



**Department of Energy**  
West Valley Demonstration Project  
10282 Rock Springs Road  
West Valley, NY 14171-9799

October 21, 2010

Mr. Paul J. Bembia, Director  
New York State Energy Research  
and Development Authority  
10282 Rock Springs Road  
West Valley, NY 14171-9799

**SUBJECT:** Responses to NYSERDA Comments on the Phase 1 Characterization Sampling and Analysis Plan (CSAP) for the West Valley Demonstration Project (WVDP)

**REFERENCE:** Letter (102846), P. J. Bembia to B. C. Bower, "New York State Energy Research and Development Authority (NYSERDA) Comments on the Phase 1 Characterization Sampling and Analysis Plan for the West Valley Demonstration Project," dated April 7, 2010

Dear Mr. Bembia:

The U.S. Department of Energy (DOE) acknowledges NYSERDA's review and comments on the Phase 1 CSAP for the WVDP. To that end, the DOE-WVDP is providing the attached comment response matrix to your April 2010 questions and comments (Attachment A).

Should you have any questions or comments regarding this transmittal, please contact Moira Maloney of my staff at (716) 942-4255.

Sincerely,

  
Bryan C. Bower, Director  
West Valley Demonstration Project

**Enclosure:** Attachment A - Responses to NYSERDA Comments on the Phase 1 Characterization Sampling and Analysis Plan (CSAP) for the WVDP

cc: M. S. Bellis, DOE-WVDP, AC-DOE, w/enc.  
M. N. Maloney, DOE-WVDP, AC-DOE, w/enc.  
K. I. McConnell, NRC, w/enc.  
P. L. Piciulo, Ph.D., NYSERDA, WV-NYS, w/enc.

MNM:103210 - 450.4

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**Attachment A**  
**Responses to NYSERDA Comments on the Phase 1 Characterization Sampling and Analysis Plan (CSAP) for the WVDP**

#	<i>Page/Section Paragraph/Line/Bullet</i>	<i>Comment</i>	<i>Reviewers Proposed Resolution (If your comment is a point of clarification it probably doesn't need a proposed resolution.)</i>
1.	General Comment	The Characterization Sampling and Analysis Plan (Plan) uses the terms "surface soil," "surficial soil," "subsurface soil," and "buried soil." The use of the term surface soil in the Plan should be consistent with usage in the Phase 1 Decommissioning Plan (DP). Specifically, the DP defines surface soil as the depth interval 0-1 m. Care should also be taken when using the term subsurface soil as the DP defines subsurface soil as soil deeper than 1 m, while the Section 6.6 of the Plan defines buried contamination as soil deeper than 1 m. The interchange of the terms can create confusion.	Consistent use of the terms "surface soil," "surficial soil," "subsurface soil," and "buried soil" throughout the Plan will avoid confusion.  <i>Response: Text within the CSAP will be revised so that references to surface and subsurface soils are clearly defined and consistent in terminology.</i>
2.	5/Sec.2.1/Para.1/Line 2	The sentence reads " <i>The level and vertical/lateral distribution of contamination in Erdman Brook and Franks Creek sediments with the WVDP premises are not known.</i> " Change the word "with" to "within."	Correct the typographical error.  <i>Response: Typographical error will be corrected.</i>
3.	6/Bullet #14/Line 5	The text states that if the subsurface contamination data collected as part of the Permeable Treatment Wall (PTW) project " <i>are considered insufficient for the WMA 1 and WMA 2 barrier wall design, then additional subsurface data will be collected from these areas.</i> " What criteria will be used to determine whether the data are sufficient (or insufficient) for the barrier-wall design?	Describe the process and/or criteria used to determine whether PTW contamination data are sufficient to support barrier wall designs.  <i>Response: The barrier wall designs described in the Phase 1 DP are conceptual. Detailed engineering designs will need to be developed by an engineering contractor. Depending on the specific requirements of the detailed designs, the contractor may determine that existing data are insufficient and request additional data collection. Text will be added to explicitly state that data sufficiency would be determined by the contractor responsible for the design of the walls.</i>
4.	8/Sect.2.3/Para.3/First Bullet	The description of Waste Management Area (WMA) 2 refers to the excavation of Lagoons 1, 2 and 3; however, Lagoons 4 and 5 also reside within the scope of Phase 1 decommissioning work.	Add language to the WMA 2 description to more closely follow the scope discussed in the Phase 1 DP.  <i>Response: Text will be added to clarify that Lagoons 4 and 5 will also be addressed by Phase 1 activities.</i>
5.	9/Sec.2.3/Para.4/Fourth Bullet	Briefly describe the construction activities planned for the high-level waste canister storage facility within WMA 6.	Insert language pertaining to the construction activities that will take place within WMA 6.  <i>Response: Text will be added to describe the construction activities planned for the high-level waste canister storage facility in WMA 6.</i>

