFTERTHOUGHT MINE
09	CA	CAD982029613	ALMADEN QUICKSILVER PARK
09	NV	NVN000905909	AMERICAN BEAUTY MINE
09	NV	NVD083917252	ANACONDA COPPER CO YERINGTON
09	AZ	AZD064946742	ANAMAX MINING CO TWIN BUTTESMINE
09	CA	CAD980814867	BALAKLALA MINE
09	AZ	AZT000624353	BHP PINTO CREEK MINE
09	CA	CAN000906063	BLUE LEDGE MINE
09	CA	CAD983569534	BLM-CACTUS GOLD MINES CO.
09	CA	CAN000908932	CENTRAL MINE
09	CA	CAN000908933	CHERRY HILL MINE
09	NV	NVD980419550	EGAN MILLING CO INC
09	CA	CAN000908934	ELGIN MERCURY MINE
09	AZ	AZD983478488	GIBSON MINE
09	CA	CAD000629923	GREY EAGLE MINE
09	CA	CAN000909511	HARRISON MINE
09	AZ	AZN000905867	HILLSIDE MINE
09	CA	CAN000908495	IDAHO MARYLAND MINE
09	CA	CAN000905984	JAMESTOWN MINE
09	CA	CA0002373736	KINGSBURY CREEK MINE LAB
09	CA	CA1141190578	KLAU/BUENA VISTA MINE
09	CA	CAD983618893	LAVA CAP MINE
09	AZ	AZD001886654	MAGMA COPPER CO
09	CA	CAD980814925	MAMMOTH MINE
09	CA	CAN000908935	MANZANITA MINE
09	CA	CA0001900463	NEW IDRIA MERCURY MINE
09	AZ	AZ0000309146	ORACLE RIDGE MINE

09	AZ	AZD081687063	PHELPS DODGE CORP NEW CORNELIA BRANCH
09	AZ	AZD983475773	PHELPS DODGE VERDE MINE
09	CA	CAD982399990	REED MERCURY MINE
09	AZ	AZ0000309211	SENATOR MINE
09	AZ	AZ0000309245	SHELDON MINE
09	AZ	AZ0000309260	THREE R MINE
09	NV	NVD981989627	UNITED MINING CORP.
09	CA	CAN000905998	VALLEY VIEW MINE
10	WA	WAD980722847	ALDER MILL
10	WA	WASFN1002142	ALDER MINE
10	OR	ORN001002721	AMES - BANCROFT MINE
10	OR	ORSFN1002194	BELLE OF BAKER MINE
10	OR	ORN001002311	BRETZ MINE
10	ID	IDD048340921	BUNKER HILL MINING & METALLURGICAL COMPLEX
10	OR	ORN001002343	CALIFORNIA MINE/MILL
10	OR	ORSFN1002196	COLUMBIA MINE
10	ID	IDN001002808	CONSOLIDATED MINE
10	ID	IDN001002668	CROY CREEK WATERSHED
10	OR	ORSFN1002198	GOLCONDA MINE
10	ID	IDN001002266	GOLD CREEK-SHOSHONE MILL F
10	ID	IDN001002666	GOLD HILL AND IOWA MINES
10	OR	ORSFN1002199	GRAND TRUNK MINE
10	WA	WASFN1002165	GRANDVIEW MINE
10	ID	IDSFN1002152	GROUSE CREEK MINE
10	WA	WAD980988075	HECLA KNOB HILL MINE
10	OR	ORN001002517	HELENA MINE
10	OR	ORSFN1002200	IBEX MINE
10	ID	IDN001002537	IDAHO LAKEVIEW MINE
10	OR	ORN001002345	IMPERIAL MINE/MILL
10	ID	IDSFN1002087	JORDAN CREEK HISTORIC MINING AREA
10	AK	AK0002364776	KIMSHAN COVE
10	AK	AK0002364768	KLAG BAY SITE
10	WA	WASFN1002162	LAST CHANCE MINE AND MILL
10	WA	WAN001002315	MOUNTAIN LION MINE/MILL
10	AK	AKSFN1002134	MOUNTAIN TOP MINE
10	OR	ORSFN1002203	NORTH POLE MINE
10	OR	ORN001002255	OPALITE MINE
10	ID	IDD984668145	RED LEDGE MINE
10	WA	WAN001002316	REPUBLIC MINE/MILL
10	AK	AK0001897602	SALT CHUCK MINE
10	WA	WAN001002396	SIERRA ZINC MINE/MILL, A.K.A. BLUE RIDGE MINE/MILL
10	WA	WAD980722789	SILVER MOUNTAIN MINE
10	WA	WAN001002346	SOUTH PENN MINE
10	ID	IDN001002245	SOUTHEAST IDAHO SELENIUM PROJECT
10	OR	ORN001002459	TAYLOR RANCH MINE
10	ID	IDN001003095	THOMPSON CREEK MINE
10	AK	AKD981767387	TREADWELL MINES
10	AK	AKN001002722	TULUKSAK RIVER
10	OR	ORN001002625	UPPER ROW RIVER WATERSHED
10	WA	WASFN1002166	YOUNG AMERICA MINE

