



US Army Corps of Engineers
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Record of Decision Amendment

**Shallow Land Disposal Area
Parks Township, Pennsylvania**

**Authorized under the
Formerly Utilized Sites Remedial Action Program**

Prepared by:
Department of the Army
U.S. Army Corps of Engineers

December 2015

I. DECLARATION FOR THE RECORD OF DECISION AMENDMENT

Site Name and Location

Shallow Land Disposal Area (SLDA)
Parks Township, Armstrong County, Pennsylvania

Statement of Basis and Purpose

This amendment to the Record of Decision (ROD) issued in September 2007 for the Shallow Land Disposal Area in Parks Township, Armstrong County, Pennsylvania presents changes to the selected remedy compliant with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Section 300.435(c)(2). The remedial action was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the NCP. The United States Army Corps of Engineers is mandated by Section 8143(a)(2) of the Fiscal Year 2002 Defense Appropriations Act, Public Law 107-117 to:

“clean up radioactive waste at the Shallow Land Disposal Area located in Parks Township, Armstrong County, Pennsylvania, consistent with the Memorandum of Understanding Between the United States Nuclear Regulatory Commission (NRC) and the United States Army Corps of Engineers for Coordination on Cleanup and Decommissioning of the Formerly Utilized Sites Remedial Action Program (FUSRAP) Sites with NRC Licensed Facilities, dated July 5, 2001.”

In accordance with NCP Section 300.825(a)(2), this document will become part of the Administrative Record File, which is available to the public at the following locations:

U.S. Army Corps of Engineers, Pittsburgh District
2200 William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222-4186
(412) 395-7500

Apollo Memorial Library
219 North Pennsylvania Avenue
Apollo, PA 15613
(724) 478-4214

Assessment of the Site

The remedy selected in this ROD Amendment for SLDA is necessary to protect human health and public welfare from the actual or threatened release of hazardous substances into the environment. Such a release or threat of release may present a potential future risk to human health.

Description of the Amendment to the Selected Remedy

The remedy selected for SLDA is referred to as *Alternative 5: Excavation, Treatment, and Off-site Disposal* in the ROD issued in September 2007. The SLDA site is owned by BWXT Government Group, Inc. (BWXT), formerly known as BWX Technologies, Inc., and licensed by the NRC. A Memorandum of Understanding (MOU) between the Corps of Engineers and NRC serves “the purpose of minimizing dual regulation and duplication of regulatory requirements at FUSRAP sites with NRC-licensed facilities” by arranging for the suspension of the NRC license to allow for accomplishment of FUSRAP cleanups. So, NRC suspension, or abeyance of BWXT’s license was a

necessary condition precedent to the Corps of Engineers cleaning up the site. Starting on May 14, 2009, the Corps of Engineers initiated the process of license suspension. During this process, NRC provided advice to the Corps of Engineers regarding physical security, material control and accountability, and criticality safety planning for the special nuclear material (SNM) it suspected was on the site and other materials that might be excavated. Meetings between the two agencies allowed the NRC to share its expertise and provide advice and input in detail, and the Corps of Engineers chose to incorporate NRC advice and recommendations into its planning for and implementation of the project. In response, NRC placed the license in abeyance on August 5, 2011. Implementation of the selected remedy began in August 2011, and involved the excavation of radiologically contaminated soil and debris, size reduction, radiological sorting, off-site transportation, and disposal at an appropriately permitted, licensed disposal facility. Between August and September 2011, approximately 3,300 tons of radiologically contaminated soil and debris were excavated and disposed of offsite.

During the excavation of contaminated soil and debris, special nuclear material (SNM) was encountered that the remediation contractor was unable to properly characterize, which caused an unanticipated and immediate need for fundamental changes to site operations, project work plans, waste disposal options, and site infrastructure. The Corps of Engineers coordinated with the NRC and the United States Department of Energy (DOE) to further characterize these materials. The resulting information refined the Corps of Engineers' understanding of the nature of the contamination in the trenches and the manner in which that contamination could be safely remediated. Specifically, the information gained from remediation emphasized the uncertainty associated with the reported trench waste materials referenced in the FS report (DA, 2006). The remedial action was temporarily suspended on September 30, 2011, while the Corps of Engineers addressed those changes with the NRC and the DOE to ensure the safety of future operations.

The Corps of Engineers updates FUSRAP project cost estimates annually to reflect the most current information available from actual field experience during the prior year's activities (USACE, 2011). Information obtained during the remedial construction activities in 2011, and expected changes in methodology and procedures for implementing the remedy, were considered in the 2013 cost estimate. The estimate indicated a substantial increase in the cost to complete the remedy, nearly eight times greater than originally considered in the ROD. As a result of the magnitude of the cost increase, and the changes to the methodology and procedures to implement the remedy, the Corps of Engineers determined that an amendment to the ROD was required pursuant to 40 CFR 300.435(c)(2)(ii).

This ROD amendment fundamentally changes the selected remedy with respect to scope and cost as follows:

- Based on knowledge gained from implementation of the selected remedy, this ROD amendment specifies changes to the assumptions regarding the work procedures employed to implement the selected remedy and additional requirements. Required procedural changes include: site infrastructure, physical security, material control and accountability, nuclear criticality safety, waste characterization, and worker safety.

- This ROD amendment incorporates changes in planned work procedures based on site knowledge gained since the 2007 ROD, and a risk-based cost estimating approach into the selected remedy cost estimate.

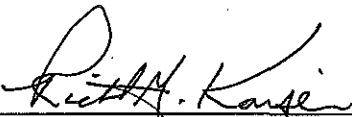
The ROD was signed by the Corps of Engineers Great Lakes and Ohio River Division Commander on September 6, 2007, and identified the estimated present value cost (2007 dollars) of the selected remedy as \$44,500,000. In addition to the primary cost drivers listed in the paragraph above, the ROD cost estimate did not fully account for those costs associated with requesting that the NRC suspend BWXT's license. All of these items contribute to the estimated present value cost (2013 dollars) of the amended remedy of \$350,187,000.

The selected remedy, associated radionuclides of concern (ROCs), and soil cleanup goals specified in the ROD remain unchanged by this amendment. However, implementation methodology (difficulty of characterizing and processing the materials), the resultant increase in personnel, equipment, facilities, and time, and the estimated cost have changed. Any chemical contamination that is not co-mingled with radioactive waste cannot be addressed by the Corps of Engineers under FUSRAP by the authority provided in Section 8143 of Public Law 107-117.

Statutory Determination

The amended remedy is protective of human health and the environment, complies with federal and state applicable or relevant and appropriate requirements, is cost-effective, and utilizes permanent solutions to the maximum extent practicable. The amended remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The feasibility study evaluated the available treatment technologies for the constituents addressed under the 2007 ROD, and found none that would be economically and technologically feasible. The amended remedy includes physical separation, size reduction, radiological sorting, and off-site disposal, which effectively achieves a reduction in mobility and the volume of excavated material requiring off-site transport and disposal. However, no treatment exists that will reduce the toxicity of the radiologically contaminated materials.

In accordance with 40 CFR 300.430(f)(4)(ii) and Section 121(c) of CERCLA, a five-year review specifically addressing the ROCs listed in this document is not required after the amended remedy is complete. Implementing the amended remedy will enable unlimited use and unrestricted exposure at the site with respect to the ROCs addressed under the FUSRAP authority.


Richard G. Kaiser
Brigadier General, Corps of Engineers
Commander
Great Lakes and Ohio River Division

17 Dec 2015
Date

TABLE OF CONTENTS

I. DECLARATION FOR THE RECORD OF DECISION AMENDMENT	i
TABLE OF CONTENTS	iv
ACRONYMS AND ABBREVIATIONS	vi
II. DECISION SUMMARY FOR THE RECORD OF DECISION AMENDMENT	1
1.0 SITE NAME, LOCATION AND DESCRIPTION.....	1
2.0 SITE HISTORY AND POST-RECORD OF DECISION ACTIVITIES.....	1
2.1 Site History	1
2.2 Summary of Contamination	2
2.3 Selected Remedy in the Record of Decision	3
2.4 Post-ROD Activities	4
3.0 BASIS FOR THE RECORD OF DECISION AMENDMENT	4
4.0 DESCRIPTION OF FUNDAMENTAL DIFFERENCES.....	6
4.1 Site Preparation.....	6
4.2 Site Supervision and Support Facilities	7
4.3 Remediation Activities	8
4.4 Environmental Sampling and Analysis	9
4.5 Waste Transportation and Disposal.....	11
4.6 Oversight and Physical Security	11
4.7 Post-Remedial Action Closeout.....	11
4.8 Contingency	11
5.0 EVALUATION OF THE AMENDED REMEDY	12
5.1 Overall Protection of Human Health and the Environment	13
5.2 Compliance with ARARs	13
5.3 Long-term Effectiveness and Permanence.....	13
5.4 Reduction of Toxicity, Mobility, or Volume through Treatment	13
5.5 Short-term Effectiveness	14
5.6 Implementability	14
5.7 Cost.....	14
5.8 State Acceptance	15
5.9 Community Acceptance.....	15
6.0 AMENDED REMEDY	15
7.0 SUPPORT AGENCY COMMENTS.....	15
8.0 STATUTORY DETERMINATIONS	16
9.0 DOCUMENTATION OF SIGNIFICANT CHANGES	16
10.0 REFERENCES.....	16

III. RESPONSIVENESS SUMMARY	17
1.0 INTRODUCTION.....	17
2.0 OVERVIEW OF PUBLIC INVOLVEMENT	17
3.0 RESPONSES TO COMMENTS	17
3.1 Neill Andritz (Public Meeting)	18
3.2 Patty Ameno (Public Meeting & Written)	18
3.3 Michael Cardieo (Public Meeting).....	21
3.4 John Voyten (Public Meeting).....	21
3.5 Patricia Hagaman (Public Meeting)	21
3.6 Perry Roberts (Public Meeting)	22
3.7 Lynn Crayne (Public Meeting)	22
3.8 Patty Ameno (Public Meeting)	23
3.9 David Battaglia (Public Meeting)	23
3.10 Tom Haley (Public Meeting)	24
3.11 Chuck Pascal (Public Meeting).....	25
3.12 David Fisher (Public Meeting)	25
3.13 Patty Ameno (Public Meeting)	26
3.14 Tom Haley (Public Meeting)	27
3.15 Peter Davin (Public Meeting).....	27
3.16 Matt Kerchensky (Public Meeting).....	28
3.17 Maggie Golofski (Public Meeting).....	28
3.18 Patty Ameno (Public Meeting)	29
3.19 Vince Santillo (Written)	29
3.20 Vikki Cooper (Written)	30
3.21 E Jane Stearmean (Written).....	31
3.22 Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc. (Written).....	32

Appendix A – Transcript of Public Meeting on January 27, 2015

Appendix B – Written Public Comments

ACRONYMS AND ABBREVIATIONS

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ARAR	applicable or relevant and appropriate requirement
ARCO	Atlantic Richfield Company
B&W	Babcock & Wilcox Company
BWXT	BWXT Government Group, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSRA	cost and schedule risk analysis
DA	Department of the Army
DCGL	Derived Concentration Guideline Level
DCGL _{emc}	Derived Concentration Guideline Level elevated measurement comparison
DCGL _w	Derived Concentration Guideline Level wide area average
DOE	United States Department of Energy
EPA	United States Environmental Protection Agency
FS	feasibility study
FSSP	Final Status Survey Plan
FUSRAP	Formerly Utilized Sites Remedial Action Program
LRD	Corps of Engineers Great Lakes and Ohio River Division
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MOU	Memorandum of Understanding
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NRC	United States Nuclear Regulatory Commission
NUMEC	Nuclear Materials and Equipment Corporation
PADEP	Pennsylvania Department of Environmental Protection
pCi/g	picoCuries/gram
RI	remedial investigation
ROC	radionuclide of concern
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SLDA	Shallow Land Disposal Area
SNM	special nuclear material
USACE	United States Army Corps of Engineers

II. DECISION SUMMARY FOR THE RECORD OF DECISION AMENDMENT

1.0 SITE NAME, LOCATION AND DESCRIPTION

The Shallow Land Disposal Area (SLDA) is located in Parks Township, Armstrong County, Pennsylvania, about 23 miles (38 kilometers) east-northeast of Pittsburgh, Pennsylvania. SLDA is located on the east side of State Route 66 adjacent to Kiskimere Street and Mary Street. SLDA is currently owned by BWXT Government Group, Inc. (BWXT) and is maintained under United States Nuclear Regulatory Commission (NRC) license SNM-2001. Section 8143 of Public Law 107-117 instructed the United States Army Corps of Engineers (Corps of Engineers) to cleanup radioactive waste at the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The Corps of Engineers is the lead agency for this cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and will accomplish the cleanup consistent with the Memorandum of Understanding (MOU) between the Corps of Engineers and NRC dated July 5, 2001. The NRC issued a confirmatory order suspending the license on August 5, 2011, to enable the Corps of Engineers to accomplish the cleanup, and the license will be reinstated in accordance with Article III.N of that MOU.

2.0 SITE HISTORY AND POST-RECORD OF DECISION ACTIVITIES

2.1 Site History

Between 1961 and 1970, Nuclear Materials and Equipment Corporation (NUMEC), who owned both the Apollo Nuclear Fabrication Facility and SLDA, buried process and other wastes from the Apollo plant at SLDA. These wastes were reportedly buried in accordance with United States Atomic Energy Commission regulation found in Chapter 10 of the Code of Federal Regulations, Section 20.304 (10 CFR 20.304), *Disposal by Burial in Soil*, which was subsequently rescinded in 1981. In 1967, NUMEC stock was bought by Atlantic Richfield Company (ARCO). In 1971, the Babcock & Wilcox Company (B&W) acquired NUMEC. In 1997, BWXT assumed ownership of SLDA. Based on reports prepared by ARCO/B&W, and information obtained during the preparation of the Remedial Investigation (RI) report (DA, 2005), the waste materials from the Apollo plant were placed into a series of pits or trenches that were constructed adjacent to one another, as illustrated in Figure 2 of the Record of Decision (ROD) (DA, 2007). However, information gained from the complex material encountered during the 2011 remediation, and information from NRC historical and investigative documents obtained subsequent to issuance of the ROD suggest that wastes other than those identified in Table 1-1 of the Feasibility Study (FS) report (DA, 2006) may be present at SLDA. Additional details regarding the site history can be found in Section 2.0 of the ROD for SLDA.

2.2 Summary of Contamination

Results of sampling completed at SLDA indicated that the uranium-contaminated materials placed in the trenches are present in a wide range of enrichments, from less than 0.2 percent by weight Uranium-235 (U-235) to greater than 45 percent. Sampling and analysis efforts indicate that the radioactive contaminants at the site are generally confined to the immediate vicinity of the trenches. Isolated pockets of radiological surface and subsurface soil contamination present at the site were removed or are now covered by site infrastructure. Routine sampling of air, surface water, sediment, and groundwater by both the Corps of Engineers and the United States Environmental Protection Agency (EPA) show no elevated levels of radionuclides migrating from the site. Groundwater is not a radiologically impacted media and therefore, it does not require remedial action. To the extent that groundwater is impacted by non-radiological constituents outside the scope of the Corps of Engineers' authority under Section 8143 of Public Law 107-117, remedial action by others may be necessary.