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6.	15/Sec.3.3/Line 1	Will the Quality Assurance Project Plan be provided to NRC for review and comment?	<p>Respond to question.</p> <p><i>Response: Yes, the Quality Assurance Project Plan for the proposed Phase 1 CSAP work will be provided to NRC for review as described in Section 1.6 of the Phase 1 DP. Submission of the QAPP for NRC review will also resolve NRC TER comment #13:</i></p> <p><i>"The Phase 1 DP provides an overview of the QA program noting that the information is generic because contractual arrangements for the proposed decommissioning have not yet been made. Section 1.6 of the Phase 1 DP states that a QA Project Plan will be developed and forwarded in the future. NRC will review the elements of the QA Project Plan applicable to data and information collected in conjunction with planned characterization."</i></p>
7.	24/Table 2	Verify the data presented in "Table 2: ROI Samples Results from Three Locations (pCi/g)." Specifically, the values identified for GP 78 and GP 30 appear to be in error for Sr-90. Also, include the other Geoprobe locations where expanded Radionuclides of Interest (ROI) exist from the 1998 sampling effort, or provide the technical rationale as to why these data locations were omitted.	<p>Verify and revise the data presented to Table 2. Include other Geoprobe locations where expanded ROI sample results exist.</p> <p><i>Response: The data presented in Table 2 have been checked and incorrect values will be corrected. The discussion of Table 2 will be modified to reflect the corrections. None of the conclusions based on Table 2 data will be affected. There are no other Geoprobe locations with samples that cover as complete a set of radionuclides as these three; there are other Geoprobe locations with samples with expanded radionuclide analyte lists, but these lists typically are missing one or more key radionuclides, making an evaluation of relative dose contributions across all 18 ROI problematic.</i></p>
8.	29/Sect. 6.5/Third Bullet	Section 6.5 discusses the process that will be used to determine the extent of surface soil contamination. Specifically, if areas are identified from the gamma walkover survey (GWS) data that clearly indicate surface contamination above the cleanup guidance (CG) for the entire area/unit (i.e., CG <sub>w</sub> ), additional sampling will be conducted to define the areas of elevated contamination and the lateral extent of this contamination. This bullet states that "very limited sampling" will be conducted to confirm GWS findings.	<p>Clarify the term "very limited sampling." Will samples be collected at 0-15 cm and 0-1 m? Describe how the sampling process will ensure that the extent of contamination exceeding CG<sub>w</sub> has been identified for the area/unit.</p> <p><i>Response: "Very limited sampling" may be as few as one sample location representing the highest gross activity levels. Samples would be from both the 0-15 cm interval and 0-1 m</i></p>

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			<p>interval. Additional text will be added for clarification. The purpose of this sampling is to verify whether contamination above CGw values exists, to identify the ROIs present, and to provide some sense for the vertical extent of contamination. The sampling described by this bullet applies to areas where gamma walkover survey (GWS) data alone give a high level of confidence that contamination issues above CGw requirements are present.</p> <p>The issue of bounding contamination is discussed in detail in a subsequent bullet. Sampling to determine the bounds of contamination would occur in areas where GWS data are not conclusive; these areas will be systematically sampled.</p>
9.	30/Sect. 6.5/First Bullet/Line 3	In addition to areas such as hardstands and paved areas, GWS data may be inconclusive in areas where the soil has been reworked or contamination may have been covered by clean soil.	<p>Revise text to read "areas where surface cover limits the utility of GWS such as hardstands, paved areas, <u>and areas where surface soils have been reworked or covered.</u>"</p> <p><i>Response: Change will be made as requested.</i></p>
10.	31/Sec.6.5/Second Bullet/Line 2	The second line states that exceptions to using the surface soil CG requirements are "well-defined portions of Erdman Brook and Franks Creek within the WVDP premises." However, the text never provides alternative cleanup criteria for the portions of Erdman Brook and Franks Creek. Presumably, as per the text, the "sediment" CG requirements would apply to these exceptions.	<p>Define the exact cleanup criteria that would apply to the "well-defined portions of Erdman and Franks within the WVDP premises."</p> <p><i>Response: Text will be added to clarify that the Phase 1 DP sediment CG requirements apply for well-defined portions of Erdman Brook and Franks Creek within the WVDP premises.</i></p>
11.	31/Sect.6.5/Para.2/Second Bullet	The description for drainage features does not address the old sewage treatment drainage that is identified elsewhere in the document.	<p>Clarify how the old sewage treatment drainage would be addressed under the Plan.</p> <p><i>Response: The description of sediments is intended to address drainage ditches, streambeds, etc. that currently exist as surface features. The old sewage treatment drainage is buried; there may well be other historical, contaminated drainage features elsewhere on the site that are also buried. These are treated generically as subsurface soil concerns, and are addressed specifically in the relevant appendices.</i></p>
12.	31/Sect.6.5/Para.2/Second Bullet/Last Line	A "0-1 sample" is described without providing any units.	Insert the correct units (meters).

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13.	34/Sect.6.6/Fifth Bullet	This bullet states that "... the initial soil samples from a location will be analyzed for all 18 ROIs." In addition, the additional 12 potential ROIs will be analyzed "in selected cases." Define the term "selected cases" and clarify what criteria will be used to determine if additional analyses are performed.	<p><i>Response: Units will be added.</i></p> <p>Clarify how "selected cases" are chosen and identify what criteria are used to determine if additional analyses are to be performed. A discussion of the criteria used in the selection process would assist the reviewer in understanding the basis for this statement. For example, are the cases selected based on process knowledge of the activities performed in the area/unit, etc.?</p> <p><i>Response: Section 6.2 provides the rationale for selecting which samples should be analyzed for the additional 12 potential ROIs. A reference to Section 6.2 will be added here.</i></p>
14.	37/Lines 1-4	It is unclear why only one discrete sample will be collected for the stream area extending from the confluence of Erdman Brook and Franks Creek to the WVDP fence line, since the length of that area is about 200 ft long. Also, if the sample yields a result above background, wouldn't it be consistent with the balance of the creek sampling to collect and analyze a sample from the 0 to 1 m depth interval?	<p>Provide the rationale as to why only one discrete sample is being collected as being representative of the sediment contamination in the specified area of the stream, and why a sample would not be collected at depth if the surface sample is above background. Also, clarify the criteria to be used for selecting the sample location, and explain how this sample location is representative of heaviest sediment contamination in the 200-ft-long area.</p> <p><i>Response: Both biased and systematic sampling is proposed for this stretch; see Appendix J for additional detail. One biased sample will be collected from the highest GWS value observed. However, samples at minimum every 30 meters will also be collected systematically from this stretch.</i></p>
15.	40/Sect.6.8/First Bullet	This bullet states that "If buried infrastructure of potential concern is identified that intersects the planned WMA 1 or WMA 2 excavation footprints, one of the trenches used to expose the buried infrastructure will be along the planned excavation boundary and evaluated for the presence of adjacent soil contamination."	<p>Revise this bullet and expand the lateral/vertical extent of these trenches to outside the WMA 1 or WMA 2 excavation footprint to ensure that all potential contamination along this buried infrastructure has been identified.</p> <p><i>Response: Additional trenching is planned for buried infrastructure outside the WMA 1 and WMA 2 footprints; see Appendices A and B for additional detail. In general, a minimum of three trench locations per buried infrastructure feature are required outside of the proposed WMA 1 and WMA 2 excavation footprints. In the event that contamination is encountered, additional trenching/sampling will be</i></p>

