Citizens Environmental Coalition

Main Office: 422 Oakland Valley Rd. Cuddebackville, NY 12729
Phone 845-754-7951 ◆ E-mail: warrenba@msn.com

Mr. Martin Krentz
West Valley Demonstration Project
US Department of Energy
10282 Rock Springs Rd. AC-DOE
West Valley, NY 14171-9799

Sent via email to
martin.krentz@emcbc.doe.gov
lee.gordon@nyserda.ny.gov

Re: Scoping Comments on the SEIS related to the Issue of Exhumation and Full clean-up of the West Valley site, as well as the findings of the Exhumation Working Group

Dear Mr. Krentz,

Introduction

The public and their public officials support full exhumation of all radioactive waste at West Valley, primarily because the site is, and never was, a suitable site to store any highly hazardous materials. Current facilities threaten to release their radiological inventories to nearby waterways and the Great Lakes, causing major harm to public health and the ecosystem. We have no idea where, on the site, stable ground will exist 50 or more years from now. The potential for contamination of a sole source aquifer also exists.

In this letter we are providing our most significant comments on the work of the Exhumation Working Group in Task 3.3. Scoping comments are integrated with the discussion and recommendations. We note that new factual information was found in this document which contradicts information provided in Task 1.3 regarding the SDA and NDA. An example is the fact that two SDA trenches did not adhere to the rule that only wastes less than 200 mR/hr would be disposed in the SDA.

We also want to comment on the issue of waste at West Valley not being Defense or Military Waste. It would be appropriate for the EXWG to say that certain wastes are not currently designated as defense or military waste. It is not appropriate to say flatly that any West Valley wastes are not defense wastes as a factual matter[1] because 1) it is an issue in dispute due to underlying facts and 2) there is an effort on the part of public officials, DOE and NYSERDA to pass a law specifying that West Valley waste is "Defense waste".

[1] Exhumation Report Task 3.3, p. 78 statement about TRU waste not being defense related.

I Exhumation is an event at a particular point of time in the future. When an event is of particular interest to us there a series of questions that must be answered: What? Where? Why? When? How? Who?

What is the event? Where would it take place? How would exhumation be tackled? In general the EXWG answered most of the questions with some exceptions that we discuss in these comments. In some cases there is a great deal of uncertainty regarding how to tackle a particular project. However, the key questions that have not been discussed in any detail are Why? and When?

Why is Exhumation necessary? When should exhumation be done?
Part of the rationale for not answering these questions is that DOE has repeatedly advocated for Closing the Waste Facilities In- Place. Another problem is that Goals and objectives have not been established for West Valley's Clean-up. The expert working groups should have been provided with overall goals and objectives as part of considering exhumation, particularly full exhumation.

Key Goal. The Key Goal for any nuclear waste facility is Preventing the Loss of Containment of Radioactive Materials to the Environment or in a way that impacts workers on- site. This key goal should be articulated in the Scope of the SEIS and substantively addressed in relation to the factual situation at West Valley.

Siting Standards cannot be met. Burial grounds should never have been sited at this vulnerable site. The real situation for these burial grounds – SDA and NDA-should be evaluated against current siting standards for LLW disposal facilities, 10 CFR 61. West Valley fails to meet at least three of these siting standards and as a consequence cannot meet the performance objectives. Example § 61.50 "Areas must be avoided where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of subpart C of this part, or may preclude defensible modeling and prediction of long-term impacts." This comparison is essential for understanding the real deficiencies associated with these buried waste dumps. Because West Valley's disposal areas don't met basic standards they cannot be evaluated as if they were originally sited and evaluated properly when they were permitted.

Erosion is already impacting the site. Exhumation is necessary in the case of the State Disposal Area because this burial ground is already impacted on two sides by 6 large gullies—on the Erdman Brook side and the Frank's Creek side of the facility. The State DEC has required a regular inspection, monitoring and reporting program to identify conditions and changes at the site related to erosion, landslides and mass wasting. In addition engineered barriers have been installed to direct the flow of water and control the forces of erosion to some degree. Agencies have noted that these fixes are only temporary and will need to be replaced regularly and/or more robustly engineered in the future.

