SOUTHERN UTE INDIAN TRIBE

October 8, 2015

Delivered via email: GKMmonitoring@epa.gov

Ms. Sandra Spence, Director
Water Quality Unit
Environmental Protection Agency, Region 8

Subject: **Comments concerning EPA's Draft Post-Gold King Mine Release Incident: Conceptual Monitoring Plan for Surface Water, Sediments, and Biology**

Dear Ms. Spence:

The Southern Ute Indian Tribe places great value on its natural resources, and contamination of the Tribe's water is of grave concern to tribal members. The Tribe appreciates that EPA is providing leadership and funding to respond to the Gold King Mine spill and that it has released for comment the proposed "Post-Gold King Mine Release Incident: Conceptual Monitoring Plan for Surface Water, Sediments and Biology," dated September 17, 2015. The Tribe respectfully submits the specific written comments enclosed herewith that were drafted by its Water Quality Program staff. I am also taking this opportunity to describe the Tribe's demonstrated capability to support this effort.

The Tribe has maintained an active Water Quality program since 1992 and recently submitted our *Application for a Determination of Eligibility to be Treated in the Same Manner as a State Under Section 518(e) of the Clean Water Act and 40 C.F.R. 131.8 for Purposes of the Water Quality Standards and Certification Program.* The Tribe has been granted TAS for section 106 and section 319 program activities and operates under EPA-approved Sample Analysis Plans (SAP), Quality Assurance Project Plans (QAPP) and other EPA approved grant related workplans, budgets and documents.

The Tribe has been an active participant in the Gold King Mine spill response at many levels including emergency response planning activities and environmental monitoring. In response to the release, the Tribe's Water Quality Program collected daily water quality samples, macroinvertebrate samples, assisted in drinking water well monitoring and benthic sediment collection. These data were collected before the plume arrived on the Reservation on

August 7th and regular monitoring continues to this day. Fortuitously, two weeks before the release, the Tribe collected Animas River fish tissue for human health and fish pathology toxicological assessment of trace metals.

To assist EPA and the State of Colorado in determining historical baseline conditions, the Tribe provided a decade of historical water quality and macroinvertebrate data. In addition, the Tribe participated in a Technical Subcommittee convened of experts to review data related to the release and guide studies to assess impacts. This subcommittee was convened by La Plata County, Colorado. Coordination on the Monitoring Plan responses was held with the subcommittee to ensure adequate coverage of monitoring, duplication avoidance, and to ensure EPA takes a watershed approach to monitoring.

Accordingly, while the Tribe was dismayed to experience the Gold King Mine spill and witness the resulting contamination of its waters, these events have resulted in an opportunity to further develop the Tribe's government-to-government relationship with the EPA and for the Tribe and EPA to demonstrate their collective capability to the local community. The Tribe looks forward to building on these efforts and contributing to a comprehensive evaluation of post-spill impacts that provides reliable information to the public and identifies any further actions that may be needed to protect tribal members and the Tribe's natural resources.

Thank you for considering our comments. If the Tribe can provide any additional information, please let us know.

Respectfully,

Clement J. Frost

Clement J. Frost, Chairman
Southern Ute Indian Tribal Council

SOUTHERN UTE INDIAN TRIBE

Southern Ute Indian Tribe Comments on EPA's Draft Post-Gold King Mine Release Incident: Conceptual Monitoring Plan for Surface Water, Sediments, and Biology

The following section-by-section comments on EPA's Draft Conceptual Monitoring Plan are those of the Tribe only, and represent the Tribe's desire for EPA to adequately monitor conditions and assess impacts (acute, chronic and unknown) that are a result of approximately 3 million gallons of mine drainage that flowed through the Reservation over several days. The comments provide information responsive both to the general approach of the draft Conceptual Monitoring Plan as well as information specific to adequately characterizing impacts to water quality on the Southern Ute Indian Reservation. The Tribe's recommendations are intended to make data collection and analysis consistent with the manner that water quality standards promulgated under the Clean Water Act are administered locally by the EPA, Tribe, and the State of Colorado.

I. Background – Gold King Mine Release Incident and Animas River Watershed Historic Conditions

Comment: Groundwater monitoring is admittedly absent from the Draft Conceptual Monitoring Plan. The Tribe believes groundwater monitoring of drinking wells and other alluvial wells must be part of any long-term sampling plan. Uncertainty in sediment chemistry fate and transport, hydraulic conductivity and persistence in the sediments drive the need for further investigation. Many drinking water wells were sampled within 1 week of the release, yet hydraulic conductivity in the impacted area varies from location to location and can exhibit variation from 1-14 ft/day to 40-100ft/day[1]. The probability that these wells were sampled before potential contaminants of concern may have impacted the wells is likely. That sediments may be suspended and re-deposited downstream is to be expected, posing risks where none previously existed over a timeline of years, not months. Interactions with contaminated sediments and groundwater have the potential to solubilize metals and increase the potential for human health impacts. Therefore, groundwater well monitoring recommendations are included in **Table 1**.