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			conducted until the lateral extent is bounded, both along and perpendicular to the infrastructure.
16.	40/Sect.6.8/Para.1/Line 2	The following sentence is awkward: "... contamination does exist of the opposite the excavation footprint for slurry wall footprints."	Correct the typographical error.  Response: Sentence will be re-written to clarify.
17.	41/Sect.6.10	Contamination status of all soils that may be affected by Phase 1 construction needs to be determined. Specifically, prior to using an area as a soils lay-down area, which would bury the existing land surface, contamination status should be determined and documented for surface soils greater than 15 cm as well as subsurface soils.	Revise this section to include evaluation of subsurface soils and surface soils greater than 15 cm to determine contamination status prior to use as a lay-down area supporting construction needs.  Response: This section will be modified to be consistent with the Sections 6.5 and 6.6 of the CSAP. Specifically, surface soil sampling will include samples representative of both the 0-15 cm and 0-1 m depth intervals. Subsurface sampling (sampling deeper than one meter) will take place if there is a reason to suspect that contamination exists at depth or if surface sampling encounters contamination impacts that potentially extend to depths greater than one meter.
18.	50/Sect.7.1/Para.3/Line 1	Provide an approximate slope angle (45 degrees?) for the southern wall of WMA 2 similar to the discussion of the WMA 1 sides.	Provide an approximate slope angle for the southern side of the WMA 2 excavation.  Response: Text will be modified to indicate that a slope angle of 45 degrees is expected.
19.	52/Sect.7.1/Para.2	This section should include a description of the actions that will be taken if contamination above the cleanup standards is identified in the sloped soil walls of the excavation in WMA 1. Specifically, if contamination is identified, but the full lateral extent of the contamination is unknown and limited due to the sheet pilings, the potential for lateral contamination should be documented and continued in the Phase 2 DP.	Provide language in this section that identifies how lateral contamination, if found in WMA 1 during Phase 1 activities, will be documented for inclusion in the Phase 2 DP process.  Response: The following paragraph will be added: "In the case of sloped walls within the WMA 1 or 2 excavations, there is the possibility that contamination at levels of potential concern may be encountered that extends beyond the practicable limits of excavation, and potentially beyond the sheet piling walls. In these instances, soil sampling from the sloped surface will take place to document the contamination status of soils adjacent to sheet piling within the sloped surface. Additional subsurface soil sampling may take place as part of Phase 1 activities in locations outside of the sheet piling to determine and document

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			the lateral extent of the observed contamination.”
20.	58/Sec.8.2/Third bullet;59/Sect.8.3/Para.1	Clarification is needed regarding the 20 composite samples (10 at 15-cm soil depth and 10 at the 1-m depth). Specifically, Section 8.2 identifies that one sample from each of the original sample depth locations will be selected and analyzed at random for the 18 ROIs and the additional 12 ROIs; yet Section 8.3 states that only the 0-15 cm depth discrete sample will be analyzed at random for the 18 ROIs and the additional 12 ROIs.	Revise Section 8.3 to be consistent with Section 8.2, including the 15 cm – 1 m depth discrete random sample for these analyses.  <i>Response: Section 8.3 will be modified as requested.</i>
21.	59/Sect.8.3/Para.1	This section states that surface soil sample results are considered “inconsistent with background” if the activity concentrations exceed their 95% Upper Tolerance Level (UTL) “by more than three times the reported error associated with the result.” Using the 95% UTL in addition to three times the uncertainty for the anthropogenic surface soil radionuclides, could potentially create much larger background concentration levels for the non-naturally occurring radionuclides.	Provide the technical rationale for using the 95% UTL in addition to three times the uncertainty for the anthropogenic surface soil radionuclides.  <i>Response: Throughout the CSAP there are references to determining whether sample results are consistent with background conditions. An example is determining whether sampling to depth should be pursued in response to surface soil results that indicate contamination. The goal of the described comparison is to minimize false positive results (i.e., flagging a sample as having impacts for one or more radionuclides when in fact conditions are at background levels) while still confidently identifying contamination when it truly is present. In general, a 95%UTL comparison should provide a false positive rate that is less than 5% in the case where there is only one contaminant of concern. However, false positive rates rapidly increase when a background comparison includes multiple contaminants of potential interest, which is the case for WVDP. Adding the additional 3x uncertainty requirement is an attempt to provide acceptable false positive rates for comparisons involving multiple radionuclides. In almost all cases, this rule would still allow identification of radionuclides as being inconsistent with background at levels well below the Phase 1 surface soil DCGL<sub>w</sub> values. The exceptions to this are I-129 and Np-237 – these two radionuclides are simply a significant analytical challenge with the Phase 1 DCGL<sub>w</sub> values.</i>