Extreme rainfall exacerbates erosion. Extreme weather events are increasing across the nation, but especially for rainfall in the Northeast. Extreme rainfall exacerbates the existing vulnerability of the site to erosion. Weather is rapidly changing and scientists are having difficulty capturing the rapidity of these changes. We note for example that South Texas not long ago was in a severe

drought, so bad that a large number of trees were lost in the City of Houston. After Hurricane Harvey, the same area was found to have experienced its 3rd 500-year flood in just a few years. At West Valley we know that reservoir dams can spill over adding to the impacts of 5 inches of rain in an hour to large watersheds for local creeks, creating raging rivers where streams previously flowed. And then scouring the valley wall of Buttermilk Creek leading to an enormous landslide in 2009. It is also possible that extreme rainfall could trigger a type of landslide, known as a debris flow, that could sweep not just the SDA away, but also the NRC Disposal Area.

Science is limited in the important area of predictions. While we respect scientific knowledge and new findings as they are developed, there also should be recognition of the limits of science. Although there is a lot of new scientific information about tectonic plates, earthquakes, volcanoes, landslides and erosion, there is a lack of knowledge related to predicting these types of events, especially over the long term. Some of these events can be catastrophic and the fact that reliable predictions are not possible, tells us that ethical or value judgments will be necessary. No amount of modelling will solve the fact that these events are not predictable. Factual parameters must be the basis for modelling. To reach appropriate conclusions regarding exhumation, the Agencies must give the public a major role in this decision-making because it involves making value judgements.

Cost-Benefit Analysis. The cost of full exhumation cannot be merely compared to the costs of other alternatives. The potential for adverse outcomes are very different. Public Health, an extraordinary valuable natural resource and future generations cannot be left out of a cost-benefit analysis.
The Loss of Containment and its potential impacts should be a major topic in the Scoping Document, covering impacts to the Seneca Nation, the Great Lakes, and public health including future generations. The enormous investment that federal and NY state governments have put into Great Lakes improvements provides some measure of the value of this resource and should be compared to the costs of Full exhumation.

When should exhumation be done? Exhumation should begin as soon as possible. This is particularly true for the SDA. The site cannot now prevent a loss of containment and the only sure way to address the issue is to exhume the nuclear waste and secure it in appropriate containers rather than leave it in an open dump.

The SDA contains Plutonium and other long lived radionuclides. These radionuclides would seriously impact the Great Lakes and public health if they were released. The EXWG report shows that removing a significant fraction of long lived radionuclides is feasible now. The work would also not be seriously constrained by dose limits as 59% of the SDA trench segments would meet the 2.5 mrem dose limit for worker protection. Exhumation of the SDA, should be immediately followed by the NDA Special holes and trenches.

Other means of exhuming the NDA Deep Holes must be explored. We discuss this below. Priority facilities for exhumation as soon as possible include the SDA, the NDA Special Holes and trenches and the C & D Landfill on the North plateau. This last one is important because it needs to be removed to more effectively control the Strontium-90 plume of contamination and reduce the amounts leaving the site.

The Waste and the tanks in the Waste Tank Farm also need to be exhumed and a specific date for this project needs to be provided in the SEIS. It is not enough to make a decision about exhuming the tanks. There must be definite dates planned for each of the exhumation projects and funds allocated. The tanks are at the end of their useful lives and may no longer be able to contain the high level wastes remaining in them. Water has seeped into the vaults. The West Valley site lies over a sole source aquifer and this aquifer has not been fully delineated by any of the involved agencies. Nor has any attempt been made to identify whether any radionuclides have made their way into this aquifer. A study of the sole source aquifer should be part of the SEIS.

II Waste Processing requires all the necessary equipment to sort, process and repackage waste of different classifications while adequately protecting workers with air filtration, decontamination areas and remote handling. The Plan is for a Sitewide Container Management Facility to do waste processing. Unfortunately the robustness of the Container Management facility, its size and the addition of a large Interim Waste Storage area raise concerns about establishing West Valley as a permanent radioactive waste facility in contrast to one that is scheduled to be permanently cleaned up under the requirements of the West Valley Demonstration Project Act.