The Tribe recommends a formal groundwater evaluation be completed within the Reservation to understand the fate and transport of the analytes of concern. This evaluations should include historic data to be complied and assessed for baseline conditions, withdraws/additions from agricultural ditches and groundwater under the influence of surface water.

II. Context for Conceptual Monitoring Plan and Data Uses

Comment: EPA should devote significant resources to the gathering of the comprehensive data that are referenced in this section. The Tribe, USGS, U.S. Bureau of Reclamation (i.e., in

planning for the Animas-La Plata Project), CDPHE, River Watch of Colorado, the City of Durango, Mountain Studies Institute, the Animas River Stakeholders Group and others have collected water quality measurements in the basin for decades. STORET is capable for storing water quality (surface and well) data, but currently lacks the ability to store and manipulate macroinvertebrates, soil, and fish tissue data, so it should not be solely relied upon. An ongoing effort by EPA to collect historical data is of critical importance to differentiate between historic conditions and release related impacts.

Comment: This section describes the strategy to "determine if water and sediment quality trends are similar to trends observed before the GKM release." EPA does not define, in quantitative terms in the Conceptual Monitoring Plan, what is meant by "similar" or "trends". In the final SAP for this project, data quality objectives must include quantitatively how these data are to be evaluated for pre/post release differences.

Comment: The Tribe contends that availability of biological data, specifically macroinvertebrate data, is more robust in quantity and special variability than sediment data. Given the data richness, and ability of macroinvertebrates to knowingly respond to environmental changes, significant emphasis should be put on the evaluation of pre and post release biological data[2]. Given that the Gold King Spill is just the most recent event in the Animas River, related to historical mining impacts, it is especially vital that EPA invest now to compile and analyze all available water quality data, both to assess the impacts of the 2015 release and to provide a baseline for assessing the effectiveness of future remediation efforts.

III. Objectives and Study Questions

Comment: Each of the study objectives should clearly define the designated uses for which the impacted areas will be assessed. The Animas River has designated uses for aquatic life, municipal and industrial, recreation, and agricultural uses. Water from shallow groundwater wells for human consumption and livestock are also present.

Comment: EPA should define quantitatively what is meant by "trends" in the study area have "changed". What will constitute an acceptable deviation from the historic condition? How will the historical condition be assessed to provide a baseline characterization? What period of record should be included for historical conditions? What indices will be used for biological communities? All of these questions must be answered and the rationale for the decisions explained.

IV. Monitoring Frequency and Analytes of Interest

Comment: More than one year of monitoring is required to assess impacts from the release. The flow regime of the Animas River is highly variable and almost completely unregulated. There is variation year to year based on snowpack, climate, and other factors. This variability drives the need for matrix specific monitoring. Given the depth of pre-event historical water column data, and the speed with which the plume moved, one year may be sufficient for that particular matrix. Groundwater conductivity rates vary significantly in the basin, sediment may be suspended at varying frequency given snowmelt, storm surges, depth of sediments and other geomorphology. Biological populations and toxicology will require several years to allow for assessment of population dynamics and bioaccumulation given chemical, physical and biological factors at play[3]. The Tribe proposes frequency of all matrices as presented below in **Table 1**.

Table 1. Sampling and Monitoring Schedule For Potential Sampling Sites Listed in Table 2	
SAMPLING AND MONITORING SCHEDULE:	**FREQUENCY OF COLLECTION ***
WATER COLUMN - dissolved and total recoverable metals, dissolved organic carbon (DOC), total organic carbon (TOC), hardness	Quarterly for 1-2 years
GROUNDWATER- total recoverable metals. Drinking water wells, livestock wells and other groundwater monitoring wells.	Quarterly for 3-5 years
SEDIMENT – total recoverable metals	Quarterly for 2-3 years
BENTHOS AND FISH TISSUE – metals; Collect and assess in locations where historic data are available so that release effects can be assessed.	Annually for 3-5 years
BIOLOGICAL COMMUNITY – benthic macroinvertebrate and fish populations – Collect and assess in locations where historic data are available and State/Tribal assessment methods are developed so that release effects can be assessed.	Annually for 3-5 years
STORMWATER SAMPLING - dissolved and total recoverable metals and dissolved organic carbon (DOC)	3-4 samples a year for 2-3 years
PHYSICAL HABITAT	Collected once at each site sampled for macroinvertebrates and fish – likely at fall event
FIELD PARAMETERS –	All sampling events will include field parameters (pH, temperature, dissolved oxygen (DO), conductivity and turbidity) measured with a probe/sonde.
FLOW –	Flow data will be measured via stream gage if present or by flow meter for all events.
* Frequency are proposed and may be altered should data indicate the need for further sampling to clarify impacts.	