The eight specific radionuclides of concern (ROCs) identified in the RI report (DA, 2005) and discussed in the ROD for SLDA and corresponding soil cleanup goals for remediation, expressed in picocuries/gram (pCi/g), are presented in Table 1 below. The soil cleanup goals, referred to as Derived Concentration Guideline Levels (DCGLs) in the ROD, were developed in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)¹.

Table 1: ROCs and Soil Cleanup Goals for SLDA

Radionuclides of Concern	DCGL_w (pCi/g)	DCGL_{emc} (pCi/g)
Americium-241 (Am-241)	28	420
Plutonium-239 (Pu-239)	33	570
Plutonium-241 (Pu-241)	890	13,000
Radium-228 (Ra-228)	1.7	(a)
Thorium-232 (Th-232)	1.4	5.3
Uranium-234 (U-234)	96	240
Uranium-235 (U-235)	35	110
Uranium-238 (U-238)	120	520

- (a) Based on site-specific considerations, a DCGL_{emc} for Ra-228 was not developed because it can be accounted for by assuming it is present at the same concentration as its parent nuclide, Th-232. For this reason, the sum-of-the-ratios equations for both DCGL_w and DCGL_{emc} in the Final Status Survey Plan (FSSP) do not include Ra-228 separately.

¹ NRC, DOE, EPA, and the United States Department of Defense jointly developed MARSSIM to provide a consistent, logical, adaptive method for investigating, surveying and demonstrating that a site meets radiological release criteria.

Based on the characterization of excavated materials in 2011, and new information obtained subsequent to issuance of the ROD, materials other than those identified in Table 1-1 of the FS report (DA, 2006) and Table 1 may be present at SLDA. If nuclides other than the ROCs listed in Table 1 are discovered during remediation in significant quantities, the Corps of Engineers may evaluate and establish soil-based cleanup goals in addition to the DCGLs listed below.

2.3 Selected Remedy in the Record of Decision

The selected remedy as originally described in the ROD for SLDA was referred to as *Alternative 5: Excavation, Treatment, and Off-site Disposal*. The remedy selected involved the excavation of radiologically contaminated soil and debris, off-site transportation, and disposal at an appropriately permitted, licensed disposal facility in order to comply with the selected applicable or relevant and appropriate requirements (ARARs). The Corps of Engineers had determined that NRC standards for decommissioning of licensed facilities found at 10 CFR 20.1402, *Radiological Criteria for Unrestricted Use*, were relevant and appropriate for the selected remedy.

In compliance with these standards, the Corps of Engineers planned to:

1. Excavate radiologically contaminated soil and waste that exceeded, excluding background, a Sum of Ratios (SOR) of 1, based on the wide area average Derived Concentration Guideline Levels (DCGL_w) presented in Table 1. In addition, elevated measurement comparison criteria (DCGL_{emc}) were developed to ensure no localized areas of elevated radioactivity would remain that could potentially produce an unacceptable risk. The DCGL_{emc} values are also presented in Table 1. The DCGL_w criteria will be applied as averages over a wide area, while the DCGL_{emc} values would be applied to smaller areas as not-to-exceed, "hot-spot" criteria. Verification of compliance with soil cleanup goals would be demonstrated using guidance in accordance with MARSSIM. This confirmation methodology, including the areas over which these criteria are applied, was developed and documented in the Final Status Survey Plan (FSSP).
2. Remove and dispose off site all radiologically contaminated soil and debris excavated to achieve cleanup goals, as discussed in item 1 above, for the ROCs.

The selected remedy addressed the threat from ROCs at the site by permanently removing radioactively contaminated soil and debris. That removal minimized the potential for future human exposure and release to the environment. Implementation of this remedy was expected to meet the unrestricted release criteria as defined in the ARAR. The selected remedy only addressed the radioactive contamination and did not address any other hazardous substances that may be present at the site, consistent with the authorization provided in Section 8143 of Public Law 107-117.

The selected remedy was expected to meet the remedial action objective which is to prevent the external exposure to, and the ingestion and inhalation of radionuclides (U-

234, U-235, U-238, Th-232, Ra-228, Pu-239, Pu-241, and Am-241) present in trench waste, surface and subsurface soil at the SLDA site so that the total effective dose equivalent (TEDE) to an average member of the critical group, when combined with the potential dose due to the ingestion of radionuclides in ground water, does not exceed 25 millirem per year and does not result in an unacceptable non-cancer risk for uranium.

2.4 Post-ROD Activities

The Corps of Engineers began implementation of the selected remedy on August 22, 2011, which involved the excavation of radiologically contaminated soil and debris, sorting of contaminated material and packaging the material for off-site transportation and disposal at an appropriately permitted, licensed disposal facility. Between August and September 2011, the Corps of Engineers excavated approximately 3,300 tons of radiologically contaminated soil and debris which was subsequently disposed off-site. Excavation activities were suspended on September 30, 2011, and remedial activities have not resumed.

3.0 BASIS FOR THE RECORD OF DECISION AMENDMENT

As mentioned, substantial time and effort went into addressing physical security, material control and accountability, and criticality safety at the site, in anticipation of the SNM and other materials that NRC suspected may be on site and, especially in light of the lack of historical site records. NRC took care to ensure that its review of the Corps of Engineers' plans was sufficient to discharge its statutory responsibility for the protection of the public health and safety related to those materials. NRC advised that it could not suspend the license without satisfaction of its statutory responsibility. Moreover, classified and unclassified discussions with NRC convinced the Corps of Engineers that as the lead agent, it would rely significantly on NRC's expertise and authority throughout the cleanup to ensure health, safety, and security.

From 2009 to 2011, the Corps of Engineers coordinated with NRC pursuant to the requirement in the 2001 MOU for the NRC to place the SLDA NRC license (SNM-2001) in abeyance. Following this coordination, the NRC placed the license in abeyance on August 5, 2011. The FS cost estimate, ROD, and initial remedial design did not contemplate the NRC advice and recommendations that the Corps of Engineers ultimately elected to incorporate into its post-ROD planning and project implementation. Implementation of such methods, as well as the coordination with NRC, account for some of the increase in remedy costs.

During the remediation, the Corps of Engineers encountered materials that were difficult to characterize, which caused an unanticipated and immediate need for fundamental changes to site operations, project work plans, waste disposal options, and site infrastructure. The Corps of Engineers coordinated with the NRC and the United States Department of Energy (DOE) to further characterize these materials. The resulting information refined the Corps of Engineers' understanding of the nature of the contamination in the trenches and the manner in which that contamination could be safely remediated. Specifically, the information gained from the complex material

encountered during the 2011 remediation, and information from NRC historical and investigative documents obtained subsequent to issuance of the ROD emphasized the uncertainty associated with the reported trench waste materials historically acknowledged in the SLDA Administrative Record. In light of this information, the Corps of Engineers, in consultation with NRC and DOE, devoted the greater part of the last two years considering best methods and practices for the characterization, excavation, and management of trench materials associated with future on-site activities, and a site-specific MOU describing the roles of interested entities was executed. The Corps of Engineers recognized early in 2012 that these methods will differ substantially from those previously considered during the evaluation of remedial alternatives in the FS. Future work planning will utilize the parameters of the nuclear criticality safety basis when performing work, and ensure that the contractor has the necessary tools and expertise to accurately characterize the waste materials. Nuclear criticality safety sets the limits for the safe handling of nuclear materials from “cradle to grave”. The nuclear criticality safety basis analyzes the safety limits of every step in the process (for example, from assay to storage to transport). Greater emphasis will be placed on the in-situ (i.e., prior to removing the wastes from the trenches) characterization of waste materials through extensive geophysical and radiological methods to enhance worker and public safety, as well as enable more efficient waste handling and site operations.

The Corps of Engineers updates FUSRAP project cost estimates annually to reflect the most current information available from actual field experience during the prior year’s activities (USACE, 2010). Information obtained during the remedial construction activities in 2011, and expected changes in methodology and procedures for implementing the remedy, were considered in the 2013 cost estimate. The estimate indicated a substantial increase in the cost to complete the remedy, nearly eight times greater than originally considered in the ROD. As a result of the magnitude of the cost increase, and the changes to the methodology and procedures to implement the remedy, the Corps of Engineers determined that an amendment to the ROD was required pursuant to 40 CFR 300.435(c)(2)(ii). The Corps of Engineers’ decision maker chose to reevaluate potential alternatives to provide a basis for the decision on how to amend the ROD. This analysis, substantially consistent with 40 CFR 300.430(f), was documented in the FS Addendum (DA, 2014).

In 2009, (i.e., subsequent to issuance of the ROD), the Corps of Engineers Great Lakes and Ohio River Division (LRD) began applying a cost and schedule risk analysis (CSRA) process to FUSRAP sites within LRD (USACE, 2008). The process includes a software-based statistical analysis of project risks to identify, analyze, and account for a wide range of uncertainties that can affect a project’s cost and schedule. The CSRA results in a range of estimated project costs and durations associated with varying confidence levels. LRD has selected the 80 percent confidence level estimate of cost and schedule for budget development, which means there is an 80 percent probability that the project will be accomplished within that estimated cost and schedule. The CSRA estimate uses a methodology that is independent of EPA guidance for CERCLA response cost estimation. The EPA method gives an estimate range with expected accuracy between -30 percent and +50 percent of the estimate amount for the detailed evaluation. The CSRA estimate provides an 80 percent assurance that this work will be

done for less than the estimate. Both EPA's method and the CSRA estimate include the costs required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) in 40 CFR 300.430(e)(9)(iii)(G).

4.0 DESCRIPTION OF FUNDAMENTAL DIFFERENCES

The selected remedy and associated soil cleanup goals specified in the ROD remain unchanged. However, the implementation methodology (i.e., the difficulty of characterizing and processing the materials) and the resultant increase in personnel, equipment, facilities, and time has changed. As a result, the estimated cost has changed. The current estimated present value cost of the proposed remedy, including both contingency as determined by the CSRA process, and the amount spent on implementing the selected remedy through September 30, 2014, is \$412,411,000. The original cost of the selected remedy in the ROD was \$44,500,000.

The cost estimate presented in the ROD was originally developed as part of the FS, the details of which can be found in Appendix B of the FS report (DA, 2006a). The significant differences between the ROD cost estimate of the selected remedy and the 2013 CSRA cost estimate for the ROD amendment, as well as the related changes in scope, are discussed below for each of the major remediation activities.

4.1 Site Preparation

The scope of this activity as detailed in Appendix B, Attachment 2 of the FS report (DA, 2006a) included: project kick-off meeting; preparation of work plans and submittals; mobilization of equipment, materials, and labor to the project site; utility identification, connections, and relocations as necessary; earthwork related to haul road construction; site clearing as necessary; and demobilization activities upon completion of the project. The mobilization cost was assumed to be 1 percent of the remediation activities cost in the ROD cost estimate. The estimated cost of this activity in the ROD was \$540,515.

For the ROD amendment, the overall scope of this activity has remained the same with a few notable exceptions:

- All work associated with utility identification, connections, and relocations, as well as the earthwork related to construction of the haul road were completed in 2011 and are not included in the ROD amendment cost estimate.
- The new information obtained from remediation activities in 2011 requires the development of new extensive work plans and submittals for the entire work effort, some of which require coordination with NRC before they can be finalized. The level of effort and cost associated with developing the work plans has increased significantly. This effort is made more difficult and costly due to the large increase in internal and external review of these documents.

- New mobilization and demobilization costs were estimated based on the equipment and temporary facilities identified as needed for the project, rather than assuming a fixed percentage of the cost of a related activity.

Although several of the tasks associated with this activity were completed in 2011, significant effort is required to mobilize for a new remediation contract, and to develop new work plans that will guide the remedial action. The estimated cost of this activity for the ROD amendment is \$1,860,673, which accounts for less than 1 percent of the total cost increase.

4.2 Site Supervision and Support Facilities

The FS described this activity for the original ROD as including labor and other items not directly associated with remedial work, including: personnel related to site supervision, quality assurance, health and safety, and administration; office and work trailers, site infrastructure; municipal and sanitary disposal services; and decontamination facilities. Support facilities constructed or installed during the initial mobilization include: the haul road; material processing building; final status survey pad; and office and work trailers. The estimated cost of this activity in the ROD was \$1,720,295.

The scope of this activity for the ROD amendment includes the same categories of labor, facilities, and site infrastructure. However, the ROD cost estimate greatly underestimated both the required labor, such as project management, engineering support, survey, nuclear criticality safety support, health physics support, scheduling, and training, as well as the duration of this activity. Specific differences in the scope of this activity are as follows:

- The estimated project duration for the ROD cost estimate was 32 months, whereas the Corps estimates the project duration for this ROD amendment to be 60 months from restart of remedial activities due to the changes in remediation methods and practices.
- Approximately eighteen (18) additional labor discipline teams are required under this activity for safe and effective work execution. The ROD cost estimate did not include costs for these additional labor discipline teams that must have a full-time presence at the site including: engineers, nuclear criticality safety engineer, waste manager, and scheduler. These types of specialists often exact large fees and salaries.
- Limited site infrastructure construction was completed during remediation activities in 2011 and those costs are not included in the ROD amendment estimate. However, the ROD amendment requires additional infrastructure associated with procurement, setup, and construction of additional office trailers, technically specific storage areas, decontamination facilities, and temporary facilities.

- Additional manpower in many disciplines may be required.
- Based upon the number of personnel that will likely be working at the site, approximately twice as many office and work trailers as were estimated in the ROD are required for administration, operations, health physics, decontamination, and storage. Additionally, the technical requirements for these facilities are more exacting and specific, and thus more costly.

The estimated cost of this activity for the ROD amendment is \$21,422,206, which represents 6 percent of the total cost increase from the ROD cost estimate.

4.3 Remediation Activities

The scope of this activity for the ROD cost estimate included the following activities: installation and maintenance of erosion and sediment controls; dewatering, excavation, separation, sorting, treatment, packaging, analyzing, profiling, and loading of wastes; water treatment; transportation and disposal of treated water; backfilling; and site restoration. The ROD cost estimate also included labor costs directly associated with these activities. The estimated cost of this activity in the ROD was \$12,963,098.

The ROD amendment includes the same scope of activities as the ROD cost estimate, and uses similar volume quantities of soils and wastes that will be excavated. Costs associated with the excavation and disposal of 3,300 tons of radiologically contaminated soil and debris during remediation in 2011 are not included in the ROD amendment. Other significant differences between the ROD cost estimate and the cost estimate for the ROD amendment for this activity are as follows:

- Remediation activities, which opened contaminated material to the weather, created a storm water discharge that was potentially radioactively contaminated. This required wastewater treatment which was provided by a subcontractor for the 2011 remediation. That contractor and their treatment facility could not be continued cost-effectively and is no longer at the site. The cost associated with design and installation of a new wastewater treatment plant is included in this part of the estimate. The purpose of the wastewater treatment plant is to treat any liquids that have been in contact with the trench waste materials, including significant volumes of precipitation runoff, prior to the water being discharged from the site.
- Based upon experience gained from the remediation conducted in 2011, the specifications for the wastewater treatment plant have changed significantly. The ROD cost estimate assumed a package water treatment system with a 50 gallon per minute capacity. The ROD amendment cost estimate includes a multi-unit process, modular water treatment plant, which includes necessary nuclear criticality safety controls, capable of treating up to 200 gallons per minute of wastewater. This change resulted in a cost increase that is nearly fifteen times greater than the ROD cost estimate for this item.