Sites below are not counted in the 121/15 Totals,

Due to having a parent/child relationship with sites above.

09	CA	CASFN0905576	MAMMOTH MINE ...576 is the child (apparently) of the other CA Mammoth mine, ...4925
09	NV	NVN000908819	ARIMETCO (paired with ANACONDA COPPER CO YERINGTON)
09	CA	CASFN0905417	CACTUS GOLD MINES COMPANY (paired with paired BLM-Cactus)
08	CO	CON000802811	RED AND BONITA MINE (paired with UPPER ANIMAS MINING DISTRICT)

(Soon, Bonita Peak will be considered the parent)



Attachment 2

**Refinement of Mine Site Categories**

EPA’s National Mining Team proposes a refinement of the fluid hazard category list described in the September 4, 2015, “Interim Guidance for Continuation of Work and Development of Comprehensive List of Superfund Mining and Mineral Processing Sites” memorandum. The purpose of this refinement is to clarify that, while the overall site category is helpful, it is the activity carried out at a particular site that may or may not result in a fluid hazard. The chart below shows how this refinement is to be implemented. Note that sites falling into the shaded cells are required to have Headquarters consultation before work is initiated.

**Mine or Mine Activity Category Chart**

	“N” No EPA actions which would increase fluid hazard <sup>1</sup>	“H” Fluid Hazard
<p>Category 1</p> <p>Sites with no known water in the mine, or sites containing fluids with <u>no or low fluid hazard</u>.</p>	<p>Site has no known or potential fluid hazard.</p>	<p>Fluid hazard is extremely low or non-existent either through engineered controls or by the configuration of the site’s physical features. Discharges may occur through foreseen and controlled releases that are not a fluid hazard.</p>
<p>Category 2</p> <p>Fluids exist but <u>fluid hazard is not adequately characterized</u> or is unknown.</p>	<p>Fluid hazard is not adequately characterized or is unknown, but the region either has no activities<sup>2</sup> planned, or planned activities at the site will not change the fluid hazard at the mine. State or other parties can be addressing these sites.</p>	<p>Fluid hazard is not adequately characterized or is unknown and the region plans activities that may increase the fluid hazard.</p>
<p>Category 3</p> <p>Sites which have a <u>probable fluid hazard</u>.</p>	<p>Fluids hazard is probable, but region either has no activities planned or planned activities will not change the fluid hazard at the mine. State or other parties can be addressing these sites.</p>	<p>Fluid hazard is probable and the region plans activities that may increase the fluid hazard.</p>

<sup>1</sup> Fluid Hazard - A situation where an accumulation of mine-related water could be uncontrollably released thereby creating a potential or actual emergency.

<sup>2</sup> Activities - Any physical action at a mine including, but not limited to, soil, surface water or sediment sampling, invasive site investigation, remedial design, remedy design, construction, maintenance, or fluid remediation.

As the chart above shows, a site would be categorized as a Category 3 due to the probability of a fluid hazard (e.g., an old collapsed adit or unstable tailings dam containing an unknown amount of fluids). If site activities (e.g., ground or surface water sampling downstream of the site or soils remediation at another portion of the site) would not reasonably be expected to result in a fluid hazard, the site would best be classified as a Category 3N (i.e., the site has a probable fluid hazard but the specific activity will not change the fluid hazard risk). However, if invasive activities were to be carried out that may pose a fluid hazard risk (e.g., drilling, earth movement), the site would shift to a Category 3H (i.e., the site has a probable fluid hazard and the activity may increase the fluid hazard risk). Sites that are classified as 2N and 3N could shift to 2H and 3H, respectively, if planned activities (e.g., tailings dam stabilization or a blocked adit investigation) might increase the fluid hazard.

