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September 5, 1997

Mat Johansen, DOE/AIP/POC
U.S. Department of Energy
Los Alamos Area Office
528 35th Street MS: A316
Los Alamos, NM 87544

Re: Recommendations for the FU-1, Sandia Canyon Wetlands, Sampling and Analysis Plan (SAP) Development

Dear Mr. Johansen:

The New Mexico Environment Department (NMED) Department of Energy Oversight Bureau (DOE OB) is responding to a request from LANL ER Project, FU-1 representatives for guidance in determining to what extent they would need to characterize the Sandia wetland sediments.

Brief History:

On May 28, 1997, Field Unit 1 (FU-1) held a meeting to discuss the development of the Upper Sandia Canyon (Sandia Wetlands) Sampling and Analysis Plan (SAP). FU-1 personnel solicited comments from NMED representatives (HRMB - Kim Hill and Barbara Toth; DOE OB - Ralph Ford-Schmid) on their approach and proposed plans. Representatives of FU-1 and the Canyons Group (FU-4) presented plans to characterize the wetland sediments through geomorphic studies focusing on identifying areas of historic sediment accumulation in floodplain and channel sediments. The initial effort would consist primarily of aerial photo interpretation and canyon field investigations.

Prior to initiating any sampling and analysis of the wetland sediments, FU-1 representatives requested guidance in determining the extent of characterization of the Sandia wetland sediments. Specifically, they would like to know if they should design their sampling plan to determine the extent of contaminated sediments greater than 1 ppm (PCBs), or should they design a sampling plan to determine the extent of contamination which exceeds an ecological risk-based concentration (as yet undetermined).

Considerations:

1. Initial field surveys indicate that there is an apparent delineation of the sediment deposits in the exposed, incised channel banks, marked by the presence of feldspar (indicative of road development). This was presented as evidence that post 1940's sediment packages could be sampled separately from the original pre-development sediment packages. If overlaying, post 1940's sediment packages, were determined to be non contaminated, sampling of the underlying, pre-development sediment packages would not have to be as extensive. The underlying sediments would still need to be sampled to determine any impacts from overlaying deposits but not as thoroughly as the overlaying sediments.

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2. The channel through the Sandia wetlands has incised, exposing the various lenses of sediment deposited by prior bank overflow events. Lateral extent of these lenses of sediments should be determined. Boreholes should be placed (north & south of channel) to determine the lateral extent of important sediment packages.

3. Storm water/snowmelt sampling has indicated that there are continuing, low-level contributions of PCBs from one or both tributaries of Sandia creek. Three storm water sample analyses of filtered residue, collected by FU-1 staff from the south tributary, below Diamond Drive, in 1996, showed suspended sediment load concentrations from 3.16 ppm to 6.33 ppm PCBs (Aroclors 1260 & 1254). One storm water sample, collected by DOE Oversight Bureau on October 4, 1996, showed the Total PCBs in water at 1 ppb (minimum quantification limit). This was due to Aroclor 1260 detected at 1 ppb. This sample was collected on the rising leg of a storm water runoff event, while the suspended sediment load was quite high (TSS = 12,200 mg/L).

4. Wetland function (sediment storage, contaminant filtration) has been reduced by high velocity, high energy, flow-induced erosion and channel incision. Sediment deposition is generally not occurring until flows are large enough to generate over-bank conditions in the wetlands. Contaminated sediments, mobilized during "normal" (less than over-bank flows) storm water and snowmelt events may be transported through the wetland, effectively short-circuiting the wetlands. These sediments are then available for transport to the Rio Grande during peak runoff events (e.g., 25 - 100 year floods).

5. The cleanup level for PCBs in soil, established by EPA Region 6 TSCA PCB Program Office for SWMU 3-056(c) is less than 1 ppm. It is possible, that at some time in the future, the Sandia wetland soils may have to be cleaned up to the same level. In addition, NMED is currently formulating a policy on bioaccumulators (e.g., PCBs, Hg, etc.), which may require cleanup to background levels, if there are fate and transport impacts on the environment.

   The actual removal of wetland sediments may not necessarily be required anytime in the near future. In order to postpone remediation of the wetlands, the following conditions would probably have to be demonstrated:

   a. Sediment entrapment and storage capabilities of the wetlands have been enhanced considerably.

      i. If the sediment trapping and storage capabilities of the Sandia wetlands were enhanced, LANL may be able to argue that the wetlands are an effective Best Management Practice.

      ii. Reduction of contaminated sediment migration would need to be demonstrated. A monitoring network would be required that would demonstrate compliance with WQCC standards.

         (1) Although the actual limit for PCBs in water is 8 ppt, due to analytical quantification difficulties the effective standard is:
         Total PCBs in water at 1 ppb (minimum quantification limit).

b. Ecological Risk Assessment

i. Once the transport of contaminants from the wetlands has been addressed (verified by storm water monitoring results) the ecological risk posed by leaving the sediments in place would need to be assessed.

(1) The characteristics of the wetlands will most likely be different from the current conditions after enhancement (e.g., higher water storage capability, increased habitat availability, and potentially greater ecological impacts).

Recommendations:

The DOE OB does not recommend that the initial sampling effort attempt to delineate the extent of 1 ppm PCB contamination in the Sandia wetland sediments. Instead a phased approach would be more cost effective and valid. We also recommend an investigation to determine the source(s) of PCBs discovered in runoff from TA-3. Specifically, we recommend:

1) Begin the characterization of the wetland sediments by sampling exposed lenses of deposits in the incised channel.

   a) As this data reveals contaminated lenses, sample outward from the stream channel to determine magnitude and extent.

   b) Quantify PCB/metal/rad contamination as necessary to conduct valid ecological risk assessments for current and future (predicted) conditions.

2) Enhancement of the wetland's ability to entrain sediments should begin as soon as possible.

3) Establish a monitoring system to document current and future storm water quality/quantity.

   a) Three stations: one station at each of two (2) tributaries to document TA-3 storm water quality inputs to Sandia Canyon; one at outlet of Sandia wetlands to document the wetland Impacts on storm water quality.

   b) Investigate possible sources of PCBs to Sandia Canyon (e.g., use of contaminated asphalt at TA-3, currently undefined PRSs) and any corrective actions that may be indicated (see recommendation # 4).

4) Investigate the feasibility of installing Urban Runoff Pollution Control devices (e.g., Stormceptor $^{(R)}$) in the two tributaries draining TA-3. We have literature available on the Stormceptor$^{(R)}$.

Please contact Ralph Ford-Schmid at 827-1536 if you have any questions regarding these recommendations or if additional information is needed.

Sincerely,

Stephen Yanicak

Steve Yanicak, LANL POC
Department of Energy Oversight Bureau

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