- Costs associated with health and safety training and related equipment and supplies have increased significantly in the ROD amendment. The primary factors affecting this increase are: nuclear criticality safety issues and the documented presence of beryllium contaminated waste. All health and safety issues regarding beryllium must be addressed in a Chronic Beryllium Disease Prevention Program substantially consistent with the requirements found in 10 CFR 850 (USACE, 2013). The ROD cost estimate did not include any costs associated with beryllium worker health and safety requirements, or any costs associated with nuclear criticality safety.
- The ROD cost estimate assumed a duration of 26 months for remedial activity, whereas the estimated duration of this activity in the ROD amendment is 46 months. This effectively doubles all costs associated with labor and other items whose costs are directly related to time, such as rentals, utilities, and services.
- The ROD cost estimate assumed there would be one-full time position related to health and safety. Due to the knowledge gained during the initial remediation work, an additional six key labor discipline positions have been identified associated with worker health and safety including: training coordinator, nuclear material accountability officer, and nuclear criticality safety manager.
- The ROD amendment assumes that the activated carbon from the air handling system at the material processing building will be replaced at a frequency of once per 10,000 cubic yards of material processed. Each carbon replacement will require 320,000 pounds of activated carbon. Routine maintenance and repairs to the air handling system are also included in the scope of this activity. The costs associated with carbon change out and long-term maintenance of the air handling system were not included in the ROD cost estimate.

The scope of this activity for the ROD amendment also reflects the variety of the types and quantities of waste materials in the trenches, the difficulty in characterizing these materials, and the additional time required to complete the work. Previous experience has resulted in an increased awareness of the level of effort required for nuclear criticality safety and non-radiological safety, such as beryllium health and safety. The associated level of effort will be increased far beyond what was originally estimated in the ROD. The estimated cost of this activity for the ROD amendment is \$47,475,832, which represents 11 percent of the total cost increase from the ROD.

4.4 Environmental Sampling and Analysis

Included in the scope of this activity in the ROD is an on-site laboratory trailer, laboratory equipment, a full-time chemist to analyze samples, a full-time radiation technician to collect samples, and additional analyses at an off-site certified laboratory. Samples to be analyzed include soil and waste samples as well as environmental monitoring samples, such as groundwater, surface water, air, and wastewater treatment effluent. The ROD cost estimate assumed a total of 150 surface water and sediment samples as well as 165 total samples for characterization of waste materials would be

sent for off-site analyses. The estimated cost of this activity in the ROD was \$1,541,515.

The scope of this activity in the ROD amendment includes all the items specified in the ROD, plus additional environmental, safety, and health monitoring such as meteorological, radiation, and beryllium monitoring. The primary differences between the two cost estimates are as follows:

- The overall estimated duration of this activity for the ROD amendment is 60 months, whereas the ROD cost estimate assumed a duration of 32 months due to the changes in remediation methods and practices. The ROD amendment utilizes the 60 month duration.
- For the ROD amendment, all radiation monitoring will be conducted by radiological control (RADCON) crews whose composition is dependent upon the specific monitoring activities. This requires additional teams of full-time personnel.
- Air monitoring consists of continued operation of the nine existing perimeter air monitors with weekly air filter collection and analysis for the duration of the project. The ROD cost estimate only included four air sampling stations.
- The ROD amendment assumes that monthly groundwater samples will be collected from an estimated 14 monitoring wells for off-site chemical and radiological analyses. This sampling will begin at the start of mobilization and conclude upon completion of demobilization, which is approximately 78 months. This results in a total of approximately 1,000 sample analyses that were not included in the ROD cost estimate.
- Beryllium contamination has been confirmed in the waste trenches at the SLDA. There are significant worker health and safety requirements associated with occupational exposure monitoring for beryllium, including training, occupational health reviews and exams, specialized personal protection equipment and specialized decontamination procedures, as well as environmental monitoring and surface sampling and analysis. Activities related to beryllium monitoring, analysis, and associated costs, were not included in the ROD cost estimate.
- The ROD amendment anticipates approximately three times the number of samples for characterization of all waste types as compared to the total number of samples in the ROD cost estimate.

The scope of this activity for the ROD amendment reflects the uncertainty regarding the types and quantities of waste materials expected in the trenches and that were encountered during remediation activities in 2011. As a result, the level of effort related to radiological monitoring, sampling, and analysis has increased significantly, as well as activities related to beryllium monitoring. The estimated cost of this activity for the ROD

amendment is \$34,961,204, which represents 11 percent of the total cost increase from the ROD.

4.5 Waste Transport and Disposal

The scope of this activity includes the transportation and disposal of radiologically contaminated waste and debris that is above clean up levels. The ROD cost estimate assumed there would be a total of 21,300 cubic yards of soils, debris, and mixed waste that would be considered low level radioactive waste, which would have to be disposed of in an appropriately permitted, licensed facility. It was also assumed that 18,000 cubic yards of non-hazardous wastes would be disposed at a solid waste facility. The estimated cost of this activity in the ROD was \$23,682,200.

This activity in the ROD amendment is identical in scope to the ROD. However, the disposal unit costs used in the ROD amendment cost estimate were based on actual unit costs from the initial remediation contract, which are much greater than initial estimates. Variation in the radioactive material found at the site may lead to larger disposal costs as well. However, the ROD amendment cost estimate assumes that none of the wastes will be suitable for disposal at a solid waste facility, based upon the materials encountered during the remediation activities in 2011. The estimated cost of this activity for the ROD amendment is \$80,721,622, which accounts for 19 percent of the total cost increase over the ROD estimate.

4.6 Oversight and Physical Security

The scope of this activity includes all labor, equipment and materials associated with Corps supervision, administration, and construction management during implementation of the remedial action, as well as all physical security measures employed at the SLDA, for the duration of the project. None of these activities or costs were included in the ROD cost estimate. The overall estimated duration of this activity is 78 months. The estimated cost of this activity for the ROD amendment is \$39,000,000, which represents 13 percent of the total cost increase from the ROD. Specialized training and equipment is required as well.

4.7 Post-Remedial Action Closeout

This activity includes Corps' labor and contracts for post-remedial action physical, administrative, and legal closeout activities. The overall estimated duration of this activity is 24 months. Costs associated with this activity were not included in the ROD cost estimate. The estimated cost of this activity for the ROD amendment is \$2,000,000, and accounts for less than 1 percent of the total cost increase from the ROD. It includes the interactions between the Corps, the landowner, NRC, DOE, and the state of Pennsylvania.

4.8 Contingency

The ROD cost estimate was prepared prior to the adoption of the CSRA process for LRD FUSRAP sites, and did not fully identify and account for all project risks, and

associated cost contingencies, related to the selected remedy. At that time, it was assumed that the contingency amount would be equal to 10 percent of the total estimated cost of the remedy, which was \$4,044,762.

Unlike the ROD, the ROD amendment cost estimate includes risk-based contingencies, developed through the CSRA estimating process, that are based on experience gained from the initial remediation effort. To develop these risk-based contingencies, statistical modeling is used to quantify known and suspected risks that could potentially affect project cost and schedule. Risks include the uncertainties associated with the composition of trench material, which can only be fully characterized upon excavation. Methods for material handling, characterization, and disposal must be adjusted based on the material found. These adjustments increase the cost and duration of excavation and disposal activities. The estimated contingency cost for the ROD amendment, as determined through the CSRA process at the 80 percent confidence level, is \$122,745,000. At just under 40 percent of the total increase in cost from the ROD, the CSRA contingency value accounts for the single largest increase to the overall cost estimate. A comparison of the cost estimates for the original ROD and for the ROD amendment is shown in Table 2 below.

Table 2: Cost Estimate Summary for the Amended Remedy²

Activity	Original ROD Cost Estimate	ROD Amendment Cost Estimate
Site Preparation	\$540,515	\$1,474,389
Site Supervision and Support Facilities	\$1,720,295	\$21,422,206
Remediation Activities	\$12,963,098	\$47,475,832
Environmental Sampling and Analysis	\$1,541,515	\$34,961,204
Transportation and Disposal	\$23,682,200	\$80,721,622
Government Oversight and Security	\$0	\$39,000,000
Post-Remedial Action Closeout	\$0	\$2,000,000
Alternative Subtotal	\$40,447,623	\$227,442,000
Contingency	\$4,044,762	\$122,745,000
Alternative Total	\$44,500,000	\$350,187,000³

5.0 EVALUATION OF THE AMENDED REMEDY

Section 300.430(e)(9)(iii) of the NCP establishes nine criteria for evaluating remedial action alternatives. These criteria are divided into three categories of weighted importance, which include threshold, balancing and modifying criteria. All remedial action alternatives must meet the first two threshold criteria to be considered. The next

² All costs are in 2013 dollars.

³ The ROD amendment cost estimate does not include the \$62.2 million that was expended through September 30, 2014.

five balancing criteria help describe relative differences between the remedial action alternatives. The final two criteria are modifying criteria that factor in the state and community input on the remedial action alternatives.

As presented above, only the methodologies used to implement the amended remedy (which entails much greater personnel, equipment, and facility cost) and the estimated cost of the amended remedy have fundamentally changed. The following evaluation will therefore focus on those two elements.

5.1 Overall Protection of Human Health and the Environment

This criterion is an overall evaluation of the amended remedy's ability to protect human health and the environment. This amendment remains protective of human health and the environment because of the complete removal of all radioactive contamination above cleanup levels to an appropriately permitted, licensed, off-site disposal facility that has been optimally sited to minimize the potential for future human exposure and release to the environment.

5.2 Compliance with ARARs

This criterion addresses whether or not the amended remedy will meet cleanup levels or criteria found in appropriate federal and state environmental requirements or provide justification for a waiver. This amendment complies with the ARAR identified for unrestricted use (10 CFR 20.1402) because the radiological contaminants above cleanup levels would be permanently removed from the site.

5.3 Long-term Effectiveness and Permanence

This criterion refers to the ability of the amended remedy to provide reliable protection of human health and the environment over time. This amendment achieves long-term effectiveness and permanence since the radiologically contaminated soil and debris would be permanently removed from the site to an appropriately permitted, licensed disposal facility suitable for receiving such wastes, and optimally sited to prevent future exposure.

5.4 Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion refers to the preference for a remedy that reduces health hazards, the movement of contaminants, or the quantity of contaminants at the site through treatment. Since there are no effective treatment technologies for reducing the toxicity of radionuclides, this amendment can only be evaluated for its ability to reduce the mobility or volume of contaminants. This amendment achieves reduction in the mobility of radiological contaminants by placing them in an off-site engineered disposal cell specifically sited and designed to isolate them from the environment. Due to the high degree of physical separation and radiological sorting during and after excavation, this amendment may likewise result in reducing the volume of excavated materials that require disposal.

5.5 Short-term Effectiveness

This criterion addresses the period of time needed to complete the amended remedy and any adverse effects to human health and the environment that may be caused during the construction and implementation of the alternative. This amendment will increase the short-term risk and potential for elevated dose rates to workers and the public from the remedial activities; however, implementing the new methods and procedures, and engineering controls developed largely as a result of the information gained from the 2011 remedial activities, will likely mitigate these risks more than previous methods considered in the original ROD.

5.6 Implementability

This criterion refers to the technical and administrative feasibility of the amended remedy, including the availability of materials and services needed to carry out the remedy and coordination of federal, state, and local governments to work together to clean up the site. This amendment achieves a higher degree of implementability because the remediation work completed in 2011 demonstrated that this alternative is technically feasible, the technologies, materials, and services that will be employed are available, and it is administratively feasible. In addition, implementing the new methods and procedures, as well as the use of a different type of remediation contract, will enhance the implementability of the amended remedy.

5.7 Cost

This criterion evaluates the estimated capital and operation and maintenance costs of the amended remedy in comparison to the original selected remedy. The estimated cost of the original selected remedy was \$44,500,000. The estimated present value cost (2013 dollars) of the amended remedy is \$350,187,000⁴. The estimated cost of the amended remedy is nearly eight times greater than the cost of the selected remedy presented in the ROD. The cost estimate presented in the ROD was originally developed as part of the FS, the details of which can be found in Appendix B of the FS report (DA, 2006). The significant differences between the ROD cost estimate of the selected remedy and the cost estimate for the ROD amendment are explained in Section 4.0 above. Though there is a significant increase in estimated cost, the amended remedy provides great confidence that all remedial goals will be met and protectiveness of human health and the environment is achieved because it permanently removes the radiological contamination from the site and, additionally, allows for unlimited use and unrestricted exposure with respect to the ROCs. The amended remedy is, therefore, cost effective.

⁴ Neither the original selected remedy nor the amended remedy have operation and maintenance costs associated with them because upon completion of either remedy, the site will be suitable for unrestricted release with respect to the ROCs addressed under the FUSRAP authority.

5.8 State Acceptance

This criterion indicates whether Pennsylvania accepts or rejects the amended remedy. Pennsylvania was provided the opportunity to submit comments to the Proposed ROD Amendment during the public comment period that began on January 5, 2015, and ended on April 6, 2015. No comments were received from Pennsylvania regarding the amended remedy.

5.9 Community Acceptance

This criterion indicates whether the public and town or county governments accept or reject the amended remedy. Concerns of the community regarding the proposed changes have been evaluated. The responsiveness summary found in Section III of this amendment presents the public comments received and the Corps of Engineers' responses to the concerns raised. Generally, the comments received from the community support the Corps of Engineers' selection of the amended remedy.

6.0 AMENDED REMEDY

The amended remedy continues the selected remedy of excavation, treatment, and off-site disposal, started in the original ROD, to address radiologically contaminated soil and debris at SLDA. The amended remedy is considered the most protective of human health and the environment in the long term, and is permanent because all radiologically contaminated waste and soil exceeding the subsistence farmer cleanup goals will be removed. The amended remedy ensures compliance with the criteria specified in 10 CFR 20.1402, since all of the materials exceeding the cleanup goals are removed from SLDA. An FSSP was developed consistent with MARSSIM requirements and will be implemented to verify that the residual concentrations of the ROCs are below the specified DCGLs and that the remedial action objectives have been met.

7.0 SUPPORT AGENCY COMMENTS

While participation by agencies as "support agencies" may be sought by the lead agency and memorialized by contract under section 104(d)(1) of CERCLA, neither CERCLA nor the NCP requires that support agencies be used. However, the absence of lead-support agency cooperative agreements does not mean that state involvement, or the involvement of other federal or local agencies was not sought or provided. The Corps of Engineers, NRC, DOE and the National Nuclear Security Administration (NNSA) have entered into a Memorandum of Understanding (MOU) to clarify the roles and responsibilities of each agency to facilitate a coordinated federal response for the SLDA remediation. The Corps of Engineers conducts frequent project meetings which include representatives from NRC as well as the DOE. In addition, the Corps of Engineers notified the Pennsylvania Department of Environmental Protection (PADEP) of our intent to issue a ROD amendment, requested and reviewed potential state ARARs, and considered the State's input in accordance with CERCLA and 40 CFR 300.430(e)(9)(iii)(H) and 40 CFR 300.430(f)(1)(i)(C) as modifying criteria for purposes of selecting the Amended Remedy. All agencies, including EPA, were provided the

opportunity to comment on the proposed ROD amendment in accordance with 40 CFR 300.435(c)(2)(ii) and CERCLA Section 121(f). No comments were received from these agencies regarding this amendment.