The Sitewide Container Management Facility, CMF, involves major building construction to meet Category 3 Performance Standards for this waste processing facility, the FEIS Base Case Facility. The cost is close to $1 Billion. However, plans for Interim Waste Storage of Orphan Waste adds a 70,000 sq. foot addition to the CMF.

This is also the only process of the 5 processes[2] associated with exhumation in the Task 3.3 report, where the EXWG does not recommend a cheaper option. The CMF is in itself a very large facility that will no longer be needed once all the waste is processed and packaged for disposal. We are very concerned that this facility not be constructed larger than absolutely necessary, with specific limitations on what it can be used for. The same should be true for the 70,000 square foot interim storage area. There are no detailed calculations of waste amounts in this report from each waste area, so how the chart below was developed is not known. It is a rosy assumption that 91% of the waste will be low specific activity, when final decisions have not been made about Phase 2 and some options dramatically increase waste volume, such as grouting. If this chart represents the real situation, it seems unlikely that we would need such a large storage area. Disposal options for 99 % of the waste in this chart are readily available.

We have not seen the justification for such a robust CMF in contrast to use of modular enclosures under Option 1, Localized Waste Processing. In the review they talk about separate SDA and NDA enclosures. However, the team never incorporates key factors like time and radioactive decay. In reality the SDA could be completed first before moving the enclosure to the NDA. These modular enclosures would be less costly and enable dismantlement after waste

[2] Processes include Leachate Management & Treatment, Protective Measures (primarily Enclosures), Waste Exhumation, Waste Processing and Interim Waste Storage.

Waste Type	Estimated Disposal Volume (CY)	% of Total
Low-Specific Activity	1,782,230	91.0%
Class A	160,366	8.2%
Mixed	748	<0.1%
Class B	3,356	0.2%
Class C	5,179	0.3%
TRU	1,329	0.1%
GTCC	5,534	0.3%
Total	**1,958,741**	**100.0%**

Table VII- 1: Distribution of Waste Volumes by Type

processing, packaging and shipment are complete. After dismantlement the modular CMF would no longer represent a desirable building to store radioactive waste.

It does seem Interim waste storage of High Level Wastes, Transuranics and Greater than Class C waste may need more robust and protective storage. Precise calculations of existing storage needs and future additions from exhumation should be provided in the SEIS. However, other waste classes should be shipped elsewhere. The West Valley Demonstration Project Act requires that wastes be sent off-site for disposal. Therefore we need to limit the size of any facility designed for interim storage to only what is absolutely necessary.

The Report estimates that the 75% of the building footprint would be occupied by the interim storage area. Total costs of construction are $189 million for the CMF & interim storage, with $756 million for operation. Total building size- 93,333 sq. ft, with 70,000 sq. ft. for interim storage.

III The study of the NDA Deep Holes fails to identify a feasible option for exhumation. Another effort is needed to explore exhumation of the Deep Holes by excavating areas rather than holes.

Remote handling is needed beyond the 120 year timeframe. Given the high radiation levels, there are a few decades to explore more feasible options. While areal exhumation was suggested in the report, it was not really evaluated. The overall effort is complicated by the need to handle the waste by remote means. The focus was on a situation at Hanford that was significantly different than that posed by the NDA Deep Holes. Hanford had vertical pipe units- 15 feet deep with a diameter of 1.8 feet- to exhume. Some of the Deep Holes at the NDA are 70 feet deep, although the team used 55 foot depths for the analysis. Digging in the holes requires supporting the holes with sheet pilings but given the depth, multiple sheets would have to be welded together as they are driven into the ground. The team proposed installing a casing around the holes that is 9 feet in diameter. The casing would have a cutter head to saw its way into the ground. After the casing is installed grout would be injected. The soil volume removed would be about double

what would be in the casing alone. The EXWG team concluded that both the Base Case and the Option posed technical challenges that would require further testing.

