



U.S. DEPARTMENT OF  
**ENERGY**



**NYSERDA**

April 13, 2016

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Dear Ms. Warren et al.:

SUBJECT: Comments on Phase 1 Exhumation Study Plan, Revision 2, July 2015

The U.S. Department of Energy (DOE) and the New York State Energy Research and Development Authority (NYSERDA) thank you for your continued interest and participation in the Phase 1 Studies process being performed at the West Valley Demonstration Project (WVDP) and the Western New York Nuclear Service Center (WNYNSC) as expressed in your November 3, 2015 letter (Reference). DOE and NYSERDA have prepared the attached matrix, which includes a response to each of the comments in your November letter.

DOE and NYSERDA value your continued interest in the Phase 1 Studies and the Phase 1 decommissioning of the WVDP and WNYNSC. Should you have any questions or comments regarding this letter or the attached matrix, please contact Moira Maloney at (716) 94-4255 or Lee Gordon at (716) 942-9960, x4963.

Sincerely,

Bryan C. Bower, Director  
U.S. Department of Energy  
West Valley Demonstration Project

PJB/BB/amd

Paul J. Bembia, Director  
West Valley Site Management Program  
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Reference:

1. Letter, Barbara Warren, et al. to Bryan Bower, Moira Maloney, Paul Bembia, and Lee Gordon, "Comments on PHASE 1 EXHUMATION STUDY PLAN Revision 2, July 2015," dated November 3, 2015

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**DOE/NYSERDA Responses to the November 3, 2015 Citizens' Environmental Coalition et al.  
Comments on the Phase 1 Exhumation Study Plan, Revision 2, July 2015**

No.	Comment	Response
1	<p>The Agencies' original scope for the Exhumation Workgroup, while not detailed, did include items that are not adequately addressed in the Exhumation Study Plan as follows:</p> <ul style="list-style-type: none"> <li>• Alternate approaches for, costs of, and risks associated with <u>complete waste and tank exhumation</u>.</li> <li>• Viability, cost and benefit of partial exhumation of waste and removal of contamination.</li> </ul> <p>Exhumation uncertainties and benefit of pilot exhumation activities.</p>	<p>The Phase 1 Exhumation Studies are intended to evaluate a full range of potential exhumation scenarios, including both full and partial exhumation. Studies 1 and 2 involve evaluating the site's radiological inventory. Updating the inventory and evaluating uncertainties with respect to locations, radionuclide activities, and volumes of materials will produce information for planning of any exhumation scenario, including full and partial exhumation. Study 3 involves evaluation of exhumation technologies and approaches that are applicable to West Valley, and will also be useful to planning either full or partial exhumation.</p> <p>The agencies acknowledge that pilot exhumation is not addressed in the Phase 1 Exhumation Study Plan Revision 2 (Study Plan). Results of the studies outlined in the Study Plan and subsequent EXWG studies will be used to evaluate whether there are exhumation uncertainties or data needs that can be addressed only through pilot exhumation. The agencies acknowledge that estimation and evaluation of exhumation costs is not addressed in this Study Plan. The Study Plan intends to evaluate exhumation approaches and technologies at a conceptual level. For example, the group intends to evaluate how removal of different waste volumes and sections of the disposal areas would reduce inventory. Also, the group will research various potential technologies for exhumation application. In the future, as specific exhumation scenarios are formulated for further evaluation, cost estimates will be developed.</p>
2	<p>There is no plan to integrate the work of the interrelated studies, when the scientific findings could be highly useful to another workgroup.</p>	<p>The work scope to be performed as part of this Study Plan (inventory updates, statistical evaluation, and precedent project review) is not dependent on the results of studies being performed by the other Phase 1 Study (P1S) working groups. However, the results obtained from the studies performed under the Study Plan may support future studies to be performed by the EXWG and the Engineered Barriers Working</p>