Comment: The tribe recommends the following analytes for GKM long term monitoring study (**Table 2**).

- For complete water quality general parameters, recommend adding total suspended solids, total dissolved solids and alkalinity. These parameters will capture turbidity impacts and buffering capacity of the waterbody.
- Recommend oxidation-reduction potential of sediment sampling. Oxidation reduction potential may impact the solubility of metals in the water column.

Table 2. GKM Long Term Monitoring Analyte List					
PARAMETER	**Fraction**	**Water Column**	**Ground Water**	**Fish/ Macroinvetebrate Tissue**	**Sediment**
Field Parameters					
Dissolved Oxygen		X	X		
pH		X	X		
Temperature		X	X		
Specific Conductivity		X	X		
Other Parameters					
Alkalinity	Total	X	X		
Oxidation Reduction Potential					X
Total Suspended Solids		X			
Total Dissolved Solids		X			

Table 2. GKM Long Term Monitoring Analyte List					
PARAMETER	**Fraction**	**Water Column**	**Ground Water**	**Fish/ Macroinvetebrate Tissue**	**Sediment**
Total Metals					
Aluminum	Total	X	X	X	
Calcium	Total	X	X		
Iron	Total	X	X		
Magnesium	Total	X	X		
Potassium	Total	X	X		
Sodium	Total	X	X		
Silver	Total	X	X		
Arsenic	Total	X	X	X	X
Cadmium	Total	X	X	X	X
Copper	Total	X	X	X	X
Selenium	Total	X	X		
Zinc	Total	X	X	X	X
Barium	Total	X	X		
Beryllium	Total	X	X	X	
Cobalt	Total	X	X	X	
Chromium	Total	X	X		
Manganese	Total	X	X	X	
Molybdenum	Total	X	X		
Nickel	Total	X	X	X	X
Lead	Total	X	X	X	X
Antimony	Total	X	X		
Selenium	Total	X	X		
Thallium	Total	X	X		
Vanadium	Total	X	X		
Mercury	Total	X	X	X	X
Dissolved Metals					
Aluminum	Dissolved	X			
Calcium	Dissolved	X			
Iron	Dissolved	X			
Magnesium	Dissolved	X			
Potassium	Dissolved	X			
Sodium	Dissolved	X			
Silver	Dissolved	X			
Arsenic	Dissolved	X			
Cadmium	Dissolved	X			
Copper	Dissolved	X			
Selenium	Dissolved	X			
Zinc	Dissolved	X			
Barium	Dissolved	X			
Beryllium	Dissolved	X			
Cobalt	Dissolved	X			
Chromium	Dissolved	X			
Manganese	Dissolved	X			
Molybdenum	Dissolved	X			
Nickel	Dissolved	X			
Lead	Dissolved	X			
Antimony	Dissolved	X			

Table 2. GKM Long Term Monitoring Analyte List					
PARAMETER	**Fraction**	**Water Column**	**Ground Water**	**Fish/ Macroinvetebrate Tissue**	**Sediment**
Selenium	Dissolved	X			
Thallium	Dissolved	X			
Vanadium	Dissolved	X			
Mercury	Dissolved	X			

V. Site Selection and Assessment Approach

Comment: The Tribe's Water Quality Program (WQP) is the most suitable entity to sample and analyze all media on the Reservation because:

- The WQP has been monitoring Tribal waters on the Reservation since 1992.
- The WQP operates under EPA-approved SAPP, QAP, SOP's, and other grant-related documents.
- The Tribe's FY2016 EPA-approved workplan includes monitoring the Animas River as part of the Tribe's §106 program to support development and implementation of the Tribe's water quality standards. The ability to collect additional data while on site for §106 program sampling activities is cost effective.
- The Tribe already has agreements with landowners for tribal monitoring sites. These agreements ensure the Tribe has access to the monitoring sites and improves security for equipment. The Tribe has worked to develop and maintain positive relationships with landowners. EPA, or EPA contractors, may or may not be able to secure similar agreements.
- The Tribe is amenable to working with EPA to collect split samples or conduct other cooperative quality assurance-related monitoring activities.
- The Tribe can access land and water owned by the Tribe.