8.0 STATUTORY DETERMINATIONS

The Corps of Engineers has determined that the amended remedy, as modified in this ROD amendment, complies with the statutory requirements of CERCLA Section 121, is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to this remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

9.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Corps of Engineers has determined that no significant changes to the amended remedy are necessary based upon review of all comments submitted during the public comment period.

10.0 REFERENCES

Department of the Army (DA), 2014b. Proposed Record of Decision Amendment, Shallow Land Disposal Area, Parks Township, Pennsylvania, USACE, December 2014.

DA, 2014a. Feasibility Study Addendum, Shallow Land Disposal Area, Parks Township, Pennsylvania, USACE, December 2014.

DA, 2007. Record of Decision for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania, USACE, August 2007.

DA, 2006. Final Feasibility Study for the Shallow Land Disposal Area Site, Parks Township, Armstrong County, Pennsylvania, USACE, September 2006.

DA, 2005. Shallow Land Disposal Area, Remedial Investigation Report, Final, USACE, October 2005.

USACE 2011. *LRB – HTRW Cost-to-Complete Estimates*, LRD Regional Business Process Manual (Doc ID: 4623), USACE, September 13, 2011.

USACE 2008. *Engineering and Design – Civil Works Cost Engineering*, Engineer Regulation ER 1110-2-1302, USACE, September 15, 2008

III. RESPONSIVENESS SUMMARY

1.0 Introduction

The Responsiveness Summary documents that the public participation requirements set forth in NCP Section 300.435(c)(2)(ii) have been met.

The Proposed ROD Amendment for SLDA was prepared by the Corps of Engineers and was released for public review and comment on January 5, 2015. The Proposed ROD Amendment detailed proposed changes to the selected remedy for SLDA.

2.0 Overview of Public Comments

The release of the Proposed ROD Amendment was announced by sending a notice to the Pittsburgh Post-Gazette, Tribune-Review, and Valley News Dispatch, informing the public of the opportunity to comment on the proposed changes in the remedy.

A public hearing was held on January 27, 2015, which included a discussion of the proposed amendment to the remedy. The meeting provided an opportunity for citizens to voice their concerns, ask questions and provide comment on the proposed amended remedy. These comments have become part of the Administrative Record for this site. The public comment period for the Proposed ROD Amendment ended on April 6, 2015.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the responses from the Corps of Engineers.

3.0 Responses to Public Comments

Responses to public comments on the Proposed ROD Amendment from the Corps of Engineers are contained in the table below. Each unique comment is identified by a number, the name of the person who submitted the comment, and how the comment was submitted, i.e., during the public meeting or in writing. If comments could not be attributed to a specific person, they are marked as “[unknown]”.

Comment 1	Neill Andritz (Public Meeting)
<p>During the initial remediation project, we had SLDA trucks hauling radioactive material that were unable to make the turn south -- north bound onto Route 66 coming out of the front gate. I made Colonel Jeff Hawk aware of this as well as the Township Supervisors, Bud Shannon for one. Our concern is these trucks in the future we hope that this gate is going to be reconfigured because a radioactive material truck blocking both lanes of Route 66 on River Road in a passing lane is an inherently dangerous situation. So that is my comment, and I hope we're able to fix this situation for future hauling coming out of the SLDA. Thank you.</p>	
<p>RESPONSE: Similar concerns were expressed during the remediation activities in 2011. In response to those concerns, the Corps of Engineers' remediation contractor developed a procedure for ensuring the safety of traffic on Route 66 when waste transport trucks were exiting the site. The procedure included traffic controls with appropriate signage and flagmen to stop traffic in both directions on Route 66 while the trucks exited the site. Once all of the trucks had safely pulled out onto Route 66, normal traffic flow was restored. This procedure, or other traffic safety measures of equal or greater effectiveness, will be utilized once remediation activities at the site are resumed. The Corps of Engineers may also consider reconfiguration of the front gate during development of the project work plans once a new remediation contract is awarded.</p>	
Comment 2	Patty Ameno (Public Meeting & Written)
<p>To the: President of the United States, Barack Obama</p> <p>And to the: U.S. Army Corps of Engineers; U.S. Nuclear Regulatory Commission; U.S. Environmental Protection Agency; U.S. Department of Energy; U.S. Department of Justice; Pennsylvania Department of Environmental Protection and ALL other governmental agencies involved with the cleanup and the issues of SECURITY of the Parks Township Shallow Land Disposal Area (SLDA), in Parks Township, Pa.</p> <p>We ask the following with respect to the Amendment to the Record of Decision:</p> <p>1.) That the cleanup of the SLDA move forward without delay, for the 'Total' removal of the nuclear and chemical waste to an Off-Site Licensed Facility.</p>	
<p>RESPONSE: The Corps of Engineers continues to expedite the remediation of SLDA as much as possible within the limits of applicable laws and regulations. The Selected Remedy will be identified in the ROD Amendment after giving consideration to all of the comments received. Release of the Request For Proposal (RFP) is currently scheduled for late 2015.</p>	
Comment 3	Patty Ameno (Public Meeting & Written)
<p>2.) That the cleanup of the SLDA be a concentrated effort by ALL of the numerous agencies involved, working in concert for the Total Removal to an Off-Site Licensed Facility.</p>	
<p>RESPONSE: Other government agencies are actively working with the Corps of Engineers to bring this project to completion including the U.S. Nuclear Regulatory Commission (NRC), the U.S. Department of Energy (DOE), and the National Nuclear Security Administration (NNSA). The Corps of Engineers and other federal and state agencies have, and intend to continue, a focused and cooperative effort in the safe and effective remediation of the SLDA site. Several federal agencies have entered into a Memorandum of Understanding (MOU) to clarify the roles and responsibilities of each agency to facilitate a coordinated federal response for the SLDA remediation.</p>	
Comment 4	Patty Ameno (Public Meeting & Written)
<p>3.) That while Security is a Priority, it shall not delay, over-shadow or render anyone or anything 'fearful' to move forward with the cleanup.</p>	

RESPONSE: The Corps of Engineers will comply with all Department of Defense and NRC physical and information security requirements related to the types and quantities of wastes that are encountered. Security requirements are an essential and important aspect of the project, however it is our intent to integrate security requirements into the remediation in a manner that avoids unnecessary delays.

**Comment
5**

Patty Ameno (Public Meeting & Written)

4.) That the Health and Safety of All the People be the Highest Priority and matching that of National Security: For the People ARE our country's number one resource.

RESPONSE: Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. National security considerations enhance the safety and security of the public at this site.

**Comment
6**

Patty Ameno (Public Meeting & Written)

5.) That the Totality of the Original Deeded and Licensed property that came under ACE/NRC License number: SNM-414, DURING THE YEARS THAT THE BURIALS TOOK PLACE, TO INCLUDE THE ABANDONED COAL MINE BENEATH-- BE QUALITATIVELY AND QUANTITATIVELY INVESTIGATED AND TESTED to ensure present and future Public Health and Safety and the Safety of the Public that would come under National Security.

RESPONSE: Section 8143 of P.L. 107-117 states that the Secretary of the Army, acting through the Chief of Engineers, shall undertake activities to "clean up radioactive waste at the Shallow Land Disposal Area..." The SLDA site is coterminous with the boundary established by the NRC license. Because the Corps of Engineers thoroughly investigated the site - including surface soils, subsurface soils, bedrock conditions (including mine works beneath the site), surface water and groundwater, and did not find any indication of radioactive contamination migrating off of, or located outside of the NRC license boundaries, the scope of the Corps' remediation is reasonable. However, if during the course of the remediation the Corps of Engineers discovers evidence that FUSRAP-related contamination extends beyond the original trench boundaries, the fence line, or even within the mines below the trenches, our authority would permit us to "chase" contiguous areas of contamination as they lead away from the site.

**Comment
7**

Patty Ameno (Public Meeting & Written)

6.) That the standards of ALLOWABLE RESIDUAL LIMITS to remain, be MORE stringent than what was allowed to be left at the former NUMEC site in Apollo, Pa., ABC/NRC License number: SNM-145.

RESPONSE: The residual limits are calculated values listed in the Record of Decision (ROD). The residual limits for radioactive materials are known as Derived Concentration Guideline Levels (DCGLs). For SLDA, the DCGLs have been calculated using the RESRAD (RESidual RADioactive material) software for the most restrictive site receptor, a subsistence farmer, using the dose-based criteria of 25 millirem per year for unrestricted release of the site, in accordance with 10 CFR 20.1402. Each individual DCGL is nuclide specific and a sum of the ratios (SOR) score of the individual nuclides is used to ensure the total dose does not exceed the 25 millirem per year dose limit. For comparison purposes, the average per capita background dose to a person living in the United States is 620 millirem per year.

The DCGLs are used for the release of areas of the site using the *Multi-Agency Site Survey and Investigation Manual*, (MARSSIM). This is the current statistical approach for the investigation and remediation of sites contaminated with radioactive materials. It has been developed and approved by the Department of Energy (DOE), the Department of Defense (DOD), the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA).

Comment 8	Patty Ameno (Public Meeting & Written)
<p>7.) That a Temporary Containment Building be erected around 'dig areas' for the purpose of: Health & Safety--- minimizing on fugitive dust; minimizing on water run-offs from watering down soil; and for National Security---to keep to the minimum, the possibility of 'prying eyes' by those who may want to hurt us.</p> <p>Just because the Nuclear Legacy of OUR past has been filled with pain, suffering and loss, does NOT mean that OUR future cannot be better than what we have previously been shown.</p> <p>So, in the name of everything that is good and very good, LET'S GET THIS DONE WITH A POSITIVE MIND-SET FOR POSITIVE RESULTS for the PEOPLE of this area: past, present and future—and for the safety of our nation.</p>	
<p>RESPONSE: The Corps of Engineers intends to leverage our remediation contractor's expertise to propose the best methods of remediation, measurement, handling, treatment, storage and disposal in a comprehensive and integrated plan. Trench containment during excavation may be evaluated during development of the work plans to determine the need for and feasibility of this approach. Airborne emissions may be controlled by wetting the work areas with a fine mist to prevent wind-blown particles. Water infiltration has been and will continue to be minimized and controlled. This is the preferred and common technique used at Corps of Engineers clean-up sites. The work plans will undergo thorough review by the Corps of Engineers and other federal agency partners before approval of the plans.</p>	
Comment 9	Patty Ameno (Public Meeting)
<p>And then 8, that a no-fracking zone be implemented and enforced in the area of the abandoned coal mine, i.e. SLDA.</p>	
<p>RESPONSE: The Commonwealth of Pennsylvania, Department of Environmental Protection's (PADEP) Bureau of Oil and Gas Management notes that the term "fracing" is used to describe a natural gas extraction process also known as "hydraulic fracturing" (Marcellus Shale Fact Sheet). Fracking occurs after a well is drilled, cased, and cemented. Generally, large amounts of water are mixed with sand and other constituents and introduced into a shale formation under high pressure to fracture it, allowing natural gas to flow to the well.</p> <p>The Corps of Engineers has no authority to require a no fracking zone. We are unsure how much fracking may impact the SLDA site, but we have requested that PADEP notify us in the event that PADEP receives a permit to drill, or conduct other activity attendant to mineral extraction near the SLDA. PADEP has primary responsibility for regulating natural gas extraction and its related activities, including seismic exploration and effects, under all or part of: state oil and gas laws, the Clean Streams Law, the Dam Safety and Encroachments Act, the Solid Waste Management Act, the Water Resources Planning Act, and other laws and implementing regulations as may be applicable to specific circumstances.</p> <p>PADEP is responsible for reviewing and issuing drilling permits, inspecting drilling operations, and responding to natural gas-related complaints across the state, including in and around the SLDA site. Permit applicants and PADEP are responsible for identifying, establishing, and/or implementing the necessary and/or required zones of protection around resources or structures of concern. Municipal regulations over those gas extraction activities that are not preempted by state regulation may also apply.</p> <p>With this background and regulatory framework in mind, any potential impacts associated with fracking proposed at a specific location near the SLDA site will be analyzed by the Commonwealth in conjunction with a permit application for exploration or drilling submitted to PADEP for review and approval. The public receives notification from PADEP of permit actions.</p>	
Comment 10	Michael Cardieo (Public Meeting)
<p>My concern is like Mr. Andritz's. The product being removed safely. Hundreds of people work in that industrial park. We all need assured that the Corps uses the God given talent to pick a contractor that can assure our safety, our employment, in and out of that site, some of them are family and friends. Because right now I am in chemotherapy, I currently have lymphoma, and I don't want to do that, chemotherapy sucks.</p>	

RESPONSE: The Corps of Engineers is sorry to learn of your battle with cancer. Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. The Corps of Engineers' Request for Proposals to acquire a new remediation contract was developed to ensure that the best qualified and technically competent contractor is selected for this project.

**Comment
11**

John Voyten (Public Meeting)

My comments on that is that I'm 150 yards away from the burial site. My idea for a future that's going to be healthy is leave well enough alone. We had the issue with the trucks coming out on 66. We went -- I have a daughter that works down over the hill at Serious Windows. There is a lot of people that could be contaminated, so to speak, if we unearthed this stuff.

I've been on the hill for 67 years, and the only thing I have trouble with is growing hair. So -- and I hunted across that property numerous times years back. I've eaten the rabbit, deer, grouse. Everything that I've got off there I've eaten and had no side effects.

RESPONSE: Under current conditions, the SLDA site presents very little risk to human health or the environment. There is very little radioactive contamination outside the footprints of the waste trenches, and the contamination that is present at those isolated areas pose very little current risk. Both on-site and off-site groundwater monitoring has shown no evidence of off-site migration of radionuclides, and those that are detected in groundwater samples are less than USEPA, PADEP, or NRC drinking water standards. However, these conditions cannot be guaranteed in perpetuity, and over time the radionuclides in the trenches would be expected to gradually migrate with the seasonal groundwater condition in the subsurface soil and possibly bedrock. The SLDA is also susceptible to subsidence from collapse of the abandoned mine workings beneath the site.

**Comment
12**

Patricia Hagaman (Public Meeting & Written)

I'm from Allegheny Township, and we are now in the process of a lawsuit against our Township because of the fracking that we are planning on doing in our backyard.

One of my concerns is: You are planning on doing this in 2017, and we're planning on fracking within the next months. I'm concerned about the seismic activity within three miles of your site here. And Parks Township has just filed and Leechburg has -- not Parks Township, Leechburg just signed the same ordinance we have. So what we're doing, we're fighting the ordinance that it's unconstitutional.

So I want to encourage you that if there is any seismic activity from what they are planning on doing right near our homes that is going to affect this site, it will definitely affect this site. It's too close to the river, it's too close to everything. Please encourage us and help us in our fight, it's our land, it's our community.

There should be a 25 mile radius fracking ban until this project is complete! Oklahoma has had earthquakes from fracking 22 miles away!

RESPONSE: See Response to Comment 9.

