

**Workshop For The 100-B/C Pilot Risk Assessment and 100/300 Areas  
Sampling and Analysis Plan  
August 9-10, 2005**

**Workshop Notes**

**Day One (100 B/C Pilot Risk Assessment)**

**Purpose**

- Identify data gaps, make additions to the document, respond to questions; our (DOE and contractor) objective is to focus on the upcoming 100/300 area risk assessment and to minimize further work on the 100-B/C risk assessment
- Contractor intention is to get to the field by October to begin sampling in the 100/300 areas to meet a TPA milestone
- DOE/contractor stand ready to run the tribal scenarios when they become available; we will do the mechanics and provide results, but we do not want to create the tribal scenarios
- Our model, based on the complete exposure pathway and EPA Risk Assessment Guidance for Superfund, captures a snapshot in time and does not take into account what has not yet been released

**Methodological Issues**

- In the riparian zone, if you find an area that is “hot”, can you go back and remediate the contamination? (Response: yes, because human health issues in the risk assessments are dealt with on a site-wide basis)
- Do the combined “top-down” and “bottom-up” approaches used in the risk assessment miss each other?

**Trustee Process Issues**

- How do you include new information in the risk assessment?
- The B/C area still has more areas to be cleaned up. If you find new contaminated sources, how will they be reconciled with this risk assessment? What will you do for those newly discovered sources/areas?

- How are we going to revise the document to address these (COPEC and aerial extent of contamination) summation questions?
- For the 100/300 area SAP, one trustee recommends a small meeting before the risk assessment conclusions are written to provide trustees an opportunity to “muck” with the sampling and studies data.
- Let the trustees help write conclusions.
- **Action: Contractor will establish a path forward for further discussion of trustee issues.**

### Trustee Technical Issues

- Expected effects: What are the expected effects that we will be exposing biota and people to? What was your thinking when put together your sampling plan?

It is the intersection between identified receptors and the contaminants that is the endpoint that we really need to worry about. Is the appropriate intersection amphibians or birds? (Response: There are not a lot of amphibians in the 100 B/C area; in the 100/300 risk assessment, however, we will do bioassays further down the river to assess toxicity levels for frogs. This is a lesson learned from the pilot risk assessment.)

If metals and rads are the main concerns for this area, what would the endpoints be? What was your thinking on this issue?

What are the effects of rads and chromium? (Response: No bioassays for 100 B/C, but we are planning five different groups for bioassays in the 100/300 SAP.) Are you assuming that the dietary exposure of metals for fish is negligible? Tissue concentrations will show exposure over all pathways. We need to use as many tools as possible. The path forward is not clear. (Response: If the metals need additional evaluation, that will be addressed as needed.)

Once you know that something is at risk on the site, what is the threshold concentration. When is that threshold exceeded? What is the risk driver for the overall big picture? We have counterposed point-by-point and block analyses, preferring bottoms up to top down. We need to include an in-between analysis where there is a concern that can be used to build conclusions. Do the aggregate analysis first, and then do a point-by-point analysis. Pass or fail the big picture first, and if it is “fail” look for the area that is the problem. Do your conclusions represent anything real?

- Grain size of sampled materials: This will continue to be an issue. Analyze the finer material: we can look at the soil descriptions and make our own evaluations.

Look at previous studies of grain size and its effects on site soil and how it may influence exposure. Particle size distribution affects fate and transport, risk assessment, etc. It is also important for metals.

- Numbers and locations of samples: The sampling done represents contractor's best guess of maximum contamination. It is not a site-wide representation and is not random, but is specific and biased towards known or suspected contaminated areas. If non-contaminated samples are included, then they bring down the final result numbers.

A map would be helpful showing where the samples were taken to show if any large areas or possible hot spots were missed.

Be clear about whether you think the samples are biased high or accurately.

There is probably an easier way to collect and interpret the data. One trustee suggests a data meeting with key risk assessment staff and trustees to explain the data.

Rad levels in water for humans is extremely conservative compared to ecological risk. Is the number of sediment samples taken (four) adequate given the size of the area? (Response: We are planning a shoreline analysis in the 100/300 SAP.)

