Shoener Environmental
Consulting Services

TO: Ellen Colangelo, PCCE

FROM: Ed Shoener TAG Advisor

SUBJECT: Task Schedule #1 - Comments on the Ecological Risk Assessment

DATE: April 22, 2004

In reference to Task Schedule #1, as you directed I conducted a review of the EPA Ecological Risk Assessment (ERA) Report dated February 2001.

I have summarized the main findings of my review into two sections. The first section provides comments on the process and what PCCE should be prepared for over the coming months and the second section provides comments on the ERA report. In the comment section I have provided some suggested questions (in italics) that PCCE may want to present to EPA. I focused on broad issues concerning the extent of contamination and associated ecological impacts. I did not focus on the assessments of individual species. Such a detailed review was beyond the scope of this assignment.

THE PROCESS – REMEDIATION AND RESTORATION ARE DIFFERENT

1. The Ecological Risk Assessment (ERA) was developed as step 7 in EPA's 8-step process for making ecological risk management and remediation decisions at Superfund sites. The next step, and the final step, is the "Risk Management" step in which EPA makes its remediation decisions.

2. Note that the report is stamped "DRAFT" and not yet officially determined to be the final report. This is in part due to the fact that the PRPs are also in the process of completing their own ERA for Blue Mountain and those areas that they recently acquired. That ERA has been submitted to the Agencies for review and is now under review. The USFWS told me that the report is not yet available for public review.

3. Apparently, the PRP ERA and the EPA ERA will be jointly evaluated and in some way an "official ERA" will be adopted before the EPA moves to Step 8, selecting the remedy. This process will have to be clarified by EPA.

4. The primary EPA guidance on ERAs is a guidance document dated October 7, 1999 and titled "Issuance of Final Guidance: Ecological Risk Assessment and Risk Management Principles for Superfund Sites". According to this document it is EPA's

stated goal to "select a response action that will result in the recovery and/or maintenance of healthy local population/communities of ecological receptors".

However, "due to factors such as technical implementability and response costs at some sites … EPA recognizes that its response action may not lead to complete recovery of the ecosystem".

5. There is a Biological Technical Assistance Group (BTAG) made up of a number of agencies whose function is to advise EPA on ecological remediation issues. Kathy Patnode is the USFWS representative to the BTAG. Kathy works out of the USFWS State College Office (814-234-4090).

6. For those areas of the site that EPA does not remediate to an uncontaminated and undamaged baseline condition, a "natural resource trustee" (such as the USFWS) can obtain monetary damages from the responsible party. The money is used to develop a restoration program. A restoration program is usually a mix of activities that may fully restore some sections of the site, replace the damaged resources (i.e. construct a new wetland areas) for other areas or acquire an area equivalent to the damaged resources to insure its protection.

7. The USFWS plans on holding a public meeting sometime this spring to explain the process for developing a restoration plan. The development of the restoration plan will be many months, if not years, away. It is done under its "Natural Resource Damage Assessment and Restoration Program" (NADAR). The USFWS NADAR contact for Palmerton is Mr. Steve Klauson in the State College Office.

8. Resources are land owned by the Federal or State governments, or resources protected by the governments, such a migratory birds, game fish and animals, wetlands, "navigable waters", etc. It does not include private land (for example much of stony ridge is private land).

9. There is a trade-off or balance between what EPA decides to remediate and what is then subject to restoration. And, in this case, even if Blue Mountain is remediated, it may not be fully restored to pre-contaminated condition, so there may be both a remediation component and a restoration component for the same parcel of land.

   For example, the Army Corps of Engineers has recently completed its five-year review for the Blue Mountain revegetation and found that it is not a total success. Reportedly, there has been a die-back of some of the grasses and the metal concentrations in much of the vegetation is significantly elevated. PCCE should obtain a copy of this report for review.

COMMENTS ON THE ECOLOGICAL RISK ASSESSMENT

1. The data collection for the assessment was very limited and will need to be supplemented to design a cleanup and develop a restoration program.

For example, the Terrestrial sample locations were limited to only 12 locations in the project area and two background locations. The furthest east was Smith Gap and the furthest west was Bake Oven. Previous sampling by a number of investigators has shown that the contamination extends well beyond these points.

Similarly, the aquatic sample location were limited to 10 sites in the project area, ranging from the confluence of Aquashicola Creek and the Lehigh River up to the Little Gap area where Aquashicola and Buckwha creeks meet.

