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To: GKMmonitoring@epa.gov

From: The Arizona Game and Fish Department

Date: October 8, 2015

Re: Comments to *Post-Gold King Mine Release Incident: Conceptual Monitoring Plan for Surface Water, Sediments, and Biology* (EPA Draft, September 2015)

The Arizona Game and Fish Department (AGFD) appreciate the opportunity to comment on this Plan.

The Study Questions in Objective A calls for an evaluation of only water and sediment quality trends. This evaluation should also include biological tissue for metal concentration. These samples should include fish, invertebrates and plankton that can be used to evaluate human health issues and to develop a broader perspective on potential impacts to the aquatic community. Information in Table 3 indicates that there are historical data for metals for both fish and benthic tissue that can be compared to post release analysis and trend development.

The Assessment Objective B calls for the collection of biological samples at multiple locations. However, the Study Questions for Objective B only address an assessment of biological communities and do not address possible screening levels exceedances for fish consumption and aquatic life uses. There needs to be an evaluation of metals concentrations in biological samples to inform stakeholders of the environmental conditions across the watershed.

Lake Powell is a critical resource to the Southwest and an evaluation of any chronic negative impacts associated with the Gold King Mine release should be thoroughly investigated. AGFD believes it is important to increase the number of sample locations from Lake Powell and therefore suggest that the following sites be included in the Monitoring Plan:

- Lake Powell down lake from the Escalante Arm.

The data from this site can be compared to the data collected from SJIN to determine if the San Juan Arm has been negatively impacted by both historic and recent mine discharges.

- Lake Powell above Glen Canyon Dam

The data generated from this site can be used to determine if mining impacts to the San Juan River extend to the lower portion of Lake Powell after mixing with the upper reaches of Lake Powell.

- Lees Ferry below Glen Canyon Dam

Glen Canyon Dam mixes the entire flow of the Colorado River watershed into Lees Ferry. Lees Ferry is a Blue Ribbon Trout Fishery and sits at the head of the Grand Canyon; this site should be properly evaluated and monitored for any potential long term chronic effects from mine discharges.

AGFD believes it is important to have water, sediment and tissue samples collected from these additional locations and that all tissue sampling should extend past 2020.

The rationale for a one-year monitoring period to identify changes in metals concentrations in surface water and sediment should be explained. EPA proposes to end its monitoring at the end of one year if “pre-release water quality and sediment trends are similar to trends observed prior to [sic] [should read: since] the GKM release.” Table 1 describes only three sediment collection events during this one-year period: Fall 2015, March 2016, and Fall 2016.

Metals precipitated into sediments from the GKM release will continue to migrate downstream towards Lake Powell as flood events churn the sediments. Three discrete sediment sampling events are unlikely to capture contaminant fate and transport trends over time.

Table 1 describes a single benthos and fish tissue sampling event for Fall 2016, which is insufficient to detect any impacts of the GKM release on macroinvertebrates, fish in their adult, juvenile and larval stages, or potential consumptive human health risks. Chronic exposure to heavy metals can impair macroinvertebrate communities, negatively impact fish embryonic development, fish tissues and organs. Metals can transfer through the food chain to other wildlife species that prey on macroinvertebrates and fish. The Department recommends macroinvertebrate monitoring and tissue sampling of benthos and fish at various life history stages for evidence of bioaccumulation over a longer timeframe.

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