<p>Comment 13</p>	<p>Perry Roberts (Public Meeting)</p> <p>We had a -- as far as fracking goes, you're clear across the river. I would say eight years ago they fracked that well by us there -- was that eight years ago they fracked that? Eight years ago, and it's not even a half mile, maybe a mile, they fracked a well down here. They blew a great big hole out in our neighbor's yard, okay, 1700 feet deep. So if there's any fracking over there, and it blew out, because it hit an old well, okay, like I said, there's an old well that had been there from a long time ago, so fracking across the creek, across the river, I don't know about that.</p> <p>But what I came up to say was you guys are hiring another company to do this, all right, the first ones that were in there, okay, me and my wife and my neighbors were discussing this that it hasn't been brought up that the first crew that was brought in there to do this job, okay, they were saying that they ran into contaminated material that they didn't know how to handle. Well, what we heard at the meeting right here is that they were not following proper protocol and were forced off of the site, okay.</p> <p>My question is: The next crew that you guys get, contractors, whether it be driving the trucks on the roads, digging up dirt beside this gentleman's house, what's in it? Do you guys really know what's in there? And why is it so hard not to get professional people, the best, to handle this? This has been drug out, drug out, drug out. This has happened, it's happened, safety, safety, safety. They didn't get a damn thing done over there. These people are still living with a great big hole in their yard. We need to get this done this time. We need to get it done right.</p> <p>RESPONSE: Waste records that estimate the volume of waste in the SLDA trenches, as well as the radiological and chemical contaminants and SNM mass, are not considered to be accurate and the actual contents of the trenches is unknown. The Corps of Engineers considers the excavation of the decades-old buried wastes to be a process of discovery, wherein we apply a risk-based approach to in-situ identification, excavation, removal, and disposal of materials consistent with best engineering and health physics practices. Close coordination between the Corps, its contractor, supporting agencies, and the community further reduces risk and assures public and worker safety before and during the remediation process. The Corps of Engineers is committed to safety in anticipation of finding materials that are not listed in the historical documentation, and this will be reflected in future remediation work plans. The Corps of Engineers has reviewed and continues to review historical documentation and anecdotal information provided by concerned persons and government agencies in order to gain a better understanding of what may be buried in the SLDA trenches. The Corps of Engineers is interested in any new information that anyone can provide, and has an open request to all persons, to provide any pertinent information to us.</p> <p>Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. The Corps of Engineers' Request for Proposals to acquire a new remediation contract was developed to ensure that the best qualified and technically competent contractor is selected for this project.</p>
<p>Comment 14</p>	<p>Lynn Crayne (Public Meeting)</p> <p>Like others in this room, I am concerned about the migration of contamination for the underlying homeowners. The State of Pennsylvania through the DEP has spent millions of dollars to view mines. They've done grouting in Apollo, Leechburg, Hyde Park, and actually Babcock & Wilcox actually did their own remediation, but they would control the property. On the Proposed Record of Decision, it already makes mention of the mine. It's a potential thoroughfare; contaminated water, and other future contamination to get into our environment.</p> <p>RESPONSE: The Corps of Engineers' amended remedy is Alternative 5 – Excavation, Treatment, and Off-site Disposal. This remedy was selected partly due to the fact that by removing the source of contamination from the site, the chances of contamination being released to the environment or migrating off-site is eliminated, regardless of the presence of the abandoned mine works or their long-term stability. This will eliminate any future concerns about environmental issues involving radioactive materials should there be problems with the underlying mines.</p>

Comment 15	Patty Ameno (Public Meeting)
<p>Let me make something clear for those who don't understand what's at stake here.</p> <p>First of all, the Corps inherited this, they didn't create it. And when there was some surprises that came up, things came to a standstill and they handled it extremely well. Everybody -- the agencies that are involved right now you can't get anymore. They are at the highest level, I can assure you that.</p> <p>But the consequences of doing nothing and leaving it there are far more dangerous than could ever be in digging it up with the expertise of the agencies, not only the Corps of Engineers, the Nuclear Regulatory Commission, the Department of Energy, and I'm going to go ahead and say it's a feasibility study, and the NSA, and all of the other agencies.</p> <p>The contractor -- the money has been allocated or will be allocated, and so cost, and the expertise will be at hand.</p> <p>Now, what if we leave it alone? Well, let me tell you, back on December 21, 1993, ARCO's project manager, senior engineer, Bert Barker, stated that the trenches -- several of the trenches were leaking dangerous levels of radiological nuclear contaminants. Now whether that was leaking laterally or horizontally really doesn't matter to me, because it means leaking, and if the radiological material continues to leak, okay, and should it get hemmed up where it's collecting, and these neutrons start banging heads, then we can have a critical mass event. This was something that the Nuclear Regulatory Commission testified in 1996 to the chairpeople of the NRC. They knew that there was a risk, but they weren't admitting to the potential of the level of the material that may or may not have been buried here just like what was being brought up, and which may be out on the other areas of the original deeded licensed property.</p> <p>I ask you to consider, because mine subsidence is something that we have seen. It wasn't that long ago Cook Vascular had the front of their building redone. Why?</p> <p>We have to be smarter folks.</p>	
<p>RESPONSE: See Response to Comment 14. Regarding Ms. Ameno's query about Cook Vascular, this question was posed during the public meeting in a rhetorical manner. It was not directed at the Corps of Engineers, and we have no information for why a private company chose to remodel the front of its building.</p>	
Comment 16	David Battaglia (Public Meeting)
<p>I would like to echo Mr. Andritz's-- the height of this mic -- other than that, I want to echo Mr. Andritz's comments. When you are doing the RFP, if you could put in the RFP the safeguards, the minimum safeguards, needed to assure, I know you're going to go with the response to better. We want to make sure that the safety of the roadway is protected in that RFP.</p> <p>So I know Colonel Lindstrom talked before about the work on the project, and I know the quality of your work, and you should be commended for the work. The Army Corps of Engineers is always working shorthanded, and we really appreciate all that you do.</p> <p>With that being said, we need to make sure we ensure the safeguards of the road, and the best way to ensure that is having the RFP.</p>	
<p>RESPONSE: Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. This emphasis on safety will be a focus in the RFP.</p> <p>See also Response to Comment 1.</p>	

Comment 17	Tom Haley (Public Meeting)
<p>I was an employee of NUMEC from 1960 to 1971. I was a project manager. I worked on all of the projects that took place within NUMEC in that period of time. I helped develop most of the videos on those projects, and I'm aware of the blueprints, I'm aware of the product, I'm aware of the waste, you know, particularly involved in this program since 1970 -- I'm sorry, 2007, and I was asked to have -- I will point out that in the Record of Decision there's a lot of things that we've learned that should show up in this Proposed Amendment that isn't showing up clearly.</p> <p>For example, there are a lot of things identified in the initial excavation that was not -- that have not made their way into the thinking as to what is there. For example, it's on Page 3 of the ROC and soil cleanup that goes to the SLDA, and there are some things missing there that I identified as being in the ground being processed.</p> <p>Some of the work programs and work plans, for example, there were some radio neutrons of interest that stuck out, because they were -- they said that they weren't processed, and they were. They were processed at NUMEC, and I made that clear.</p> <p>One specifically was a game breaker, and that was related to 233. That was processed. I pointed that out several times all the way through this program, clear through the identification. But as a matter of fact what I did do is I prepared a document that listed everything that I could find out; everything I knew; consulting with Patty's -- Patty Ameno's documents that she had in place, and I talked about -- I presented in all the products and services we had, and the processes, and the operations, and the waste it came from, the waste summary, the waste containment, the disposal of the FOB, and I gave this to the Parks -- through the converted service contractor in May of 2011. And in August of 2011, it's been an excavation site.</p> <p>Well, unless something happened, and the potential could have well occurred, and the Colonel came to talk about that. I handed him the document. I said, Have you seen this? I prepared it for COBERRA. No, we haven't seen it. It's everything you need to know about what was processed at NUMEC. It describes waste within the limits of classified specifications. I can only go so far with my words. Let me finish. I offered to come and volunteer to talk to anybody in the Corps or in the contractor community, and let them know the details of the waste that was there, and I haven't heard from anybody yet, and that was three years ago.</p>	
<p>RESPONSE: The Corps of Engineers has read Mr. Haley's report titled, "Numec Radioactive Waste and Waste Containers at Parks Township SLDA", dated May 2011, and the Corps also believes that there is uncertainty associated with the trench contents. The Corps of Engineers considers the excavation of the decades-old buried wastes to be a process of discovery, wherein we apply a risk-based approach to in-situ identification, excavation, removal, and disposal of materials consistent with best engineering and health physics practices. Close coordination between the Corps, its contractor, supporting agencies, and the community further reduces risk and assures public and worker safety before and during the remediation process. The Corps of Engineers is committed to safety in anticipation of finding materials that may have been processed by NUMEC or are not listed in the historical documentation, and this will be reflected in future remediation work plans.</p> <p>See also Response to Comment 13.</p>	

Comment 18	Chuck Pascal (Public Meeting)
<p>And this is once again it's like Ground Hog Day. We've been having these meetings for 20 years asking that this waste be removed from here. And the Valley has been fairly consistent for 20 years saying that it wants the space, and we still do. Some people have kind of glanced at the cost, 350 million estimated at this point; however, 350 million dollars is merely one dollar for every person in the United States. I'd say that's a small amount to pay considering the amount of profit that was made by the companies that own this site, and the amount of services that they provided to the United States Government, and the United States Government paid for it, and millions and millions of dollars that have been spent contaminating and poisoning this Valley. It's a small amount to pay to undo that and to get the dump back on the right track with the people in this area.</p> <p>Now a few things that have been said here are correct. There needs to be more of an emphasis on safety and emergency preparedness. I don't think that was done the last time, and I believe that part of what should happen from your perspective is that we should be training the fire departments in the area how to respond to the kinds of chemicals or whatever is in this site, chemicals and nuclear waste, how to fight a fire, how to fight an emergency, have evacuation plans, notify the municipalities around us of what is going on, and when these -- when things are going to be passing through their municipalities. I understand that's a security issue but by the same token, I'm talking about the police departments, fire departments, the emergency management people, Armstrong County Emergency Management, as well as the municipalities. The first responder ambulance folks all need to be trained in terms of how to respond to the particular special things, which might occur, given what is in the site.</p> <p>In addition to that, I agree with what Patty said earlier with regard to the fracking issue and Miss Hagaman, as well. There has been a significant amount of seismic testing in this area, and people -- and I've been seeing it on Facebook and elsewhere, people are feeling tremors from seismic testing that is miles away from their house. That being the case, that may disturb the trenches or whatever, the abandoned mines in this area. So we should look at immediately a ban of seismic testing within some scientifically justifiable range of the site.</p>	
<p>RESPONSE: The cost of the remedial alternatives is one of the balancing criteria that the Corps of Engineers considered during selection of the remedy. Although this decision comes at a high cost, the Corps of Engineers determined that the selected remedy is protective of human health and the environment and provides long term effectiveness and permanence because it permanently removes the contamination source from the community, and restores the site for unrestricted use. Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities and that is partly reflected in the significant increase in estimated project cost.</p> <p>Training and coordination with local emergency responders will be part of the overall remedial program at SLDA. Once a new remediation contract is awarded, the Corps of Engineers and its contractor will coordinate emergency training, planning and response for SLDA with federal, state and local government agencies. Emergency preparedness will include conducting emergency drills to assess emergency response preparedness before and during remediation work.</p> <p>See also Response to Comment 9.</p>	
Comment 19	David Fisher (Public Meeting)
<p>My concern is, is there going to be continual air monitoring not only on site, but off site. I live approximately 500 yards east of where the processing place is and where the trenches are, which 90 percent of our weather blows from the west to the east and over a 10 year period, I would like to know if there could be some type of monitoring done not only on site, but off site to keep us safe in a 10 year period?</p>	
<p>RESPONSE: The Corps of Engineers has performed continuous air monitoring for airborne particulate concentrations at eight separate locations around the site perimeter and at one off-site location since the start of remediation activities in 2011. The nine air monitoring stations are also equipped with thermoluminescent dosimeters (TLDs) that measure the cumulative ionizing radiation dose that a receptor would be exposed to at those locations. All air monitoring data to date indicate that no elevated levels of airborne radiation are leaving the site. This continuous air monitoring will occur for as long as the Corps of Engineers has control of the site. Additional air monitoring measures will be employed once active remediation at the site begins.</p>	

Comment 20	[unknown] (Public Meeting)
<p>The people up in Kiskimere where this is located at, somebody needs to come up with a plan if something would terribly go wrong. These people that live up there have no evacuation plan. That's one road up there and one road out. Okay. These people are going to have to go into the woods or down over a hill. So, something there needs to be done, too, about getting people an evacuation plan, if you want a road built, put it in, I don't know. The Kiskimere people up there are stuck up there. There is only one road in and one road out.</p>	
<p>RESPONSE: Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities.</p> <p>The Corps of Engineers and its contractor will coordinate emergency training, planning and response for SLDA with federal, state and local government agencies. Emergency preparedness will include conducting emergency drills to assess emergency response preparedness before and during remediation work. Additionally, an Off-site Emergency Response Plan was developed for SLDA by the Local Emergency Planning Committee for the Emergency Planning District of Armstrong County. At this time, none of our emergency preparedness partners have identified a plan to build a second road.</p>	
Comment 21	Patty Ameno (Public Meeting)
<p>Yes. With respect to the Kiskimere, from the time the Army Corps of Engineers took this job -- many thanks to Jack Murphy, that has been one of the major requests is to have an alternative evacuation road for Kiskimere; however, I don't think it is the Army Corps of Engineers lap that this falls in. I actually believe this may fall into the lap of the State, the State DEP and possibly the governing State. So in the interim, I might need your help to try and coordinate some of this going on, and hopefully they'll have the help of the Corps of Engineers to get that going.</p> <p>The fracking is a real serious situation, as well. I had spoken to EPA about this and the DEP, and they both said that this needed to be a no-fracking zone in and around the SLDA with or without a cleanup going on. It needed to be a no-fracking area, because with the potential for mine collapse, and the material to migrate, and, again, as I told you before, once that material, the radiological material, starts moving, and it collects --Tom, you're a nuclear engineer, am I telling everything correct? Say it loud. Am I telling it correct? Yes. This nuclear material starts gathering, it collects, it will cause a neutron effect, okay, which will be a critical mass. It will not be an explosion, it will not be a destruction of buildings, it will be a flashing blue light and if it happens underground, you're not going to see it. And what will happen from the epicenter on, depending upon the amount of material, everything living will start dropping off dead. Now, I can't put that in any clearer terms. This stuff has to get out, and it has to be investigated to the rest of the original deeded licensed property, because we know that the companies were notorious back then, and so is the Government finding out now, at least this segment of Government.</p>	
<p>RESPONSE: The development of work plans and implementation of the selected remedy will include determining and applying the appropriate means of measurement, handling, storage, packaging, and shipment for disposal off-site for the full spectrum of excavated radioactive materials. Safety in all aspects of the project is the Corps of Engineers' highest priority.</p> <p>See also Responses to Comments 9, 14, and 18.</p>	