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		<p>Group (EBWG). These results may also support other analyses that are not part of the P1S process, such as the development of the Supplemental Environmental Impact Statement (SEIS) and the probabilistic performance assessment (PPA) that are being prepared to satisfy National Environmental Policy Act (NEPA) and New York State Environmental Quality Act (SEQRA) requirements associated with Phase 2 decision making for the West Valley Demonstration Project (WVDP) and Western New York Nuclear Service Center (WNYNSC).</p>
3	Significance of Landslides at West Valley	<p>The EXWG was not tasked with evaluating landslides nor did the EXWG recommend that landslides be studied in this Study Plan. DOE and NYSERDA identified slope stability as a Potential Area of Study in the Guidance for Identifying and Conducting Potential Phase 1 Studies (January 2011). Whether slope stability (including landslides) will be evaluated through the Phase 1 Studies process or through the Supplemental Environmental Impact Statement (SEIS) has yet to be determined.</p>
4	Importance of Climate Change	<p>The agencies understand the importance of evaluating the effects of climate change during their Phase 2 decision making. This series of EXWG studies are focused on updating the radiological inventory at the WVDP and SDA to account for radiological decay and ingrowth; to establish a statistical relationship between existing inventories in the burial areas and field measurements of radioactivity; and a review of precedent projects at other DOE, commercial, and international sites that may be applied to the WNYNSC. Therefore, climate change effects are not specifically relevant to the studies being performed in the July 2015 Study Plan, but this information will be used to support the scoping of future studies that will evaluate full and selective exhumation scenarios where climate change will be considered. The effects of climate change will be considered in the work being performed by the P1S Erosion and Engineered Barriers Working Groups and by the Probabilistic Performance Assessment (PPA) and SEIS contractors during the implementation of their work scopes.</p>

No.	Comment	Response
5	Nature of the Study	<p>The agencies acknowledge that pilot exhumation is not addressed in the Study Plan. Results of the studies outlined in the Study Plan and subsequent EXWG studies will be used to evaluate whether there are exhumation uncertainties or data needs that can be addressed only through pilot exhumation.</p> <p>Study 3, a review of precedent exhumation projects, will be completed by the EXWG through the process established by the <i>Guidance for Identifying and Conducting Potential Phase 1 Studies</i> (January 2011). Study 3 will not be performed by a performance assessment contractor.</p>
6	Three reasons are given for the Exhumation study and its 3 components. The overall Rationale stated is questionable.	<p>The EXWG studies will not create new inventories for the disposal areas or the waste tank farm (WTF), but will instead update the existing 2000 NDA, 2002 SDA, and 2005 WTF inventories to account for radioactive decay and in-growth to years 2020, 2050, 2080, 2110, and 2140. This updated inventory data will be used to support the PPA analysis and the analyses performed in the SEIS</p> <p>The Phase 1 Exhumation Studies are intended to evaluate a full range of potential exhumation scenarios, including both full and partial exhumation (see response to Comment 1, above). Full exhumation was evaluated by the agencies as part of the Sitewide Removal Alternative in the 2010 Final Environmental Impact Statement (FEIS). The agencies will also evaluate full exhumation as part of the Sitewide Removal Alternative that will be analyzed in the SEIS.</p> <p>The studies identified in this EXWG Study Plan are not dependent on the work currently being performed by the Erosion Working Group (EWG) or any other entity. However, the decommissioning alternatives to be analyzed in the SEIS will utilize the data and findings developed by the P1S working groups and other contractors performing scientific investigations for the DOE and NYSERDA.</p>
7	The Statement of the Problem & Data Quality Objectives are inadequate or missing. A clear comprehensive statement of	The agencies feel that the problem statement and the Data Quality Objectives (DQOs) as presented in the EXWG Study Plan address the