An area approach would enable removal of soil from one side of a series of Deep Holes. Removal could be done from the first 8 feet of several holes. As the excavation is dug deeper, more of the waste could be exhumed until all the Deep Holes are exhumed. This would avoid the problem of how to excavate deeply in such a narrow hole while still supporting the equipment above.

IV The Waste Tank Farm

In this section, we mostly summarize the findings of the EXWG team. We also make some additional recommendations for waste processing technologies to be considered. We would have appreciated a more comprehensive discussion of the inventories here.

FEIS Base Case—Removal of Residual wastes & carbon steel tank shells & concrete vaults. Removal follows Roof Removal within New WTF Dedicated Waste Processing Facility (Category 2 Performance Facility, designed to withstand a design basis earthquake).

Note: they are only talking about the 2 large tanks, not the smaller ones. We need confirmation of the clean status of the smaller tanks.
The waste processing facility would be 50,000 square feet, built with hi density concrete as a confinement facility. Special equipment so everything can be done remotely. Shield windows and closed-circuit TV. All 5 processes but also more attention to worker safety and remote handling.

There are no precedents elsewhere in the nation for removing the tanks. However, the tank contents of more than 50 tanks has been removed within the DOE complex. Waste removal is always less than complete because of the difficulty in dislodging the waste and removing it.

Option 1: Removal through the Risers. This is done with an in-tank robotic system lowered into the tanks. Waste processing facility still needed. More limited access could be a problem.

Option 2: Partial Layer of Grout on bottom of tank. This would enable workers to remove sidewalls--- if there was no bathtub ring of contamination. Excess Exposure would occur.

Option 3: Full Grouting before Removal of Tanks. No precedent because grouting is primarily used for Close In Place. After Cesium decays workers would cut tanks and grout up and dispose of material.

Option 4: Filling Tanks with Water to shield workers. Concern here is leakage from the tanks and spreading contamination. The depth of water also might not adequately shield workers from radiation from IX columns.

Removal of STS Equipment (Supernatant Treatment System)

Most of the zeolite was incorporated earlier into vitrified waste. However, the IX columns are full of contaminated zeolite that gives off 500 R/hr of radiation from Cs-137. Zeolite beads are known to amalgamate and become a solid.

The FEIS Base Case involves flushing the zeolite out of the columns, but this cannot be done if it has become a solid mass.

One option would be to remove the columns intact, but this would require a heavily shielded lead box that would weigh possibly 26 tons. It may be too difficult to accomplish and workers could be heavily exposed.

Several options were explored to break up the zeolite in the columns so it can be removed. More study needed. Ultrasonic methods should be evaluated.

Removal of Tank Contents.
About 60% of activity is contained in the sludge/zeolite heels in the tanks.

Evaluation of Technologies

There are multiple methods discussed that dislodge the waste in the bottom of the tanks and vacuum it up. It would be done by remote handling. The good news is that a lot of work has been done in this area and costs have come down dramatically at other DOE facilities in the $20-$40 million range. One method is discussed for cleaning large areas of tank walls in a single pass. A chart shows % of sludge volume removed as well as curies.

The technologies evaluated appear promising. We would like to see how successful cleaning the tanks could be, in terms of curies remaining. However, we wonder why Nitrocision was not presented and discussed. This is a method DOE has briefly discussed at West Valley. We also would like to see ultrasonic methods considered, particularly for breaking up the zeolite in the IX columns.

The use of a rotary dryer was identified as needing more study for handling wet waste. We would like to suggest consideration of Stainless Steel long tubes that are used for composting organic material. They are fully enclosed and computer controlled. A conveyor built has holes in it that allow air to circulate through the waste from underneath. Because it is fully enclosed it would be much safer for worker protection. When the waste is sufficiently dried the conveyor belt would move the waste into containers. Use at West Valley would not be as demanding as maximizing compost efficiency, however the enclosure and recirculation aspects are ideal for worker protection from the process of drying.

Thank you for your attention.

Sincerely,

Barbara J Warren

Barbara J. Warren, RN, MS
Executive Director