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22.	83/Sect.11.5/First Bullet	Additional information regarding how each control chart is maintained should be included in the text; specifically, a description of how biased conditions, trends and out-of-control situations, etc. are documented.	<p>Clarify how each control chart will be maintained and describe what documentation will be included for each detector.</p> <p><i>Response: The following paragraph has been added to the beginning of Section 11.5 to clarify the construction and use of control charts:</i></p> <p><i>“In several cases control charts are used to monitor detector performance. In general control charts will be developed by obtaining sequential detector readings sufficient to develop average responses and to estimate the variability associated with those responses. The variability, as measured by the standard deviation, will be used to construct two and three standard deviation error bars for the control charts. As described in the subsequent bullets, one or more daily controlled measurements would be obtained and added to the control charts. Daily readings that are more than two standard deviations away from the mean response would require a second measurement. If the second measurement also is more than two standard deviations away from the mean response or the initial measurement was more than three standard deviations from the mean response, the detector would be evaluated for evidence of potential problems and corrective actions taken as necessary before routine use of the detector is resumed.”</i></p>
23.	87/Table 5	Target sensitivity values for plutonium are incorrect in the footnotes. The notes state that the reported value in the table is “25% of background for naturally occurring radionuclides.” A naturally occurring background value does not apply to plutonium; the correct footnote should be “2” or 10% of the most restrictive radionuclide-specific cleanup goal.	<p>Amend the references to footnotes for the plutonium values listed in Table 5. Also, parentheses are missing for some footnotes in the Table.</p> <p><i>Response: Corrections to Table 5 will be made as requested.</i></p>
24.	89/Sect.13	Will management of the characterization data include GIS mapping similar to that described in Section 5.0 for the buried infrastructure inventory?	<p>Revise the text to more clearly describe characterization data storage/management.</p> <p><i>Response: Text will be added to Section 13 to indicate that GIS mapping will be used in conjunction with databases to manage, interpret, and present information generated by CSAP</i></p>

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			activities.
25.	92/Sect.14.0/Para.1	Clarification of the corrective actions that will be conducted if performance falls outside of expected ranges is needed for this section.	<p>Describe the types of corrective actions that will be undertaken when "performance falls outside of expected ranges." In addition, how is the definition of performance falling outside of expected ranges being determined?</p> <p><i>Response: The following text has been added to the paragraph ending with the quote noted above:</i></p> <p><i>"Response checks will make use of control charts as described in Section 11.5. Corrective actions can include a variety of actions depending on the nature of the problem, and may include replacing a detector, re-collecting data that may be suspect because of quality assurance concerns, modifying data collection protocols to mitigate data problems that may have environmental or temporal components, etc."</i></p>
26.	General Comment	<p>The CG<sub>w</sub> Sampling protocol presented in the Surface Soil Sampling sections of the appendices appears to be identical for all except WMA 3. Soil samples are collected at two depths (0-15 cm and 0-1 m) when the GWS results indicate surface soil contamination levels likely exceed surface soil CG<sub>w</sub>. However, when GWS results indicate contamination levels above background but less than CG<sub>w</sub>, and when it is unclear that the contamination levels indicated by the GWS results exceed CG<sub>w</sub>, only a 5-increment composite soil sample from 0-15 cm depth interval is collected. The composite sample from a depth of 0-15 cm does not meet the definition of surface soil presented in the DP and Section 6.5 of the Plan. How can you compare the contamination levels of the composite soil sample with the CG<sub>w</sub> values derived for surface soil defined as being the interval from 0-1 m? Section 6.5 of the Plan states that the 0-15 cm depth sample would be collected to: (1) assess direct exposure dose issues and (2) to limit dilutions; yet it also states that a two-sample per location requirement would apply to all locations except "areas where there is no evidence of historical contamination." The collection of soil samples from the two-</p>	<p>Reconcile the fact that surface soil is defined in the Phase 1 DP as the interval from 0-1 m while this Plan calls for locations where only the top 15 cm are sampled. Revise the text to be consistent when applying the two-sample rule – (i.e., where two samples would be collected from the top 15 cm and the interval from 0-1 m). Procedures for sampling in areas where the surface soil was disturbed or covered with clean soil must address soils in the 0-1 m depth interval.</p> <p><i>Response: The rationale for relying strictly on 0-15 cm depth intervals for certain portions of the site is that this would only be done when "...there is no evidence of historical surface soil disruption and no reason to be concerned about subsurface soil contamination." In these areas the assumption is that if GWS data indicate impacts, those impacts would be limited to the top few inches of soil. In this scenario, comparing 0-15 cm data to a DCGL derived for 0-1m would be conservative. Note that for these areas CSAP data would be, by definition, incomplete for FSS purposes. If no significant contamination was observed in CSAP surface soil samples and the area ready for FSS data</i></p>

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		depth intervals would be particularly important in those areas where the surface soil was reworked or where potential contamination may have been covered by clean soil.	collection, 0-1 m samples would be collected to complement the existing 0-15 cm data set.
27.	General Comment	In Appendices A through J of the Plan (all WMAs), the section entitled Required Laboratory Analyses states: "A select portion of the samples . . . may be analyzed for the additional radionuclides of potential interest." What criteria will be used to select the samples for additional analysis? Also, for WMA 1, 2, and 3, the Plan states: "In addition, ten percent of the soil samples . . . will also be analyzed for the 12 radionuclides of potential interest..." The requirement for analyzing 10% of soil samples for the 12 radionuclides of potential interest is not included for WMA 4, 5, 6, 7, 9, 10, and 12.	Provide an explanation of why analysis of 10% of soil samples for the 12 radionuclides of potential interest is not required for WMA 4, 5, 6, 7, 9, 10, and 12.  <i>Response: Additional clarifying text will be added to Section 6.2 to address this comment. The 10% rule is used for WMA 1, WMA 2, and WMA 3 because of the known relatively heavy surface and subsurface contamination that potentially is present across those WMAs. The 10% rule is not used for the other WMAs because contamination releases in those areas would have been much more spatially isolated and distinct; looking for the presence of the 12 secondary ROIs in those settings will be done much more effectively by targeting locations where evidence (e.g., historical information, GWS results, visual evidence, etc.) suggests significant contamination is most likely to exist. Note that for all WMAs evaluated for the 12 secondary ROIs, if a sample encounters one or more of these ROIs at levels considered potentially significant, then <u>all</u> samples from that WMA also will be analyzed for the encountered radionuclide(s).</i>
28.	General Comment	For consistency purposes, refer to Section 2.3 of the Phase 1 DP and Chapter 3.11 of the Final Environmental Impact Statement (FEIS) when discussing known or suspected releases in each of the WMAs.	To provide consistent language when discussing known or suspected releases, the Phase I DP and the FEIS should be reviewed, and the information contained therein incorporated into this section of the Plan.  <i>Response: All of the CSAP appendices will be revised to provide a more explicit and referenced linkage to the descriptions of known or suspected releases found in the Phase 1 DP and the FEIS.</i>
<b>Appendix A Comments</b>			
29.	A-1/Sect.A.1/Para.2	The first sentence states that "Descriptions of the various features of <u>WMA 2</u> follow and are taken from the Phase 1 DP." This	Correct the error in the text.