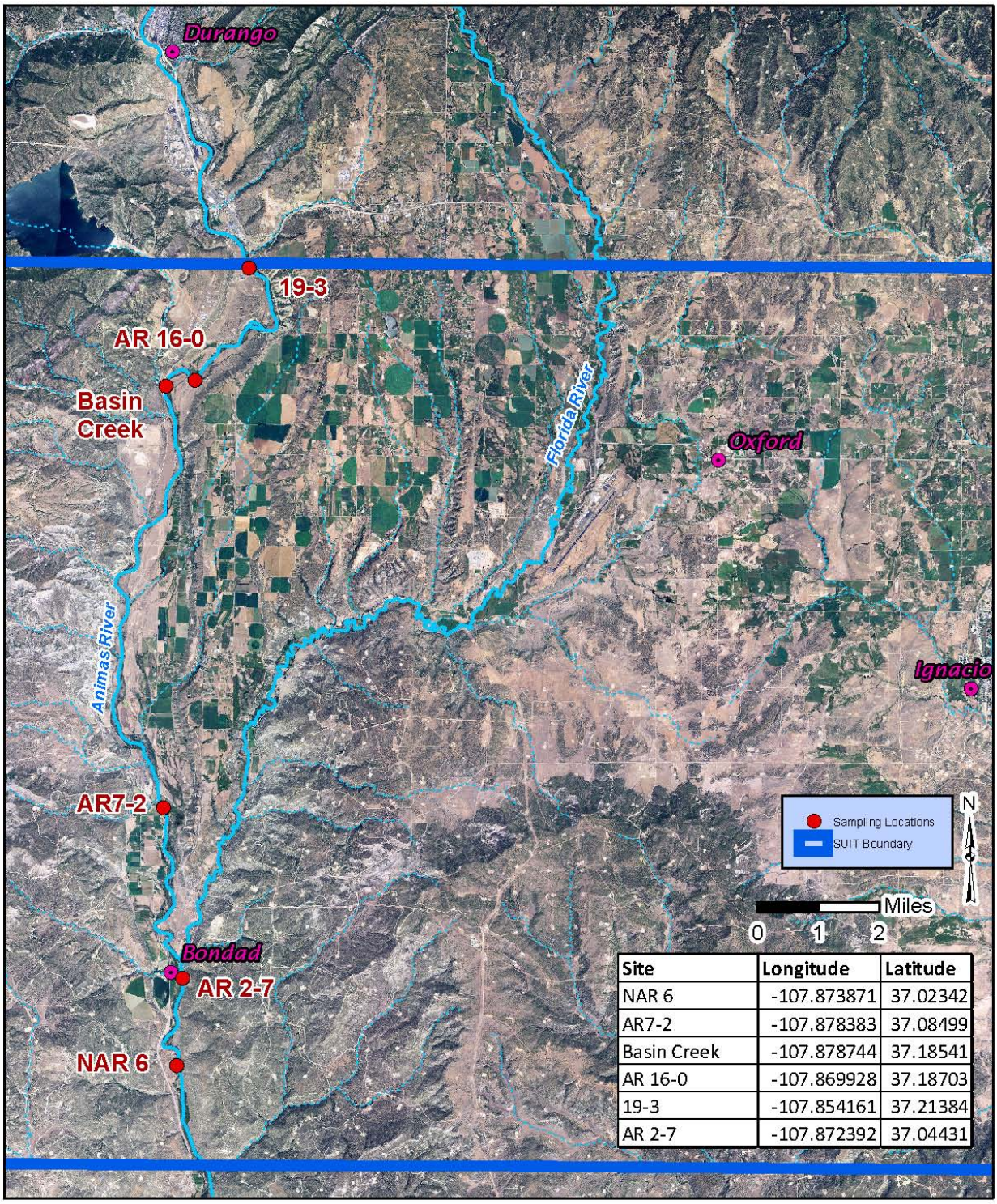
VI. Potential Sampling Locations

Comment: Water quality in Colorado is regulated at the segment level. Segments are defined by CDPHE and in the Tribe's water quality standards on the basis of geomorphology, hydrological segmentation, or other changes in landform or use that warrant a segment break. The Tribe suggests the EPA compose the SAP on the segment level, provide methods for assimilating all data within a segment, and assess those data at a segment level, as would be the case for assessments under CWA Sections 303(d) and 305(b).