- Reference sites: The higher concentrations of some metals upstream puts into question what Vernita Narrows means as a reference site.
- Summation: The risk assessment did not sum the hazards quotients for metals and that is an issue.
- Community versus individual effects: Why did you think of insects as a major pathway? (Response: Insects are the most heavily exposed.) Your expected effects may not always be the case. Community metrics may be the most appropriate endpoint.

Consider all species T&E and extrapolate the information. (Response: We are following EPA [ERAGS] guidance.) Direct measures of community effects are hard to measure.

## Day Two (100/300 Areas SAP)

### Informal Strategy (EPA)

We are now at the point where we can make final cleanup decisions. First we need to identify cleanup alternatives and evaluate cleanup options for the future. The risk assessments will help give us a suite of alternatives. We can focus on making risk-based decisions later.

### Trustee Policy Issues

- What threshold of contaminants will activate some type of cleanup? In revisions to the SAP, we need to clarify the risk drivers. The public needs to know the risks whatever decisions DOE might make.
- It is unclear at what low level of risk we would stop identifying cleanup alternatives. What level of certainty versus uncertainty is acceptable?

We can have risks but no exceedances; we can also have exceedances of ARARs, but no risks.

There is the potential to conclude that cleanup is overly protective by one criteria, but not protective enough by another criteria.

- How big of an impact will prior cleanup actions cause on the areas being assessed? This is a gray area.
- We need to know the risk assessment and risk decision process. If we understand the process we can determine the cleanup needed.
- We need to make sure the analysis is appropriate and we have enough data to support decisions. “Let the data lead your decision” rather than “Let the decision lead your data.”
- Are we getting the best “bang for our buck” in terms of use of the data, usefulness of the data, and the cost of obtaining them?
- **# 1 trustee issue:** The *amount* of data provided is often not enough to make clear cut decisions. How can we have confidence in the results based on a small data set? This raises a concern about false negatives.

If we want to show low or no risk, we want to be confident that the numbers are accurate.

There is sometimes no link between a hypothesis and the number of samples. We need to either increase the number of samples or reduce the scope to get better statistical information.

We need to strike a balance to have a credible risk assessment. Propose a plan that will yield a defensible, credible risk assessment.

The proposed SAP does not meet the needs of answering protectiveness questions. Redirect sampling to non-remediated areas, like the riparian zone.

Is it appropriate to compare multi-incremental sample data with discrete analyses used for the background study?

- Significantly expand the field sampling effort. Redirect the effort to look at the riparian and aquatic areas that have not been remediated. In the terrestrial areas, focus the investigation so that it will yield more definitive answers.
- There are too many “insensitive” endpoints. The analyses do not adequately examine sub-lethal effects and non-standardized concerns. It looks as if we have prejudged what we will see.
- **#4 trustee issue:** We need to look at reference sites other than Vernita.
- Is there a budget limit? Can funds be redirected for more focused work? We are not informed about what the constraints are.
- Resources are not adequate to do what needs to be done.

### **Trustee Technical Issues**

- Hazard quotient baseline: we have more work to do on reference sites; we need to look at previous sediment studies; we need to look at all the risk assessments, when completed, to know what gaps need to be filled in
- Histopathology: Consider doing a subset of livers and kidneys. Add the histopath effects to help determine adverse effects on small animals
- Litter bags: How will the data from these be used? There are lots of factors to consider: direct measures of decomposition rates at the site, soil organisms, temperature and humidity, etc.
- **#2 trustee issue: Chromium:** Need to determine the spatial extent of the chromium plume coming into the river and the effects on target organs

- Aquifer: We need a better understanding of the model, over land flows, purged water that cascades off the edge, flow pathways that have not been defined, river bottom and river interface that has not been defined
- Extent of contamination: This needs to be defined. We need data on the extent of the rad zones and the methods of measuring the activity. We have TLDs (thermoluminescent dosimeter) but no baseline outside of small areas. Have all the transport mechanisms been considered?
- **#3 trustee issue: Uranium in the 300 area**: There is only one sample planned in the aquatic zone. This is a weakness of environmental design. What kinds of statistics will be used?
- 100-NR-2: This is not really separate from the 100/300 area SAP; what is the link between the two?
- We want more sampling for air emissions.