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	the problem is essential to derive goals and adequate Data Quality Objectives.	objectives of the studies identified in the Study Plan. Section 1.A states that <i>"the EXWG has focused its initial studies on the following objectives: updating the inventory; projecting the inventory estimates into the future; conducting additional characterization to determine whether the inventory can be confirmed with field measurements; and providing information about specific locations, radionuclide activities, and volumes of materials that may be exhumed under various selective exhumation scenarios"</i> .
8	The proposed sampling is identified as field confirmation of the Waste Inventory (p. 1), but in fact <u>no waste samples are to be analyzed</u> .	The field studies described as Study 2 in the Study Plan are not intended to confirm the inventory, rather the goal is to develop empirical relationships between field measurements and the documented inventories through primarily nonintrusive methods. Given results of the planned studies and potential subsequent EXWG studies, the agencies and the EXWG will evaluate whether there are exhumation uncertainties or data needs that can be addressed only through more intrusive activities such as waste sampling or pilot exhumation.
9	Full Exhumation is very different from selective exhumation and should have been thoroughly discussed.	The Phase 1 Exhumation Studies are intended to evaluate a full range of potential exhumation scenarios, including both full and partial exhumation (see response to Comment 1, above). Full exhumation was also evaluated by DOE and NYSERDA as part of the Sitewide Removal Alternative in the 2010 FEIS, and will also be analyzed as part of a Sitewide Removal Alternative in the upcoming SEIS to support Phase 2 decision making.
10	The Waste Tank Farm (WTF) and its huge inventory of radionuclides is not being evaluated at all in this Exhumation Study. It is being ignored or dismissed.	The inventory of the Waste Tank Farm (WTF) is being updated to account for radioactive decay and ingrowth as discussed in the Study Plan. This updated inventory information will be used to support future EXWG studies that will evaluate full and partial exhumation scenarios for the WTF. The SEIS will also analyze full exhumation of the WTF as part of the Sitewide Removal Alternative and may analyze some type of partial removal. The 2011 sampling results for Tank 8D-4 have been provided to the EXWG. The 18 radionuclides to be evaluated in the WTF are identified in Exhibit II-2b on page 14 of the Study Plan and are

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		<p>consistent with the WTF inventory evaluated in 2005. The inventory associated with the 17 principal radionuclides evaluated in the URS 2002 SDA study will be updated as part of this EXWG study.</p>
11	<p>In general the language in the Study plan does not reflect a scientific investigation.</p>	<p>The agencies disagree with your assessment. The SME's that prepared the study plan have considerable experience planning, performing, and completing similar scientific investigations for commercial, academic, and governmental clients including the DOE.</p> <p>The Technical Implementation Plans (TIPs) to be developed by the EXWG largely address procedural, programmatic, and contractual issues necessary for identifying, safety and training requirements, costs, and schedules. The TIPs do not advance or change the investigative approach from what is detailed in the Study Plan. As such, the agencies do not plan to discuss or consider comments on the TIPs.</p>
12	<p>Field Study and Sampling-- Is the Design of the Study adequate to answer the questions posed?</p>	<p>The planned studies are intended as an approach to answer several topical questions related to both full and partial exhumation scenarios. As the study plan indicates, results of these studies may inform recommendations of future studies to better or more completely answer the topical questions (particularly as regarding specific exhumation scenarios, exhumation cost estimates, and pilot exhumation). The planned studies are not intended to provide the complete characterization necessary to support either exhumation or closure of site facilities.</p> <p>At the February 24, 2016 Quarterly Public Meeting, the EXWG acknowledged some of the limitations of the field studies detailed in the Study Plan, including the fact that transuranics would not be directly measured. Based on results of instrument response modeling, the EXWG has concluded that the field studies, as originally planned, were not likely to produce viable results. As such, the EXWG is reconsidering these field studies. As changes are potentially made to the investigative approach, we would share these changes in the form of an addendum to the Study Plan.</p>

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13	The Field Study is problematic and the results should not be used to alter previous inventories.	As discussed in the Study Plan, the field investigation in Study 2 is being performed to establish whether a statistical relationship exists between the estimated inventories in the NDA and SDA and field measurements of activity. The EXWG acknowledges the difficulty in detecting long-lived transuranic radionuclides and proposes to target gamma and neutron-emitting radionuclides that are not easily shielded. The working assumption is if there is a statistical correlation between gamma/neutron activity and the field investigation results, then there is also a corresponding statistical correlation for the estimated transuranic radionuclide inventory in the NDA and SDA. Results of the field study will not be used to alter existing inventories nor will a new inventory without transuranic radionuclides be developed.
14	A secret Performance Assessment will compromise scientific integrity and prevent public participation.	<p>The P1S process has not been altered for this Study Plan, and there is no “secret” performance assessment or “secret” calculations and modeling being performed as part of the EXWG’s Study Plan.</p> <p>In early 2014, the DOE and NYSERDA briefed the public, the USNRC, and the USEPA on their path forward for the Phase 2 decision making process. This path forward was to support the NEPA/SEQRA process and included the preparation of a PPA that would be used to support the development of an SEIS. The NEPA and SEQRA processes have provisions for ensuring transparency and obtaining public input that are different from that established by the agencies in the <i>Guidance for Identifying and Conducting Potential Phase 1 Studies</i> (January 2011). Since the PPA and SEIS are not part of the P1S, the P1S’ Subject-Matter Experts (SMEs) and Independent Scientific Panel will not be consulted during the development of the PPA and SEIS.</p>
15	Comparative Evaluation and Inventory Selection	There is no mention of “selection of current inventories” for the Phase 1 Study process on page 8. Page 8 does state that the goal of the study is to “ <i>Determine the degree to which previously derived estimates of the waste inventories are consistent with the current inventories selected for use in the Phase 1 Study process.</i> ” The original scope for this EXWG study was to update the 2000 and 2002 inventories for the