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		statement should apply to WMA 1, not WMA 2.	<i>Response: Text will be corrected.</i>
30.	A-4/Sect.A.4/Para.2	The statement that <i>"This leak also contributed to sewage treatment system contamination"</i> is misleading. While the Line 7P-240 failure may have contributed to this contamination, the failure of the sanitary sewer line (located south of the Line 7P-240) is the cause of this contamination. There were multiple leaks or spills in the area that likely contributed to the contamination that entered the failed sanitary sewer line.	Revise this statement attributing the sewage treatment system contamination to the failure of the sanitary sewer line.  <i>Response: Text will be corrected.</i>
31.	A-9/Sect.A.9.1./Last Sentence	The last sentence in this paragraph should be amended to state ". . . wastewater lines as well as buried utilities."	Correct the grammatical error.  <i>Response: Text will be corrected.</i>
32.	A-10/Sect.A.9.3/Second Bullet	For the CGw sampling, the analytes are not explicitly identified. Under the previous bullet for <i>Hot Spots</i> (GL <sub>enc</sub> ), the samples are analyzed for the 12 potential radionuclides as well as the 18 ROIs. The description for CGw sampling is silent on the appropriate analyte list.	Add additional language under this bullet for the list of radionuclides.  <i>Response: Section A.9.7 specifies required analytics. Certain sections explicitly call out analysis requirements for the 12 secondary ROIs – hence the hot spot reference to required analytics. No change will be made to the text.</i>
33.	A-10/Sect.A.9.3	Areas in WMA 1 have been reworked or covered with soil. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CGw Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  <i>Response: The intent was to collect 0-1m deep soil samples as described in the subsequent paragraphs on subsurface sampling; the text for surface soil sampling will be changed to make it clear that all accessible areas outside the footprint of the planned WMA 1 excavation will have surface soil samples extending to a depth of 1m collected on a 20 m grid.</i>
34.	A-12/Sect.A.9.4/First Bullet	What is the basis for cutting off the subsurface soil sampling under paved areas at 1 m? For reasons already identified in this Plan (e.g., past practices of placing clean fill over construction areas and the spreading of the North Plateau Groundwater Plume), it seems plausible that contamination could be found at depths greater than 1 m beneath paved areas in WMA 1.	Provide the technical rationale for limiting subsurface soil sampling to depths of 1 m in paved areas of WMA 1.  <i>Response: The "Additional Contingencies" part of this section specifies that deeper sampling will be required if any 0-1m sample provides results exceeding background conditions. No change will be made to the text.</i>

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35.	A-12/Sect.A.9.4	Under the section describing subsurface soil sampling, there does not appear to be a defined methodology for sampling the area surrounding the foundation pilings in WMA 1. The Plan discusses subsurface areas below paving, sampling for waste characterization, and subsurface sampling along the boundaries of the excavation, but no methodology is provided for assessing potential contaminants that may have traveled down along the foundation pilings (of the Main Plant), and into the underlying Lavery Till and Kent Reccessional. Section A.7 states that the pilings will be evaluated during excavation, but no further details are provided.	Identify the process for assessing the contamination once the foundation pilings are exposed. As with the buried infrastructure, little is known about the pilings until excavation has begun.  <i>Response: The scope of the appendices is to describe data collection activities for each WMA to be conducted prior to the onset of remediation. Characterization work related to the foundation pilings in WMA 1 is part of the excavation support data collection effort and is described in detail in Section 7.1. No change will be made to the text.</i>
36.	A-13/Sect.A.9.4/Second Bullet/Last Sentence	The last sentence states that that these data will be used "to estimate waste stream volumes resulting from the excavation of WMA 2." Appendix A should be referring to WMA 1 (not WMA 2).	Correct the error in the text.  <i>Response: Error will be corrected.</i>
37.	A-14/Sect.A.9.4/Additional Contingencies	Under the first sub-bullet, the Plan states that "if any 0-15 cm surface soil sample result indicates contamination impacts above background levels and there was not a 0-1 m sample collected from that location, a 0-1 m sample will be collected from that location following the protocols used for the original 0-15 cm surface soil sample." This statement implies that there could be a scenario where a 0-15 cm sample is collected, and if no contamination is found, then a 0-1 m sample will not be collected. With the extensive historical information regarding reworking of soils for construction activities in WMA 1, this sampling method, which may be suitable for undisturbed portions of the site in WMAs 4, 10 and 12, seems inappropriate for WMA 1.	Explain why it is appropriate to collect samples from the top 15 cm of soil in areas that are clearly disturbed from past construction and soil management activities.  <i>Response: Please see response to Comment #33.</i>
38.	A-15/Sect.A.9.5/First Bullet	The first sentence under this bullet should be amended as follows: "Three locations along each piece of buried infrastructure.... "	Correct grammatical error  <i>Response: Error will be corrected.</i>
39.	A-43/Figure A.23	While soil core locations for the Sheet Piling Footprint Characterization are depicted in Figure A.23, there is no similar depiction of the soil core locations for the Slurry Wall Footprint Characterization on the northern and eastern sides of WMA 1.	Since a description of the Slurry Wall Footprint Characterization is included in Section A.9.4, revise Figure A.23 to show sampling locations for the Slurry Wall.  <i>Response: Figure A.23 will be revised as requested.</i>