Comment 22	Tom Haley (Public Meeting)
<p>Yes, I want to comment on what Patty just said. I know the material that's in there. I know the material that's in there. As it was being uncovered, I identified it and there was a danner scan and some other work analysis. It was proven that's what it is. I've seen it. I worked with it. I know what it is. And you can't leave it in there, especially in the amounts that the NRC and ACE estimated that was there. They had a high degree of confidence that it's anywhere from 200 to 600 kilograms of at least 235 in there. There is other materials in there, too, that are very dangerous, isotopes, that we haven't found yet. The other thing is that I want to let you know how far off the estimates are in the ROD and where they were. If you add up the Table 1.1 in the ROD, the individual ROD, there is 10 -- 10 trenches are there with the amounts that you come up with, and you add those up it comes to 26.6 kilograms. I will tell you that the amount of the material that was removed until September 30th amounted to more than that in 235. What was said was in all 10 trenches was a -- that was in a little over a half a trench just to let you know about how far off the estimates are. This job was set up to be a muck and truck type of job; you get rid of the contaminated material waste, contaminated soil. So that's not what you have in the ground. It's been proven. We've been still fighting on that. That's there. It's dangerous. It shouldn't be left there. I hope to God we don't go through another one of those ROD's again, because it's got to come out of there. I will let you know there's a lot more material in there that we don't know what it is, and we haven't exhausted our efforts to find out everything about what's there, so that the people who are bidding this contract can have an idea of what else they're going to find so that they can work out the processes that can address more than one isotope, several isotopes at once. That's all I'm saying.</p> <p>I'm suggesting strongly that we exhaust all the information, that we gather all of the information we can, which we have not done yet. What we have to do is pick this thing up and look at it. It will give you a lot of questions that I can answer. I wrote this. It took me six months to put it together with Dr. Shapiro's help, with other workers from NUMEC's help that I called around the country to get the confirmed types of waste that were in there, okay, and the possible amounts.</p>	
<p>RESPONSE: The Corps of Engineers does not consider Table 1-1 in the Feasibility Study Report to be an accurate estimate of what is in the trenches. Waste records that estimate the volume of waste in the SLDA trenches, as well as the radiological and chemical contaminants and SNM mass, are not considered to be accurate and the actual contents of the trenches is unknown. While a summary of this information is provided in the SLDA Feasibility Study Report (and other documents), it should be stressed that this is based on best available information and should not, in any way, be assumed complete or fully representative of all waste within the trenches. Additionally, during waste exhumation in 1965 the complete contents of trenches 2, 4 and 5 were removed simultaneously and placed on the ground in the area between trench 2 and trenches 4 and 5. As a result, the contents of the three trenches were mixed prior to (and during) replacement in the trenches. Not all waste was returned to the trenches and it is possible NUMEC added more waste while the three trenches were open.</p> <p>See also Responses to Comments 13 and 17.</p>	
Comment 23	Peter Davin (Public Meeting)
<p>I'm a life-long resident of Pittsburgh, Pennsylvania, and I'm very familiar with the publicity that the site has. I've spent 30 years in the nuclear D&D business, and as I look around the room I see some of the leading experts in the industry, and I see in front of me the Army Corps, which has a reputation, maybe not known in this room, but certainly known throughout the United States for having the most exacting requirements for cleanup of this type. I suggest that as part of the procurement process you include a requirement in the RFP that bidders propose a detailed risk assessment and risk management plan as part of the proposal. That way the community can see what the risks are, and the contractors, which are familiar with this management of this risk, will delineate in the RFQ -- or, excuse me, in their proposal in response to the RFQ what those risks are and how they will be managed.</p>	

RESPONSE: Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. The Corps of Engineers' Request for Proposals to acquire a new remediation contract was developed to ensure that the best qualified and technically competent contractor is selected for this project. Contractors' proposals will be evaluated for how completely they identify the hazards and risks associated with this project, and their approach to safely conducting the remediation work. In addition, the Corps of Engineers' selected contractor must identify all hazards and risks, and the steps they will take to protect the workers, public, and the environment in their work plans. The work plans will undergo thorough review by the Corps of Engineers and other federal agency partners before approval of the plans.

**Comment
24**

Matt Kerchensky (Public Meeting)

My wife and I are kind of new to the area. We actually are in the process of purchasing a house in the Kiskimere area. So I guess nobody is questioning the intelligence in this room, and how you guys are going to handle this. I guess my question is: I'm a general contractor for the gas company. You guys are putting this out to bid; you guys are giving this contract to another company. You're not actually doing the work yourselves, as far as I can understand. I guess my suggestion is that somebody -- I hope somebody is going to be on this site at all times from this group of intelligence that you guys have here, because I've seen a lot of contractors come into the area, do the gas work that we do, and I've worked hand in hand with them, and because they have done this for so long, they know the easy way around it, and shortcut it, and the next thing you know plants are on fire, wells are on fire, you know, Console Energy is on fire because these companies have actually shortcutted things that they were supposed to do. So, that's my -- I guess that's my concern, is I hope you guys are planning on being here 24-7, 365 days a year to oversee this contract or whoever you get in there, whoever you give it to.

RESPONSE: The Corps of Engineers has a rigorous quality assurance process and is planning to have full-time, on-site personnel providing oversight of the contractor while there are remediation activities taking place. However, it is very unlikely that remediation activities will occur on a 24-hour schedule. Site security will be maintained continuously, 24 hours per day, 365 days per year, until remediation activities are complete. The Corps of Engineers has an experienced and knowledgeable staff, and plans to involve subject matter experts from other federal agencies to augment our project team, as necessary, to ensure we have thorough oversight of the contractor. In addition, routine and special audits of contractor operations, as well as audits of Corps of Engineers' quality assurance practices, will be employed.

**Comment
25**

Maggie Golofski (Public Meeting)

I'm a resident of Parks Township, and as one of the residents I am totally in favor of removing the waste that is on the site. And I believe that if all of the protocols are followed, that there will be no issues for safety, for anybody in the area. I live very close to the site, and I -- that's not one of my concerns. And I know that if some of these people had been to other meetings they would have known that the county and local emergency services are all trained and know what to do in case there is an accident. And also as far as evacuations, because of security, I know they have those in place, you know, and I don't have a concern about that. I know that anything that needs to be done, will be done safely, and we'll all be protected. So I'm just in favor of getting it out of here, even if it might cost a lot of money and take a long time, some of us might not see the end of this, you know, might not be here, but I'm just in favor of it all getting removed.

RESPONSE: Safety of the public and workers during remediation of the SLDA is the Corps of Engineers' highest priority and will determine the pace and direction of the remedial activities. The Corps of Engineers appreciates your trust and affirms its desire to deliver the best services in a safe manner.

Comment 26	Patty Ameno (Public Meeting)
<p>This has been a long road for all of us, and especially me. We -- how many people in here have children? Let me see your hands. This is what it's about. We can't undo anything that's already been done. We can't put the genie back in the bottle, but we can sure as hell move forward with something good, and we can leave something good for the future generations.</p> <p>Now, in the mid '90s I went to Jack Murtha, and I asked him, because you know how I feel about the NRC, they are an adjunct to the industry, and I'll make no bones about that in stating that. But I wanted the Corps of Engineers to take this, because I believe in them. Granted there is nothing perfect. There's only one perfect thing that was ever created on this earth and they crucified him, so none of us are perfect. But they have an open line for open discussion, and I got to tell you I was extremely, extremely impressed on the way the Corps handled the September 30th shutdown, and how this community was informed. Things needed tweaked. They saw it, the writing on the wall, and now with all the other agencies that's involved I have to tell you value your children, and the safety, and, you know that there is unknowns there, and I'm going to tell you even more about this right now, about the rest of the original deeded licensed property at the time of the burials.</p> <p>Recently I gave approximately 41 documents and photographs to the EPA. They ran it by their general counsel, and then to their contractor. They came out with a 17 page report, and with every document, with every photograph they're actually making an argument that it could be there, or it's possible that it couldn't. Given the history of what we know of the SLDA; what do you think is more likely than not? Okay, so that area has to be investigated. And the fact that there are data gaps in the inventories might suggest that they couldn't put down classified information. They couldn't have inventoried classified material. That's all I have to say. Think about it people and let's keep praying. Let's keep these guys going.</p>	
<p>RESPONSE: See Response to Comment 25.</p>	
Comment 27	Vince Santillo (Written)
<p>I attended the hearing in jan. 2015 when the asked for comment regarding the slda site I have many concerns. When the site first started the removal process everybody was assured Their was no reason for concern all safety issues will be addressed and handled. After the digging started their was an immediate stoppage of work. Due to a safety issue. And the fact that what was in the ground was far worse than they expected. So 1st concern they will not tell you what was found 2nd all of a sudden heavily armed guards showed up at the site. Next walls were erected around guard sheds to protect guards. Problem if they needed protecting why don't we. The threat would come from outside the walls. So the big concern is when they resume digging any time material is exposed. So are we. From threats we are not told about. But common sense tells you they are real. Also the fact you have no idea what all you will encounter as you move forward. Neither do we. The information that has come to light.has a definite impact on life on this hill Not only our safety but uneasiness that goes with not knowing what will happen as they continue. Not to mention my property value. This should be addressed too. 1 more concern what about the chemical waste how will it be removed. I haven't heard any more about this for a long while. The army corp. is not responsible for removing. This I was told. Who will or do they stay.</p>	

RESPONSE: During the initial phase of remediation, work plans were developed that detailed the procedures the contractor would follow to ensure the work was conducted safely. These work plans were reviewed by the Corps of Engineers and the NRC. Work was stopped in September 2011 when the contractor failed to follow the safety procedures specified in the work plans. The Corps of Engineers would not permit the contractor to resume remediation activities until corrections and improvements were made to the contractor's procedures and managerial and technical staff. The contract period of performance expired before work could be resumed. When the breach of procedures occurred, the Corps of Engineers implemented existing contingency plans to ensure the safety of site workers and the public. At no time during the past remediation work was the safety of site workers or the public at risk.

The Corps of Engineers anticipated the full range of materials, as identified in the ROD. However, we found that our current approach did not allow for timely, accurate characterization of the complex materials being excavated. Future work planning will include reducing the chances that a work stoppage will occur by facilitating work within the criticality safety basis, and ensuring that the contractor has the necessary tools and expertise to accurately characterize the waste materials.

The Corps of Engineers must comply with all DOD and NRC physical and information security requirements related to the types and quantities of wastes that are encountered. Site protective improvements were made to comply with those requirements. The Corps of Engineers emphasizes that although certain information regarding the SLDA remediation cannot be publically disclosed, it is not meant to cause alarm or fear, but rather to protect the community and our nation's security. The Corps of Engineers is not aware of any credible threats against the site or the community.

The Corps of Engineers is not authorized to factor local property values into its consideration and has not done so. Under the law, the Corps of Engineers is only authorized to remove radioactive waste and other chemical material comingled with radioactive waste above a certain threshold. The site owner is responsible for any non-radioactive chemical materials found and will work with the Pennsylvania Department of Environmental Protection (PADEP) to dispose of them accordingly.

**Comment
28**

Vikki Cooper (Written)

We are very concerned about the transportation of the contaminated materials. In the past, SLDA radioactive waste was shipped by container and then offloaded into gondola rail cars at a facility in Wampum, Pennsylvania. This method added unnecessary risk by requiring additional handling of the contaminated materials along with an increased chance of airborne release. Furthermore, past material handling procedures pose an additional security risk and they present needless exposure risks to offsite recipients. Therefore, in light of the risks noted above, we call for the Corps to add a stipulation within the ROD amendment that would require any packaged waste from SLDA project remain sealed until it is received at the disposal facility.

RESPONSE: The Corps of Engineers disposed of radioactive waste from the remediation of SLDA soils using large, sealed metal containers called intermodal containers (IMCs). These containers are routinely used by the Corps of Engineers without incident to transport wastes. The containers were closed on-site at SLDA, sealed with metal cable security seals and loaded onto trucks for off-site transport to Wampum, PA. There the sealed IMCs were off-loaded onto flat bed rail cars, designed specifically for carrying IMCs, for transport to the designated disposal site. Packaging, marking, labeling and transportation of the IMCs was in compliance with regulations of the US Department of Transportation (DOT). Once the IMCs left the SLDA site, the containers were not opened until they arrived at the disposal facility.

**Comment
29**

[unknown] (Written)

I am from Allegheny Township with "Riverfront Access Tourism Support". I am concerned with seismic activity because of drilling in our township 3 miles of Parks Township site.

RESPONSE: See Response to Comment 9.

**Comment
30**

[unknown] (Written)

I would like to see the material moved out of the area & the project completed ASA possible.

RESPONSE: The Corps of Engineers continues to expedite the remediation of SLDA as much as possible within the limits of applicable laws and regulations. Release of the RFP is currently scheduled in late 2015.

**Comment
31**

[unknown] (Written)

Leave the material there. It is not harming the community and costs too much to remove. You should seal it where it is.

RESPONSE: See Response to Comment 11.

**Comment
32**

E Jane Stearmean (Written)

As a third-generation resident of the Kepple Hill/Riverview section of Parks Twp. – and the parents of 4th & 5th generation residents of this area that is impacted by the shallow landfill Numec/Babcock Wilcox dump project, we feel it is imperative that efforts continue to remove all questionable materials from the site permanently. I am 67 yrs old – both my parents, a brother & I are cancer victims – as are a great majority of our local relatives & our neighbors (past and present).

To face a possibility of radioactive and chemical contaminants being left in the ground – with questionable future problems, not to mention the degrading effects on our property values & state of mind – is completely unacceptable.

PS – We (the public here) have come to trust the Army Corps of Eng. With them – we are hopeful the clean-up will be carried out safely and completely – as promised.

RESPONSE: See Response to Comment 25.

**Comment
33**

[unknown] (Written)

When will the solicitation for the project be issued?

RESPONSE: The Request for Proposals, or RFP, will be issued upon approval of the ROD Amendment, and upon completion of all required Corps of Engineers review and approvals. Release of the RFP is currently scheduled in late 2015.

**Comment
34**

Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc. (Written)

The RODA affirms the excavation and removal remedy that USACE selected in its initial 2007 Record of Decision for the SLDA, but the RODA establishes that this remedy is now anticipated to cost approximately \$412 million instead of the originally-estimated \$45 million. Much of the change in estimated costs appears to be related to significantly more complex excavation and materials-handling processes, changed site security requirements, multiple additional levels of federal agency involvement and oversight, and other procedural and methodological changes in the approach to excavation. Although USACE now expects the SLDA remedy to cost nearly ten times what it originally anticipated, the FSA and RODA do not provide a substantive and meaningful evaluation of remedial alternatives. Moreover, the FSA and RODA are so devoid of detail that we have been unable to ascertain the specific facts which underlie USACE's general assertions that changed procedures will result in an increase in remedy costs by nearly an order of magnitude. To ensure selection of an appropriate remedy and to satisfy the requirements of the National Contingency Plan, the FSA and RODA must reflect a genuine, thorough, and open re-evaluation of remedial options for the SLDA rather than simply affirming an excavation remedy that now appears to pose significant additional implementation challenges.

RESPONSE: The Record of Decision Amendment fulfills the requirements of CERCLA, the NCP, and Corps of Engineers policy. The Feasibility Study Addendum was performed to ensure a thorough, substantive, and open re-evaluation of alternatives to support the Record of Decision Amendment. Fundamental changes to the basic features of the selected remedy with respect to scope and cost are presented and justified, and appropriate alternative remedies evaluated.

The NCP requires that the lead agency propose an amendment to the Record of Decision where the remedial action differs significantly from the selected remedy and those differences fundamentally alter the basic features of the remedy with respect to scope, performance or cost. 40 CFR 300.435(c)(2). Although not required by the NCP, the Corps of Engineers undertook a thorough reevaluation of the two alternatives from the Feasibility Study that satisfied the statutory requirements of CERCLA. See FSA and FS. For a remedial alternative to be selected, it must be protective of human health and the environment and comply with the Applicable or Relevant and Appropriate Requirements (ARARs). 40 CFR 300.430(f)(1)(i)(A). Alternatives 4 and 5 were the only alternatives from the original Feasibility Study that met these statutory requirements. See FS, FSA pp. 4, 5. The Corps of Engineers also conducted the detailed evaluation of the original remedy and proposed amended remedy as required by the NCP in 40 CFR 300.435.