Comment: The proposed Monitoring Plan sampling locations may not be best suited to describe the impact from the various media identified in **Table 1**. Proposed Tribal sites in **Table 3** were selected given the amount and variety of historical data (**Table 4**) and recreational activity. The Tribe's suggested sites provide coverage for all segments (and defined designated uses) identified in the Tribe's draft water quality standards.

Table 3. SUIT Recommended site names, description and type					
Site Name	**SUIT WQS Segment**	**Latitude**	**Longitude**	**Description/Location**	**Importance/ Rationale**
AR19-3	1	37.2213842	-107.854161	Animas River at Southern Ute Indian Reservation boundary	Release response site; at CO/SUIR border
AR1- Basin Creek	2	37.18541	-107.878744	Animas River immediately below the confluence with Basin Creek.	Fishing/rafting access. Historic macro data.
AR 7-2	2	37.084992	-107.878383	Animas River above confluence with Florida River near the Bonds compressor station.	Historic data available at this site and NAR 4
AR 2-7	3	37.04431	-107.872392	Animas River below Confluence with Florida River. 2.7 miles above SUIR /NM Border	Southern edge of Reservation, Historic data available at this site, AR2 and NAR 6

Table 4. Summary of historic data availability by site on SUIR						
Site	**Water column - metals**	**Sediment - metals**	**Fish tissue - metals**	**Benthic tissue - metals**	**Macro-invertebrate population**	**Fish population**
***AR19-3**	Yes*	TBD	Yes**	Yes	Yes**	Yes
AR1- Basin Creek	No	TBD	Yes**	Yes	Yes**	Yes
AR7-2	Yes	TBD	Yes**	No	Yes	Yes
AR2-7	Yes*	TBD	TBD	No	TBD	TBD
* indicates site included in Draft EPA Plan						
****indicate immediate pre-release data are available						
Southern Ute GKM Long Term Monitoring Locations. Note: This table contains both long term monitoring locations and historical monitoring locations that are referenced in Table 3.						



Site	Longitude	Latitude
NAR 6	-107.873871	37.02342
AR7-2	-107.878383	37.08499
Basin Creek	-107.878744	37.18541
AR 16-0	-107.869928	37.18703
19-3	-107.854161	37.21384
AR 2-7	-107.872392	37.04431

Southern Ute Indian Tribe Water Quality Program
Gold King Mine Release Monitoring Locations

VII. Methods

Comment: Multiple methods for individual matrices are listed. Should multiple methods be approved, how will EPA address comparability between the different collection techniques? For example, immediately following the spill, CDPHE collected sediment samples that focused on "hot spots" where samples were collected from areas that visibly indicated a high degree of contaminated sediment, whereas EPA contractors collected a randomized collection of all sediments within a specified area, regardless of visible presence. The Tribe suggests a limited set of SOP's be utilized in the assessment to provide for ease of data comparison.

VIII. Quality Assurance/Quality Control

Comment: The EPA anticipates using a single National Environmental Laboratory Accreditation Conference (NELAC)-accredited lab that conforms to American National Standard ASQ/ANSI E4 quality assurance systems. Will this lab be available for 3rd party use to perform independent sampling or split sample analysis?

IX. Data Management

Comment: Data sharing and information management during the spill has been a challenge for EPA. STORET will not house all of the types of data identified in the Monitoring Plan. The Tribe suggests a separate Information Management and Assessment Plan section in the QAPP, or as a stand-alone document, regarding data management. The Plan should detail how historical data are to be managed in STORET or alternative databases. Arizona USGS has a very useful interactive mapping tool that connects to disparate data sources and allows the user to see all the various entities monitoring efforts and data. http://maps.azgs.az.gov/gold-king-mine-spill/

Comment: The Tribe suggests that EPA develop a communication plan that describes how these data will be presented to the public. Translating scientific data to useful information is an important part of the GKM Response. This plan can also be used to inform the public of the important work the EPA and the Tribe are performing to understand GKM impacts and detail the level of collaboration between the agencies.

References

1. US DOE. 2001, UMTRA Groundwater Project, Durango, CO. www.lm.doe.gov/durango/sowp/appxg.pdf

2. Barbour, 1999, Chapter 3: Elements of Biomonitoring. EPA Website http://water.epa.gov/scitech/monitoring/rsl/bioassessment/ch03main.cfm (Section 3.2.2)

3. EPA, 2000. Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment. http://water.epa.gov/polwaste/sediments/cs/upload/bioaccum.pdf