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<b>Appendix B Comments</b>			
40.	B-2/Sect.B.1/First Bullet	Clarify that the materials exhumed from WMA 5 (i.e., the Old Hardstand) were used as fill or Lagoon 1. Specifically, add contaminated asphalt to the debris description that was used as fill in Lagoon 1.	Include contaminated asphalt in the description of the materials used to fill Lagoon 1.  <i>Response: Text will be added to indicate that contaminated asphalt also was used to fill Lagoon 1.</i>
41.	B-2/Sect.B.1/Second Bullet	To be consistent with the descriptions provided for Lagoons 1 and 3, include language that Lagoon 2 was fed directly by Lagoon 1 and contains contaminated sediments from the 1984 Lagoon 1 Closure.	Amend the language describing Lagoon 2.  <i>Response: Text will be modified as requested.</i>
42.	B-6/Sect.B.1/Continued Bullet	Include language related to the current use of the leachate transfer pipeline. Specifically, that the pipeline currently transfers liquids collected in the NRC-Licensed Disposal Area (NDA) Interceptor Trench to Lagoon 2 for treatment.	Append the text to include language specifying the current use of the leachate transfer pipeline.  <i>Response: Text will be modified as requested.</i>
43.	B-14/Sect.B.9.1/Last Sentence	The last sentence in this paragraph should be rewritten as follows: <i>"This infrastructure would include wastewater lines <u>as well as</u> buried utilities."</i>	Correct the grammatical error.  <i>Response: Text will be corrected.</i>
44.	B-16/Sect.B.9.3	Areas in WMA 2 have been reworked or backfilled with soil as stated in Section B.3. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CG <sub>w</sub> Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  <i>Response: Surface soil sampling to a depth of 1m on a 20m grid is required for a 1.7 acre area of WMA 2 where there is evidence of surface soil disturbance. A description of this sampling activity was originally in the subsurface soil section of the appendix, but will be moved to the surface soil sampling section since it is more appropriate there.</i>
45.	B-17/Sect.B.9.4	Expand the sampling efforts to include the soils surrounding Lagoon 1 to define the lateral and vertical extent of contamination around Lagoon 1. This sampling will identify any potential migration of contaminants from Lagoon 1 or the fill placed in Lagoon 1.	Provide details within the document describing additional subsurface sampling of the soils surrounding Lagoon 1.  <i>Response: Lagoon 1 is within the footprint of the planned excavation for WMA 2. Sampling for waste characterization will take place across the planned WMA 2 footprint. Sampling along the planned boundary of the excavation will be used to evaluate whether subsurface contamination extends beyond the planned footprint, including to the south of Lagoon 1. It is not</i>

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			clear what additional benefit would be gained by sampling around Lagoon 1 since these soils will be excavated. The vertical extent of contamination beneath Lagoon 1 will be evaluated by data collection during the excavation process. No change will be made to the text.
46.	B-18/Sect.B.9.4./First Bullet	In assessing the 1.7 acres in the western area of WMA 2, what is the basis for collecting a sample to a depth of 1 m? Given the reworking of soils in the area and spreading of the North Plateau Groundwater Plume, it would seem plausible that contamination could exist below 1 m.	Provide a technical basis for subsurface sampling down to 1 m.  <i>Response: Sampling will not necessarily be limited to the 0-1m depth interval. The contingency section of this appendix includes sampling deeper to vertically bound contamination at locations where 0-1m sample results indicate the presence of contamination. There are likely areas outside the planned WMA 2 excavation footprint where contamination exists at depth due to the North Plateau Groundwater Plume, but the 0-1m interval is not impacted. However, as noted in the CSAP, further characterization of the North Plateau Groundwater Plume (which has already been heavily characterized) is outside the scope of the CSAP. No change will be made to the text.</i>
47.	B-21/Sect.B.9.6/First Bullet	Modify the first sentence under this bullet to read: <i>“Three locations <u>along each</u> piece of buried infrastructure that is of concern within WMA 2 will be trenched.”</i>	Correct the grammatical error.  <i>Response: Text will be corrected.</i>
<b>Appendix C Comments</b>			
48.	C-10/Sect.C.9.3/First Bullet	In describing the analytes for the samples collected assess hot spots, the text states that the 0-15 cm samples will be analyzed for the 12 potential radionuclides as well as the 18 ROI. The text does not mention the target analytes for the 0-1 m samples.	Provide a list of analytes for the 0-1 m samples.  <i>Response: Please see response to Comment #32.</i>
49.	C-11/Sect.C.9.5/First Bullet	Reword the first sentence under this bullet to state: <i>“Three locations <u>along each piece</u> of buried infrastructure that is of concern within WMA 3 will be trenched.”</i>	Correct the grammatical error.  <i>Response: Text will be corrected.</i>
<b>Appendix D Comments</b>			
50.	D-2/Sect.D.3	The area history, as conveyed through a description of the various aerial photographs, doesn't capture the fact that disposal operations at the Construction and Demolition Debris Landfill	Provide additional details on the operational history of the CDDL.