**Comment
35**

Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.

The FSA and RODA Fail to Reconsider Remedial Options with Care Appropriate to the Scale and Complexity of the Anticipated Remedy.

The selection of a remedy for the SLDA under the Formerly Used Sites Remedial Action Program (“FUSRAP”) is subject to the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”). The National Contingency Plan (“NCP”) contains a set of implementing regulations that govern the selection of a CERCLA remedy. Under the NCP, the lead agency must first conduct a thorough feasibility study, which involves identifying potential remedial alternatives, screening those alternatives against a number of criteria, and finally thoroughly evaluating the retained remedial alternatives against a set of nine established criteria. See 40 C.F.R. § 300.430. To be selected, a remedy must (a) protect human health and the environment; and (b) comply with applicable or relevant and appropriate regulatory requirements (“ARARs”). When one or more remedial alternatives meet these first two threshold criteria, the lead agency must evaluate each such alternative against five “balancing” criteria which include long-term effectiveness; reduction in toxicity, mobility, and volume; short-term effectiveness; implementability; and cost. Id. State and community acceptance are also considerations. Id. In conducting this evaluation, the NCP specifically requires the lead agency to conduct a “cost-effectiveness” evaluation and provides that “[a] remedy shall be cost-effective if its costs are proportional to its overall effectiveness.” 40 C.F.R. § 300.430(f).

When a lead agency publishes an amendment to a previous Record of Decision (“ROD”) which results in an estimated overall increase in the cost of the proposed remedy by approximately \$370 million, the amendment to the Record of Decision cannot rely on the underlying initial cost-effectiveness evaluation. It must, instead, conduct a thorough and rigorous cost-effectiveness evaluation in light of the magnitude of changes in costs. Because cost-effectiveness is a part of a balancing evaluation that should be applied to all remedial alternatives that meet the threshold criteria, all retained remedial alternatives should be examined with care and a rigorous analysis should be conducted of whether any such retained alternatives might be more cost effective than the originally-selected remedy. The RODA and FSA do not demonstrate that a thorough cost-effectiveness evaluation of the selected remedial option has been undertaken, much less that a similar analysis with respect to other remedial alternatives has also been performed. Indeed, Section 2.4.7 of the FSA, which addresses “Costs,” contains a general description of how the costs have been calculated for a number of alternatives, including a description of some of the contingencies that are components of the cost estimates, but it does not contain any actual “cost-effectiveness” evaluation. The RODA similarly contains no significant discussion of the cost-effectiveness of the selected remedy or of how such “cost-effectiveness” is evaluated in light of the balancing criteria required by the NCP.

RESPONSE: The Record of Decision Amendment fulfills the requirements of CERCLA, the NCP, and Corps of Engineers policy. The Feasibility Study Addendum (FSA) was performed to ensure a thorough, substantive, and open re-evaluation of alternatives to support the Record of Decision Amendment. Fundamental changes to the basic features of the remedy with respect to scope and cost are presented and justified, and appropriate alternative remedies evaluated. The Corps of Engineers elected to prepare an FSA, a document that is not otherwise required by the NCP, to support and refresh the agency's 40 CFR 400.300(e)(9) analysis. It would be inappropriate, burdensome, and contrary to regulation to interpret a proposed ROD amendment as the functional equivalent of reinitializing an agency's remedial investigation phase.

The NCP requires that the lead agency propose an amendment to the ROD where the remedial action differs significantly from the selected remedy and those differences fundamentally alter the basic features of the remedy with respect to scope, performance or cost. 40 CFR 300.435(c)(2). Although not required by the NCP, the Corps of Engineers undertook a thorough reevaluation of the two alternatives from the Feasibility Study that satisfied the statutory requirements of CERCLA. See FS, FSA pp. 4, 5. For a remedial alternative to be selected it must be protective of human health and the environment and comply with the Applicable or Relevant and Appropriate Requirements (ARARs). 40 CFR 300.430(f)(1)(i)(A). Alternatives 4 and 5 were the only alternatives from the original Feasibility Study that met these statutory requirements. See FS, FSA pp. 4,5. The Corps of Engineers also conducted the detailed evaluation of the original remedy and proposed amended remedy as required by the NCP. 40 CFR 300.435. Cost effectiveness of both Alternatives 4 and 5 were evaluated consistent with CERCLA and the NCP and discussed in the FSA and PP. See. FSA pp. 10-17, PP.

Comment 36	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
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The FSA Relied on Invalid Bases to Exclude Alternatives 2 and 3 from Detailed Evaluation.

Both the RODA and the FSA reiterate the 2007 ROD's conclusion that Alternatives 2 and 3 did not warrant a "detailed evaluation" against the NCP's nine mandated criteria. To reach this conclusion, the RODA and FSA adopt the reasoning set forth in the underlying 2006 Feasibility Study ("FS") -- a document that is nearly ten years old. Thus, the FSA states that neither Alternative 2 nor Alternative 3 "could be assured to provide protection of human health and the environment over the 1,000-year performance period due to the uncertain stability of the abandoned mine workings beneath the upper trench area." Id. It appears from the FSA that USACE based this conclusion on concerns regarding the potential that old coal mines underneath the SLDA disposal trenches might subside, resulting in future impacts to groundwater. Without identifying what specific information or studies USACE relied upon to reach these conclusions, the FSA further summarily rejects the possibility of grouting mine openings, by concluding that grouting creates a potential heaving concern.

This dismissal of Alternatives 2 and 3 (a) ignores the fact that actual subsidence risk has not been fully and rigorously evaluated for the SLDA, particularly since many of these mines are approximately 80 years old and have shown no evidence of current subsidence; (b) ignores the fact that grouting, shoring, filling, and other mine stabilization technologies have improved since any previous studies of the SLDA were conducted; and (c) mistakenly rests on the assumption that a 1,000-year protectiveness standard must be applied to this Site.

RESPONSE: The Corps of Engineers recognizes that grouting all of the mine openings beneath and adjacent to the footprints of the trenches could help to stabilize the ground and could reduce the likelihood of future subsidence for the next 1,000 years. The Corps of Engineers also acknowledges that the technology of grouting mine openings is a proven technology and has been used successfully for years; dismissal of Alternatives 2 and 3 does not ignore these facts. While grouting mine openings may reduce the likelihood of future subsidence, there remains significant uncertainty about the performance of a grouting program over the 1,000 year performance period and the effects of potential mine subsidence on trench materials. The extensive grouting of the mine entries and potentially the caved rock would likely change the groundwater levels and flow regime in the rock strata and more importantly, would not prevent the migration of contaminants from the trenches due to infiltration of groundwater. This uncertainty renders in-situ alternatives incapable of guaranteeing protection of human health and the environment over the performance period. Protection of human health is a threshold criterion, which, if not met, eliminates the alternative from further consideration.

See also Response to Comment 36(c).

Comment 36(a)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>Alternatives 2 and 3 were improperly rejected based on alleged subsidence risk without fully evaluating that risk.</u></p> <p>Neither the RODA nor the FSA provide or reference a thorough analysis of the actual stability of the abandoned mine tunnels beneath the SLDA site, nor do the documents collect or address any evidence obtained after the initial preliminary analysis of the tunnels that was conducted in 1990. The FSA cites no authority to support its claims of trench instability, instead merely asserting that a review of available information “was conducted.” Furthermore, the FSA identifies no evidence that subsidence, were it to occur, would cause a release to the groundwater.</p> <p>Neither the RODA nor the FSA provide or reference a thorough analysis of the actual stability of the abandoned mine tunnels beneath the SLDA site, nor do the documents collect or address any evidence obtained after the initial preliminary analysis of the tunnels that was conducted in 1990. The FSA cites no authority to support its claims of trench instability, instead merely asserting that a review of available information “was conducted.” Furthermore, the FSA identifies no evidence that subsidence, were it to occur, would cause a release to the groundwater.</p> <p>Existing data, which are not identified or discussed in either the FSA or the RODA, indicate that the trenches have been stable, and that there have been no off-site impacts. For example, data from recent SLDA monitoring events demonstrate that the trenches have not shifted since survey markers were installed in 1990. Additionally, voluminous groundwater data neither identify any off-site groundwater issues originating from the SLDA, nor indicate that the presence of radioactive material within the disposal trenches has resulted in any off-site impacts.</p> <p>Further, estimating subsidence risk for the Site is not “impossible.” We understand that techniques have been developed recently which would permit subsidence risk to be assessed. In particular, we understand that advanced computer modeling techniques combined with data obtained via video scoping could give a more complete picture of subsidence risk. To further understand this issue, Atlantic Richfield asked coal mine stability experts Dr. Quanzhong Gu and Dr. John Stankus to conduct an initial evaluation of the SLDA site. Their preliminary modeling suggests that the site has a limited and identifiable potential for subsidence that could be addressed and reasonably mitigated by a number of different state-of-the-art engineering solutions. This evaluation is preliminary, and Drs. Gu and Stankus conclude that further data collection, modeling, and evaluation would be necessary to allow a deeper understanding of how to manage and resolve subsidence issues. But the analysis does not suggest that potential mine subsidence issues are the sort of unmanageable or irresolvable risk that could provide a rationale for rejecting Alternatives 2 and 3 at the screening-level stage.</p> <p>In light of what appear to be significant changes in the complexity, short-term effectiveness, and implementability of the selected remedy, as well as the collection of additional site-related data, the dismissal of Alternatives 2 and 3 is a critical decision point. The FSA should not reject those alternatives without a comprehensive analysis of subsidence risk.</p>	

RESPONSE: Although not seen at this time, the potential for uranium to migrate from the trenches is high due to their unlined and uncapped condition, water infiltration and outflow, high concentrations of uranium (as a transportive radionuclide), and trench proximity to nearby water resources (riverine and groundwater). Since radionuclide inventories of the trenches have high uncertainty, the longevity of the sources in the trenches are unknown and may present a recalcitrant radionuclide source for water resources of the Kiski valley.

The lack of significant uranium impacts to site groundwater indicates the ambient soils have the capacity to adsorb radionuclides at a rate that counteracts the outflow of contaminated water from the trenches (i.e., soil portioning mitigates radionuclide transport from the trenches). The upper trenches are allegedly excavated to a weathered shale layer, which exhibited clay and silt infilling of fractures in boring logs; this condition also limits groundwater flow and potential uranium transport from the base of the trenches. The integrity of this shale layer appears to be a very important mitigating component to limit transport from the trenches; breaches in this shale layer would be detrimental to the environment. The effectiveness of in-situ remedies rely completely on the assumption that there are currently no fractures or pathways for groundwater flow within the weathered shale layer, and that none will develop during the 1,000 year performance period. If a pathway for groundwater flow through the weathered shale layer were to develop, radioactively contaminated groundwater from the trenches could migrate into the abandoned mines which ultimately discharge into Carnahan Run.

The Corps of Engineers recognizes that groundwater monitoring data collected to date indicate no migration of the radioactive wastes from the trenches. However, that condition cannot be guaranteed to continue in perpetuity. At a minimum, it would require that none of the existing hydrogeologic conditions at the site may change. Currently, the abandoned mines underneath the trenches present a risk of causing subsidence which could alter the hydrogeologic conditions, possibly resulting in a release of the radioactive wastes into the environment. If the abandoned mines were to be grouted, the current groundwater flow regimes for the site would most likely be altered, with unknown impacts to the buried radioactive wastes.

The report prepared by Keystone Mining Services (KMS) does not address the effects of subsidence on the trenches filled with low-level radioactive waste, the joint/fracture system of the overburden, and the hydraulic conductivity of the rock, and the groundwater. The KMS report also does not address how the conclusion was reached that "...the subsidence risk is outside the range of what has long been addressed in areas where other old coal mines operated in the Upper Freeport seam". In fact, KMS states that, "The results from the SDPS model indicate that subsidence caused by the room-and-pillar mining could occur." KMS further states, "Under high humidity and/or flooded conditions, the [mine] floor will become muddy and soft, which could cause the remaining coal pillars to "sink/punch" into it, and eventually causing room caving and propagating to the surface." It is documented that the abandoned mines are flooded with free-flowing water that discharges into Carnahan Run. In addition, the preliminary modeling performed by KMS assumed that all of the coal pillars were still intact and retained their original dimensions and strength from when they were created. No considerations were given to account for protracted chemical and physical weathering that could potentially reduce both the cross-sectional area of the pillars and the intrinsic strength of the coal. (GAI, 1993). KMS did not conduct a risk assessment for the trenches, considering subsidence, groundwater infiltration, and migration of contaminants from the low-level radioactive waste. The Corps of Engineers finds that KMS' conclusion is unsubstantiated.

See also Responses to Comment 35 and 36.

Comment 36(b)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The FSA does not appropriately consider the feasibility and effectiveness of modern mine stabilization and other techniques that could reduce the potential for radionuclide migration.</p> <p>The FSA states that Alternatives 2 and 3 were “re-evaluated for this FSA” and “still did not meet the threshold criteria” because of mine stabilization issues. FSA at 4. But other than a passing reference to a “review of . . . current technology related to mine stabilization,” the FSA contains no evidence that USACE conducted any kind of analysis -- even the kind normally conducted during an FS screening process -- of any specific technologies capable of addressing mine stabilization. FSA at 4.1.</p> <p>Even the FSA’s cursory discussion of mine stabilization issues recognizes that “[a] grouting program to stabilize the mine workings beneath the trenches could be developed” and that “the technology of grouting mine openings is proven, and has been used successfully by the U.S. Department of the Interior, Office of Surface Mining.” FSA at 5. The FSA further notes that grouting the mine openings would “stabilize the ground and reduce the probability of future subsidence for the next 1,000 years.” Id. But the FSA then dismisses stabilizing the mine workings because grouting “may cause heave of ground” and “would most likely change the groundwater levels and flow regime in the rock strata.” Id.</p> <p>Neither of these rationalizations -- for which there does not appear to be any engineering analysis in the FSA or in the administrative record -- is a compelling reason to reject remedial alternatives that include mine stabilization. The idea that grouting might induce heaving, without any analysis of whether grouting would induce heaving, is little more than speculation, not analysis. And this speculation appears to ignore both the successful use of mine stabilization techniques at other sites as well as the improvement in those techniques in recent years that substantially mitigate or eliminate heaving risks. As detailed in Dr. Gu and Dr. Stankus’ report, modern backfilling techniques now allow mine tunnels to be filled in a variety of ways so that the fill material can be more uniformly distributed and placed to address heaving and caving issues.</p> <p>Similarly, the fact that mine stabilization may result in changed patterns of groundwater flow and changed groundwater elevations cannot, in itself, serve as a basis for rejecting alternatives that include mine stabilization. Stating that groundwater patterns will change is not the same as concluding that those groundwater patterns would change in a way that would increase the risk of contaminant transport from the SLDA disposal trenches. While the FSA speculates as to the first proposition, it offers no support for the second. Moreover, there is extensive groundwater data, much of which has been collected since the initial 2007 ROD. Given the extensive site-related groundwater data, well-established groundwater flow and contaminant transport models (that are used at CERCLA sites across the United States) can be used to evaluate how mine stabilization would change groundwater flow patterns and elevations and whether such changes would increase the risk of contaminant transport from the SLDA trenches. The FSA contains no indication that this kind of analysis has been done.</p> <p>Finally, even if mine stabilization resulted in groundwater flow patterns or elevations that increased the risk of contaminant transport from the trenches, there are numerous well established remedial techniques that can be used to alter groundwater flow and elevations. These techniques -- including capping to address recharge, grouted underground walls or barriers, and soil solidification to change permeability of in situ soils -- have all been applied at other CERCLA sites. It is not clear whether USACE considered the possibility that any of these relevant technologies could be used at the SLDA.</p> <p>In light of the substantial changes in Alternative 5, as well as the existence of proven remedial techniques to address mine stabilization and groundwater flow, the FSA should not have rejected Alternatives 2 and 3 at the screening stage but should have conducted a full analysis of these alternatives.</p>	
RESPONSE: See Responses to Comments 36 and 36(a).	