EPA should supplement the data to select and design a cleanup and develop a restoration program.

2. The full extent of the impacts was not defined by this assessment.

   Due the limits of the data, the study was not able to locate a "no impact" location for many of the impacts. For example, the earthworm benchmark was still exceeded at the Smith Gap site, which was the site located farthest to the east.

   For each endpoint, EPA should clearly identify if the "no effect" location was or was not determined. If the "no effect" location was found, EPA should map this location.

3. Impacts to Stony Ridge (from Bowmanstown to Little Gap) are not well defined because the data collection in this area is limited to non-existent.

   EPA should collect additional data to document and analyze the impacts of the site on Stony Ridge (from Bowmanstown to Little Gap).

4. Data was not collected to assess the impacts to the Lehigh River, yet it is obvious that contamination from the site reaches the Lehigh River.

   EPA should collect data to document and analyze the impacts of the site on the Lehigh River.

5. Wetland Locations – The wetland assessment appears to be focused on the larger wetland systems near the Aquashicola Creek. It is likely that there other wetland areas exist throughout the project area in locations where there are spring seeps along the ridges and in low-lying areas that collect surface water or intercept the water table.

   The full extent of wetlands in the project area should be identified and mapped in order to insure that the risk to wetlands is better understood as the cleanup and restoration program is developed.

   EPA needs to determine the full extent of the wetland throughout the entire site and then document the impact of the site on the wetlands.

6. There was no data collected to back up the finding that the "risk is not unacceptable" for endpoint 7- carnivorous (meat eaters only) mammal community (coyotes), endpoint 8-omnivourous (eats everything) mammal community (raccoons), and endpoint 9-piscivorus (fish eating) mammal community (minks).

   A mathematical dietary model was run for these species and although increased risks for these species was predicated for Coyotes from arsenic and for raccoons from arsenic and cadmium, the report found that the risk was "not unacceptable".

   EPA did not document how it determined that the dietary model is appropriate in Palmerton and how it "calibrated" the model to apply to the Palmerton situation.

   EPA should specify what was the risk and the criteria used to determine what is an unacceptable risk to these endpoints.

7. There needs to be a summary table or chart to clearly identify how unacceptable are the "unacceptable risks". For example, are the risks 2 times greater than what would be deemed acceptable or 15 times greater?

   This could be an important issue as the cleanup moves forward and indicator species are selected. Also, the magnitude of the risks will help determine what level of cleanup would be appropriate and help determine the tradeoffs between cost, implementability and cleanup levels.

   EPA should provide a summary table, chart or map to clearly identify how unacceptable are the "unacceptable risks" for each of the endpoints.

8. The health of ecosystem is to a large extent dependent on healthy soil and the organisms that live in and on the soil. These organism breakdown organic matter to create new soil in which plants can grow and the soil organisms serve as the basis of the food chain for the entire ecosystem. The contamination of the soil was one of first steps that lead to the destruction of the Blue Mountain ecosystem. Restoring the health of this soil will be also be a necessary first step in restoring the ecosystem.

   The ERA fails to clearly identify what soil contamination levels will insure the establishment of healthy soil. For example, the soil contamination levels that are *always* toxic to earthworms are identified, but the levels at which a healthy population of earthworms and the overall soil community can exist are not identified. There is a big difference between soil that is always toxic and soil that can support a healthy ecosystem. The existing data needs to be reviewed to determine the no effect level for the soil community and if necessary, additional laboratory tests should be conducted to establish this level.

   EPA should identify the no effect level and locations for the soil community. If it is not possible to identify such a location, EPA should conduct additional laboratory tests if needed to establish the no effect level.

9. Preliminary remediation goals were not identified. The lowest no risk soil levels identified in the report are those that will protect birds (endpoint 10 – insectivorous avian community (woodcocks) and endpoint 11 – omnivorous avian community (robins). The no effect level for these endpoints were:

    - cadmium - 60 ppm
    - lead - 240 to 640 ppm
    - zinc - 2800 ppm

EPA should clearly specify the preliminary remediation goals.

I understand that the USFWS has commented extensively on the ERA. I have asked the USFWS for copies of their comments. Once I receive these documents I will forward them on to you.

If you have any questions, please contact me at 570-842-5305.

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