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		<p>NDA and SDA, and the 2005 inventory for the WTF to account for decay and in-growth. In response to stakeholder concerns raised during the November 2013 Quarterly Public Meeting, the scope of this study was expanded to include a comparison of previous inventory estimates for the NDA and SDA. The 17 principal radionuclides proposed for evaluation in this study account for more than 99% of the total estimated radiological inventory in the disposal areas regardless of radioactive decay type. Curium isotopes were not included in the current EXWG evaluation as the total estimated curium inventory in the NDA and SDA was less than 0.01% of the total estimated radionuclide inventory of the NDA and SDA.</p> <p>At the February 24, 2016 Quarterly Public Meeting, the EXWG presented preliminary results of their evaluation of the existing inventories. The EXWG found there to be generally good agreement on waste volumes across the inventories. The EXWG also investigated some discrepancies and outliers with respect to waste activity and was generally able to identify the reason for these differences between the inventories. The EXWG's evaluation provides information that supports their selection of specific inventory records for further exhumation studies.</p>
16	Applying Inventories to Selective Removal Scenarios Task 1.3	<p>The EXWG intends to evaluate a range of exhumation scenarios "to provide DOE and NYSERDA with supplemental information on the comparative value of various removal scenarios." This information will be useful in evaluating conceptual exhumation approaches, technologies, etc. We would like to stress that exhumation scenarios that may be evaluated by the EXWG do not constitute site alternatives to be evaluated through the Phase 2 decisionmaking process (i.e., the SEIS). These alternatives will be developed by the agencies and evaluated within the NEPA/SEQRA process. Contrary to what is stated in Task 1.3, the probabilistic performance assessment contractor is not involved in supporting the work scope in the EXWG Study Plan.</p>

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17	Study 3: Review of Precedent Projects at other sites	<p>The DQO process requires specification of performance criteria that are quantitative criteria. Since Task 3 relies on expert opinion and experience, there are no quantitative performance criteria that can be applied to this work scope. The agencies have agreed to add the kerosene mitigation project that was performed at the WVDP to the list of precedent projects being evaluated as part of Study 3. When a final investigation report is available for the October 2015 event at the Beatty, Nevada LLW disposal facility, the agencies will review the report and identify any information that may be relevant to the WVDP and WNYNSC. The agencies have reviewed the accident investigation report for the February 2014 events at the Waste Isolation Pilot Plant and have implemented appropriate actions at the WVDP.</p>
18	The Exhumation Study is largely a preliminary document that will be developed as it moves forward via technical implementation plans and task reports.	<p>The agencies will provide interim and final reports on the P1S website and provide technical presentations to the public at the Quarterly Public Meetings.</p>
19	Documents and Source Materials should be made available to the public.	<p>Reference documents used to support the precedent sites study will be made available on the P1S website. However, the agencies are not familiar with the "new spreadsheet recently compiled by Dr. Wild." Ralph Wild has not actively supported the EXWG since August 2014.</p>
20	Full exhumation should be fully studied.	<p>The Phase 1 Exhumation Studies are intended to evaluate a full range of potential exhumation scenarios, including both full and partial exhumation (see response to Comment 1, above).</p> <p>The agencies analyzed "full exhumation" as part of the Sitewide Removal Alternative in the 2010 FEIS and will also analyze the Sitewide Removal Alternative in the SEIS.</p>