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#	<i>Page/Section Paragraph/Line/Bullet</i>	<i>Comment</i>	<b>Reviewers Proposed Resolution</b> <i>(If your comment is a point of clarification it probably doesn't need a proposed resolution.)</i>
		(CDDL) began as early as 1963, and continued through 1981 (under Nuclear Fuel Services) and 1984 (under the U.S. Department of Energy).	<p><i>Response: The following sentence was added to the introductory paragraph for Appendix D:</i></p> <p><i>“Disposal operations at the CDDL began as early as 1963 and continued through 1981 under Nuclear Fuel Services and 1984 under the WVDP.”</i></p>
51.	D-8/Sect.D.9.2	Areas in WMA 4 have been reworked or backfilled with soil and have been impacted by groundwater contamination that has surfaced into drainage areas. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	<p>Amend the CG<sub>w</sub>, Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.</p> <p><i>Response: Outside of the CDDL footprint, there is no evidence in historical photographs of surface soil reworking in WMA 4. There certainly are subsurface impacts due to the North Plateau Groundwater Plume, but further characterization of that plume is outside the scope of the CSAP. If there are concerns regarding contamination potentially buried during surface soil reworking in WMA 4, then we should discuss and ensure that the CSAP addresses those areas.</i></p>
<b>Appendix E Comments</b>			
52.	E-3/Second and Third Bullets	The two bullets make one sentence.	<p>Correct the grammatical error.</p> <p><i>Response: Error will be corrected.</i></p>
53.	E-12/Sect.E.9.3	As stated in Section E.2, the soils in WMA 5 have been reworked at least once since the inception of the site. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	<p>Amend the CG<sub>w</sub>, Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.</p> <p><i>Response: The CSAP does call for sampling the 0-1m interval on a 20 m grid for those portions of WMA 5 where there has been historical reworking of surface soils. This was described in the subsurface section; however, to be consistent with the definition of surface soils, this text will be moved to the surface soil section.</i></p>
54.	E-16/Sect.E.9.5/First Bullet	Reword the first sentence under this bullet to state: “Three locations along <u>each piece</u> of buried infrastructure that is of concern within WMA 3 will be trenched.”	<p>Correct the grammatical error.</p> <p><i>Response: Error will be corrected.</i></p>
<b>Appendix F Comments</b>			

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#	Page/Section Paragraph/Line/Bullet	Comment	Reviewers Proposed Resolution (If your comment is a point of clarification it probably doesn't need a proposed resolution.)
55.	F-1/Sect.F.1	This section should include a description of the Old Sewage Treatment Plant (STP), the area surrounding the Old STP and the current radiological condition of this area.	<p>Amend the text accordingly.</p> <p><i>Response: The following paragraph was added to Section F.1:</i></p> <p><b>“Old Sewage Treatment Plant. The Old Sewage Treatment Plant was a small structure located approximately 60 m south of the Process Building. It was connected to the Process Building by a buried sewage line. It discharged to an open ditch via an underground line approximately 70 m to the southeast. It was replaced by the Sewage Treatment Plant, which used a completely different set of supply and discharge lines than the Old Sewage Treatment Plant.”</b></p> <p><i>Note that there is very little existing data that documents the current radiological condition of the immediate area around the old STP. Contamination encountered in sediments associated with the discharge point indicates contaminated waste streams were handled by the old STP, and consequently environmental impacts in the vicinity of the STP and its connecting buried infrastructure are plausible.</i></p>
56.	F-2/Sect.F.1	Clarify if any actions are planned for the North Waste Tank Farm Test Tower Foundation. Will this foundation also be removed during the Phase 1 activities?	<p>Describe any proposed actions for the North Waste Tank Farm Test Tower Foundation.</p> <p><i>Response: The North Waste Tank Farm Test Tower was removed down to its floor slab in October 2006. As described in Section 7.7.6 of the DP, the floor slab and foundation of the North Tower will be removed with underlying soils to a maximum depth of 2 feet. A radiological status survey will be performed in the area after removal. The data will be evaluated and, if appropriate, a Phase 1 final status survey will be performed. Additional text clarifying Test Tower activities will be added to the CSAP.</i></p>
57.	F-12/Sect.F.9.3	Areas in WMA 6 have been reworked or backfilled with soil (e.g., Old Sewage Treatment Plant drainage channel). The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	<p>Amend the CG<sub>w</sub>, Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.</p> <p><i>Response: The text will be modified to include 0-1m depth sampling for DCGL<sub>w</sub> concerns in WMA 6. Note that the Old</i></p>

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			STP drainage channel was already targeted for trenching to determine contamination status.
58.	F-17/Sect.F.9.6/First Bullet	Reword the first sentence under this bullet to state: "Three locations along <u>each piece</u> of buried infrastructure that is of concern within WMA 3 will be trenched."	Correct the grammatical error.  Response: Text will be corrected.
<b>Appendix G Comments</b>			
59.	G-12/Sect.G.9.3	Areas outside the geomembrane cover (in WMA &) have been reworked or backfilled with soil. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CG <sub>w</sub> , Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  Response: Text will be modified to indicate the 0-1 m depth interval will be sampled for DCGL <sub>w</sub> concerns too.
60.	G-14/Sect.G.9.5/First Bullet	Under the first bullet, the text states that ditch sampling along the eastern boundary will include samples representing a 0-1 m depth interval. It is unclear why other drainage locations would not require samples from the 0-1 m depth interval.	Explain why the northern boundary drainage features do not require samples of a greater depth interval. Again, it is unclear why application of the two-sample approach is inconsistent in those areas where soils are reworked or active sediment deposition is occurring.  Response: There is evidence that contamination in historical drainage features along this portion of WMA 7 was potentially covered with clean material. This is the reason for specifying a 0 – 1 m depth interval for this area. In general, if there are concerns that drainage features may have been backfilled or may have had clean cover placed over historical contamination, then a 0 – 1 m sampling depth interval is specified. For drainage features where this is not a concern, a 0 – 15 cm depth interval is considered conservative for a surface soil DCGL <sub>w</sub> evaluation.
61.	G-15/Sect.G.9.6/First Bullet	Reword the first sentence under the first bullet to state that "Three locations <u>along each piece</u> of buried infrastructure..."	Correct the grammatical error.  Response: Text will be corrected.
62.	G-20/Table G.2	Table G.2 "Sample Number Estimates," identifies that there are no biased sediment samples for the 0-1 m discrete depth interval, yet in Section G.9.5, 0-1 m, discrete depth interval samples are taken of the NDA Eastern Ditch Boundary. Verify the information, and be consistent in the data presented in Section	Verify that information presented in Section G.9.5 and Table G.2 is both accurate and consistent.  Response: Sample number estimates for all of the appendices have been checked. The associated text/tables will be updated