### **Trustee Process and Methodological Issues**

- Allow the trustees to assist in writing conclusions.
- The 100/300 SAP excluded some items that were in the DQO summary. Many of the proposed conceptual studies were dismissed (example: fish and amphibian studies). Why?
- What can we learn from the CRCIA sampling effort?
- Can there be a “phase 2” approach with the 100/300 area SAP?
- How do we find out when new information or document drafts are available? And how do we obtain the documents when they do become available?
- We want more independent studies
- It would be valuable if we understood the contractor’s limitations; otherwise, our expectations can be out of line with reality
- Discussion comments:
  - Don’t tell me why my concern is irrelevant (we want perspective and interpretation)
  - We get (automatic) resistance to our ideas
  - “It’s already been done” doesn’t work
  - Listen to us

- Be tactful
- Keep us informed
- Acknowledge our different constituencies
- We want to be really confident: it's hard to "prove the negative"

### **DOE/Contractor Responses**

- We may have a philosophical disconnect: our challenge is to be clear on what it takes to comply with the ERAGS. Some suggestions go beyond what it takes to comply with ERAGS. We may need to agree to disagree

NRDA and ERAGs are different (emphasis on sublethal impacts versus population-level effect foci). They often do not align but both can get us to an ARAR-based cleanup and then get us to an ERAGS risk assessment. You could still fail risk assessments by meeting ARARs. If we satisfy both, we are doing good and so much the better.

- Any focused studies must support the risk assessment. The SAP already does include studies that are not required by the ERAGs.
- Budgets and baselines can change. If it takes more than what is currently budgeted to do a SAP or risk assessment, then DOE is open to that. Like the trustees, we do not want to waste money; we want to do studies that support decision making. We prefer to focus on the necessary technical issues than to be fixated on money
- We have schedules and milestones: Radical changes to a big risk assessment, with all the planning and coordination required is like changing the direction of a freight train. The risk assessment direction was discussed and set last winter with the Trustees in the DQO process, the SAP was to just work on the finer details.
- It is hard to hear "this is not good enough" when you are not prepared (have not read the materials)
- "Plan the work, work the plan": we can learn more by doing the actual sampling and data collection, then making revisions and adjustments as needed when issues arise

## **Trustee-recommended “quick changes” to the 100/300 area SAP**

When a sample is collected, make the total organic content and particle size analysis (sand/silt/clay) less than 2 mm for all soil and sediment samples

Test for sulfates and oxygen content on seeps, aquifer, and groundwater Use a 28-day (rather than 10-day) toxicity test

Find references sites in addition to Vernita

Do bulk density on the soils

Don't use reed canary grass (the suggestion was made that it is insensitive to contaminants)

Collect effects data on amphibians

Add more horizontal aquifer tubes

Add moisture and temperature sampling to litter bags

Move sample locations away from culturally sensitive areas, or have tribal representatives on hand when you sample

Consider not using clam tubes

Figure out how to evaluate risks to fish

Do histopath on fish

More sample stations

More discussion on policy issues

## **Immediate changes DOE/contractor will undertake as outcomes of the workshop**

- Acknowledge trustee concern that planned near-shore samples are insufficient. We will look at the three major plumes for strontium, chromium, and uranium. We will look at the 100-N strontium plume and make sure it is complementary
- We will analyze target organs in addition to the fish carcass: we will look at target organs and histopathology for target organs. This will address the chromium issue

- We will do fewer analyticals for plants (2? vs. 3); sagebrush/rabbitbrush or whatever plants that are most predominant on the sites if they are not present.
- We will look again at the Vernita reference site and try to build up more confidence with further research on previous studies at this location. We have added more sampling sites upriver from Vernita. We still believe this is a good reference site.
- We will remove appendix B because it shows no risk to salmon and we know that is not a consensus conclusion.

**Workshop for 100 B/C Pilot Risk Assessment and 100/300 Areas SAP  
Participant List**

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