The chart above is intended to provide the regions with general guidelines for determining the category of proposed activities planned at a site. This chart can also be used as a tool to determine which sites need additional management review and approval prior to proceeding with planned activities. Generally, planned activities at sites falling under categories 2H and 3H are required to undergo Headquarters consultation while site activities falling under other categories (1N, 1H, 2N and 3N) would not be subject to such a consultation. For these lower risk fluid hazard categories, it is generally recommended that the regions place documentation in the site file that the planned site activities will not result in fluid release.

The activity categories laid out in the chart are intended to be dynamic, and, over time, site activities may result in sites moving from one category to another. For example, if adequate characterization and planning are conducted, a number of Category 2 sites can be moved to Category 1. However, for the sites that do not move to Category 1 due to a determination that the site may indeed pose a significant fluid hazard, the site could move to Category 3 (probable hazard). Regions are asked to annually update these categories based on additional site information. When regions recommend changes in categories, the change should be supported by documentation that is provided to OSRTI or OEM, as appropriate.

Attachment 3

FY16 Planned Activities at Category 2 and 3 Sites which May Increase Hydraulic Hazard

Region	Site Name	Category
7	Big River Mine Tailings/St Joe Minerals Corp, MO	3
8	Flat Creek IMM, MT	3
8	Bonita Peak Mining District, CO	3
8	Pennsylvania Mine, CO	3
9	Argonaut Mine, CA	3
10	Triumph Mine Tailings Pile, ID	3
4	Ore Knob Mine, NC	2
7	Big River Hills Lead Tailings, MO	2
7	Federal Mine Tailings, MO	2
7	Madison County Mines, MO	2
8	Captain Jack Mill, CO	2
8	Carribeau Mill Tailings, CO	2
8	Chalk Creek (Golf Tunnel), CO	2
8	Nelson Tunnel/Commodore Waste Rock, CO	2
8	Red and Bonita Mine, CO	2
8	Standard Mine, CO	2
9	Lava Cap Mine	2

**Consultation Package for Fiscal Year 2016 Planned Activities that May Increase Fluid Hazard at Mining and Mineral Processing Sites**

Regions proposing activities that may increase fluid hazard (Category 2H or 3H) at mining and mineral processing sites for the 2016 construction season should prepare a briefing document to support Headquarters consultation. A suggested outline for the briefing document is provided below. The document can reference other existing documents, if they are available, for review and should specifically address the site feature under consideration in the document.

- I. **Site description:** Site name, location, brief site description and background, operable units or other response actions (if any).
  
- II. **Assessment of the fluid hazard:** What is known about the nature and extent of the fluid hazard? Summarize the knowns and unknowns for: water level, water pressure, potential volume of impounded fluid, flow rate and other lines of evidence that demonstrate a good understanding of the feature being addressed under the site's planned work. Present a Conceptual Site Model (CSM) for the feature to be investigated or remediated.
  - A. An adit's CSM should specifically focus on the fluid hazard (relationship of feature to mine pool, other mine features, overall hydrogeology).
  - B. A tailings impoundment's CSM should explain the outcome of geotechnical assessments; potential failure modes (piping, breach from overtopping or material failure), factors of safety (static and seismic) and water management (run-on and run-off controls, spillway information, and any key findings from recent inspections/dam safety assessments). Reference existing documents to the extent possible.
  - C. Identify the source(s) of the information to support the assessment and CSM. Is the CSM based on historic (non-EPA) data? Are mine maps and historic summaries available? Cite, as appropriate, the reports/documents that provided the most current assessment of the feature and site conditions.
  - D. Identify consultants, other federal agencies, and others that contributed to the fluid hazard assessment.
  
- III. **Failure Modes and Effects Analysis:** Indicate whether a Failure Modes and Effects Analysis (FMEA) has been conducted for the feature being investigated or remediated. If conducted, summarize the FMEA's relevant information, including potential off-site impacts.
  
- IV. **Description of work to be performed:** This description should identify the feature being investigated or remediated and should include maps, figures and/or drawings of the work to be performed. Is the work being implemented to better characterize the feature and associated hazard or to remediate the feature and hazard? Reference existing work plans that contain additional detail, if available.
  - A. Identify key expertise (implementation contractor, design, field oversight) that may be required to implement the proposed activity and whether such expertise has been retained to perform the work.
  - B. Describe steps that will be taken to minimize the uncontrolled release of fluids.
  - C. Identify the major uncertainties and risks associated with the proposed activity.
  - D. Include a schedule to indicate the duration and how the field season limitations (if any) will be addressed.