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		G.9.5 and Table G.2.	to address corrections and/or changes to sample numbers in response to comments.
<b>Appendix H Comments</b>			
63.	H-3/Sect.H.4/Line 1	The first sentence in this section should be revised to read: <i>"The Drum Cell is the only building in WMA 9 and is targeted for removal during Phase 1."</i>	Correct the grammatical error.  <i>Response: Text will be corrected.</i>
64.	H-7/Sect.H.9.2	The statement is made that <i>"If GWS results indicate no evidence of contamination impacts above background levels, no additional surface soil sampling will be required other than to address areas too wet to perform a gamma walkover survey."</i> Given that both the Subcontractor Maintenance Area and the NDA Trench Soil Container area have had soils and gravel placed on top of them, it seems unwise to eliminate these areas based on a walkover survey. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CG <sub>w</sub> , Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  <i>Response: As part of the Phase 1 decommissioning process, all hardstands eventually will be removed (although some may be used to support portions of the Phase 1 work prior to removal). Consistent with the CSAP, once hardstands are removed, then the exposed soil surfaces will be characterized to determine contamination status. There are no plans to conduct hardstand characterization prior to removal. Additional text will be added to the main body of the CSAP to further clarify how WVDP hardstands will be approached from a characterization perspective.</i>
65.	H-7/Sect.H.9.2/Second Bullet/Last Sentence	The last sentence under this bullet states that <i>"...contamination exceeding surface soil CG<sub>w</sub> requirements are along the boundary between WMA 10 and WAM 1, 3, and 5."</i> This appendix applies to WMA 9 and should not refer to WMA 10.	Correct the text accordingly.  <i>Response: The reference to WMA 10, 1, 3, and 5 will be removed.</i>
<b>Appendix I Comments</b>			
66.	I-10/Sect.I.9.3	Section I.4 states that surface soils may have become contaminated from airborne releases. There are areas within WMA 10 where trailers were installed and later removed, and the surface soils were reworked. The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CG <sub>w</sub> , Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  <i>Response: Sampling only the 0-15 cm depth interval is intended only for those areas where there are no concerns that contamination may have been covered with uncontaminated soils. Text will be clarified.</i>

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<b>Appendix J Comments</b>			
67.	J-2/Sect.J.3/Para.3	Figure J.3 shows WMA 12 in 1966, and identifies a "soils push-out" area being visible from WMA 2 into WMA 12. Further, this section states that "This push-out area is of significance because it corresponds to elevated direct gamma reading collected in 1990-1991." Since the push-out area was created prior to the 1968 air stack release, have other potential sources of the contamination been detected?	Verify the source of the contamination.  <i>Response: At this stage, the source of elevated surface activity in soils immediately south of the lagoons is unknown. The main point is that there is evidence of contamination in this area that appears to affect surface soils and that may extend into the subsurface. The text will not be changed.</i>
68.	J-5/Sect.J.7	Provide data to support the statement that "No environmental releases of contamination within WMA 12 are believed to have occurred." This statement seems to contradict Figures J.5 and J.6, and should be resolved for consistency.	Provide data to support that there have been no environmental releases of contamination within WMA 12, or amend this language to be consistent with Figures J.5 and J.6.  <i>Response: The statement was intended to refer to direct releases within WMA 12 as there is no documentation indicating that contaminated material was released within the WMA 12 boundary. That is not to say WMA 12 is not impacted by releases in adjacent WMAs that resulted in contaminated environmental media within WMA 12. For example, we know sediments have been impacted, and there clearly are some surface impacts along the border with WMA 2, etc. The text will be clarified.</i>
69.	J-9/Sect.J.9.2	Areas in WMA 12 have been reworked or backfilled with soil (e.g., the soils push-out near WMA 2 and areas north of WMA 7). The surface soil sampling protocol should systematically address the 0-1 m depth interval (see General Comment #26).	Amend the CG <sub>w</sub> , Sampling protocol to assure the collection and analysis of soil samples in the 0-1 m depth interval.  <i>Response: See the response to Comment #66.</i>
70.	J-13/Sect.J.9.5	Section J.9.5 states that "Figure J.13 identifies those portions of Erdman Brook and Franks Creek where sediment CG requirements apply." The western areas of Erdman Brook are not included in the sampling areas shown in J.13. There is known sediment contamination present in the Old STP Drainage Channel, which extends from WMA 6 into WMA 12. Additionally, the tributary of Erdman Brook that extends northwest toward WMAs 2 and 6 are not included in the sampling areas. Figures J.5 and J.6 suggest contamination in that stream area.	Provide the rationale for not performing sediment sampling on the identified portions of WMA 12 to confirm the lateral extent of contamination and areas of potential remediation.  <i>Response: Section J.9.5 describes sampling in these stretches of Erdman Brook. There will be at minimum one sample collected every 30 m for all drainage features within WMA 12.</i>

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<b>Appendix K Comments</b>			
71.		No comments	Comment noted.