Comment 36(c)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The FSA improperly uses a 1,000-year protectiveness standard as a basis for rejecting Alternatives 2 and 3.</p> <p>The FSA also states that Alternatives 2 and 3 cannot be carried beyond a screening level evaluation because “neither alternative could be assured to provide protection of human health and the environment over the 1,000-year performance period” The FSA notes that the 1,000-year performance period “is consistent with the time frame identified in 10 CFR 20.1401(d).” The cited provision is not, however, a provision specifying appropriate protectiveness periods but rather a provision explaining how to calculate the total effective dose equivalent (“TEDE”) -- which is to be based on “the peak annual TEDE expected within the first 1000 years after decommissioning.” Thus, the cited provision is not an ARAR that should be used to evaluate Alternatives 2 and 3. Rather, the appropriate regulatory provision addressing post-closure standards provides that disposal areas shall be designed “to provide reasonable assurance of control of radiological hazards to . . . [b]e effective for one thousand years, to the extent reasonably achievable, and, in any case, for at least 200 years” 40 C.F.R. § 192.32(b)(1)(i). Similarly, the regulation establishing standards for control of residual radioactive materials provides that control shall be designed to be effective for “up to one thousand years, to the extent reasonably achievable, and, in any case, for at least 200 years.” 40 C.F.R. § 192.02(a). The Nuclear Regulatory Commission’s (“NRC”) regulations providing for disposal of byproduct material also contain a similar effectiveness requirement. See 10 C.F.R. Part 40 App’x A criterion 6(1); see also 10 C.F.R. §§ 61.7(a)(2), (b); 61.52; 61.59 (establishing NRC standards of construction and maintenance for disposal facilities containing varying classes of radioactive waste).</p> <p>Indeed, as permitted under these ARARs, it appears that USACE has relied on the timeframe of at least 200 years to evaluate long-term remedial effectiveness at other FUSRAP sites. At the Seaway FUSRAP site, for example, USACE identified the regulations cited above as ARARs; the 2009 Seaway ROD states that the remedy for that site would “[p]rovide reasonable assurance of control of radiological hazards to be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years.” Record of Decision for the Seaway Site (October 2009), at 8-2. Similarly, at the Niagara Falls Storage Site, USACE noted that a waste containment structure would adequately mitigate off-site contaminant migration for 200 years. See USACE, LOOW & NFSS Frequently Asked Questions (FAQs), available at http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite/NFSSLOOWFAQs.aspx#A5. At the White Mesa Uranium Mill site in Utah, the design objective of a reclamation plan involving material from FUSRAP sites was “to be effective for up to one thousand years, to the extent reasonable, and, in any case for at least 200 years.” 65 Fed. Reg. at 308-09 (January 4, 2000).</p> <p>Under the correct ARARs, then, the remedial alternatives for the Site must be evaluated against an effectiveness standard which mandates effectiveness for at least 200 years and seeks to achieve effectiveness for up to 1,000 years to the extent reasonably achievable. It does not appear that USACE has conducted an evaluation of whether the 1,000-year effectiveness criteria is “reasonably achievable.” The FSA contains no indication that this kind of analysis has been conducted in light of either (a) the substantial changes in the selected alternative that have required an amended ROD or (b) recent improvements in mine stabilization technologies that may improve the effectiveness of other alternatives.</p>	
<p>RESPONSE: The determination of ARARs for SLDA is in accordance with the CERCLA and the NCP as supported by the Administrative Record. The selected ARAR is 10 CFR 20.1402. This regulation is a properly promulgated federal requirement that provides cleanup standards or standards of control that specifically address the hazardous substances at SLDA. Since the Corps of Engineers is neither the site owner nor an NRC licensee, the requirements are not legally applicable for a remediation conducted by the Corps of Engineers at the site. Instead, 10 CFR 20.1402 is a relevant and appropriate requirement under the circumstances of the release of the hazardous substances at the site. 40 CFR 300.5. Specifically, the medium and substances, the actions or activities and the type of place regulated by the requirements are sufficiently similar to the circumstances at the site and the requirements are well-suited to the site. 40 CFR 300.400(g). The ARAR requirement from 10 CFR 20.1402 includes dose to a critical receptor and the dose is based on the peak annual dose within a 1,000 year period of time after decommissioning. If subsidence were to occur within the 1,000 year period, a receptor could be exposed to greater concentrations of radioactive materials than from the selected alternative and the receptor dose could be higher than the ARAR allows.</p> <p>The Seaway FUSRAP site has a different ARAR than SLDA because the site circumstances and contamination at the site is different than that of SLDA. The Corps has not completed a final feasibility study for NFSS, or issued a proposed plan for NFSS. As such, no ARARs have been selected for the NFSS FUSRAP site. Additionally, neither of those sites are licensed by the NRC.</p>	

Comment 36(d)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The FSA fails to consider the cost of the separate, duplicative remediation structure that USACE implies will be required in an excavation remedy.</p> <p>The initial 2007 ROD interpreted the underlying federal statute authorizing USACE to remediate the SLDA under the FUSRAP program as precluding USACE from remediating nonradioactive contamination that was not commingled with radioactive waste: “Any chemical that is not co-mingled with radioactive waste cannot be addressed by the U.S. Army Corps of Engineers (USACE) under FUSRAP by the authority provided in Section 8143 of Public Law 107-117.” In the initial ROD, the initial excavation, and, it appears, the RODA, USACE has interpreted “radioactive waste” to consist only of that material meeting or exceeding derived concentration guideline limits (“DCGLs”), rather than material above background levels of radioactivity. These interpretations constrain USACE’s authority to remediate soils and materials from the SLDA.</p> <p>As an initial matter, USACE’s legal interpretation of the scope of its remedial authority is unconvincing. The statute authorizing SLDA remediation does not prohibit USACE from remediating non-radioactive waste. Generally, “hazardous substances” associated with “Atomic Energy Commission . . . activities” -- including hazardous substances associated with “beryllium work” -- are “considered within the scope of FUSRAP cleanup activities.” USACE, Formerly Utilized Sites Remedial Action Program: Engineer Regulation, ER 200-1-4 (August 29, 2014). The authorizing statute for the SLDA also does not require USACE to define radioactive material narrowly, so as to exclude material exhibiting concentrations of target radioactive materials above background levels but below DCGLs. Furthermore, even assuming, arguendo, that the statute authorizes only the cleanup of material co-mingled with material exceeding DCGLs, the statute would not prevent USACE from taking the sensible position that all material buried in a trench alongside radioactive material must be considered to be “co-mingled” with that radioactive material. USACE appears to have taken a more pragmatic approach to the issue of the scope of material falling within FUSRAP remediation parameters at the Luckey Site, a former beryllium production facility where USACE not only addressed “AEC-related constituents” including beryllium, but also non-AEC-related constituents co-located with AEC related constituents. See Luckey Site, Final Feasibility Study Report (2003), at ES-1-2.</p> <p>At SLDA, USACE’s interpretation of the scope of its remedial authority effectively requires the property owner to develop an additional and overlapping set of remedial operations to address any material that USACE classifies as (a) not radioactive waste because it does not exceed the DCGLs and (b) not co-mingled with radioactive waste. Some of the material USACE excavates from the disposal trenches and then determines it will not further address may require off-site disposal under the Resource Conservation and Recovery Act or applicable Pennsylvania law. Depending on levels of radioactivity and chemical contamination, BWXT may be forced to send such waste to a low-level radioactive waste facility or a mixed-waste low-level radioactive waste facility, the very same types of disposal facilities being utilized by USACE. We expect that these concurrent and overlapping materials characterization, handling, and disposal processes being operated by USACE and BWXT will substantially increase overall remedial costs and will be unnecessarily duplicative. The cost increase may be particularly large if USACE utilizes a contractor without an NRC license, since BWXT -- which must utilize a licensed contractor -- would be required to rely on an entirely separate contractor. Neither the FSA nor the RODA provide information on how these two remedial structures will be coordinated, and they also fail to evaluate these concurrent and overlapping remedial processes with respect to short-term effectiveness, implementability, cost, or any of the other criteria by which a remedy must be evaluated.</p> <p>If USACE maintains its narrow interpretations of its own authority, it must consider the cost of these concurrent remedial structures in its evaluation of remedial options. The NCP requires the lead agency to consider costs in evaluating remedial alternatives. See 40 C.F.R. § 300.430(e)(9)(iii)(G). The regulations provide no basis for ignoring costs simply because those costs will not be incurred by the lead agency. Failing to consider these costs in the remedial evaluation results in both an insufficient evaluation of Remedial Alternative 5 and a biased comparison of that remedial alternative with other remedial alternatives.</p>	

RESPONSE: Section 8143 of P.L. 107-117 states that the Secretary of the Army, acting through the Chief of Engineers, shall undertake activities to “clean up radioactive waste at the Shallow Land Disposal Area...” in a manner “consistent with” the 5 July 2001 Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission and The U.S. Army Corps of Engineers of Engineers for Coordination of Cleanup & Decommissioning of the Formerly Utilized Sites Remedial Action Program (FUSRAP) Sites With NRC-Licensed Facilities (2001 MOU). Article III.G. of the 2001 MOU states that “USACE shall remediate the licensed site to meet at least the requirements of CERCLA and of 10 CFR 20.1402.”

The Corps of Engineers’ preliminary remediation goals (PRGs) were developed in its RI/FS, on the basis of limiting the annual dose to a hypothetical Subsistence Farmer to 25 mrem/year, consistent with the limit identified for an average member of the critical group, as specified in NRC decommissioning requirements in 10 CFR 20.1402 (Radiological criteria for unrestricted use). No additional information was obtained during the RI/FS/FSA process necessitating changes to PRG development to meet that dose requirement. Because that dose requirement was determined to be the ARAR, the PRGs were used as the derived concentration guideline limits (DCGLs) for the site (FS; ROD), and remain valid for the FSA.

Thus, the Corps of Engineers’ interpretation of its authority under Section 8143 of P.L. 107-117, as including material meeting or exceeding site DCGLs and those non-radioactive substances comingled therewith, is reasonable - and consistent with CERCLA and the 2001 MOU. The Corps of Engineers’ authority to remediate the SLDA site is merely one of many administrative powers given to the Corps by Congress. But those powers are also circumscribed by the very authority granted to it – our authority is not without limits. Stark v. Wickard, 321 US 288, 309 (1944). In the event that the Corps’ interpretation of its own authority was challenged, and an ambiguity in Section 8143 of P.L. 107-117 shown to exist, the Corps of Engineers’ interpretation of any ambiguity would be afforded substantial deference in court under the well know principles and framework of Chevron, City of Arlington v. FCC, 133 S. Ct. 1863 (2013) (citations omitted).

The Corps of Engineers considered costs associated with the remediation pursuant to 40 CFR 300.430(e)(9)(iii)(G), 40 CFR 300.430(f)(1)(i)(B), and 40 CFR 300.430(f)(1)(ii)(D) (FS, FSA pp. , ROD, RODA pp. 4-5). Any remedial action that may be required by the NRC, EPA, or PA DEP, during or subsequent to reinstatement of BWXT’s NRC license but outside of the scope of the Corps of Engineers’ authority under Section 8143 of P.L. 107-117, is the exclusive responsibility of the site owner.

Comment 37	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
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USACE Has Not Sufficiently Considered Alternative 4.

RESPONSE: See Responses to Comments 35 and 39.

Comment 37(a)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
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The FSA’s analysis of Alternative 4’s “implementability” overemphasizes the difficulty of managing administrative issues as part of Alternative 4.

The FSA concludes that the difference in cost between Alternative 4 and Alternative 5 is offset by Alternative 4’s “lower implementability, which appears to be related to “the uncertainty in obtaining regulatory concurrence for, and community and owner acceptance of, construction of an on-site disposal cell” as well as “the uncertainty and potential delay in obtaining real estate interests and long-term operation and maintenance requirements for 1,000 years.” FSA at 16. As further explanation, in its assessment of implementability, the FSA states that Alternative 4 would face “significant administrative challenges,” in part because regulatory approvals would be required. See FSA at 10.

To support these conclusions, the FSA notes that, prior to implementation of Alternative 4, a new memorandum of understanding between federal agencies would be required. The fact that some additional time might be required for the executive branch of the federal government to resolve an appropriate division of responsibilities among its various agencies is not a rational basis for concluding that there are implementability issues with a particular remedial alternative. This is particularly so when we are aware of no legal basis that would preclude federal participation in and oversight of Alternative 4. Finally, as with the analysis of Alternatives 2 and 3, the FSA’s analysis of long-term operation and maintenance requirements is predicated on the erroneous use of the mandatory 1,000-year longevity requirement as an ARAR. (See Section I.B.3 above).

RESPONSE: An SLDA-specific Memorandum of Understanding between the Corps of Engineers, NRC, DOE-EM, and NNSA was executed in 2014 to articulate the cooperation of the agencies relating to the remediation of radioactive waste at SLDA.

The Corps of Engineers analyzed Alternative 4's implementability in conformance with 40 CFR 300.430(e)(7)(ii), 40 CFR(e)(9)(iii)(F), and 40 CFR 300.430(f)(1)(i)(B).

In order to implement Alternative 4, or any alternative that does not meet the unrestricted release criteria set forth in 10 CFR 20.1402, the Corps of Engineers and NRC would have to enter into a new memorandum of understanding (MOU) because USACE response actions meeting the restricted release requirements of 10 CFR 20.1403 are outside the scope of the existing MOU. The fact that significant additional time would be required for multiple federal government agencies (NRC is an independent agency, so it is not part of the executive branch) to develop and approve a new MOU is absolutely a basis to assigning a lower rating for the implementability of Alternative 4. As stated in the NCP (300.430(e)(9)(iii)(F)), "...alternatives shall be assessed by considering...the administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies."

See also Responses to Comments 36(c) and 38(b).

**Comment
37(b)**

Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.

USACE has failed to recognize that an onsite disposal cell could have a high level of effectiveness.

The FSA asserts that "Alternative 5 is determined to provide a higher degree of effectiveness [than Alternative 4] because of complete removal of all material." FSA at 8. This conclusion fails to recognize that an on-site disposal cell can be designed to provide long-term protection for human health and the environment. Notwithstanding the FSA's references to sampling and analysis costs, sampling should not be a barrier to use of a disposal cell; we understand that such sampling can be carried out in the early stages of the project with minimal impacts on costs and schedules. See FSA at 11. On-site disposal cells have been effectively utilized at numerous sites throughout the United States, including at the Hanford, Savannah River, and Fernald Sites. At the Oak Ridge site, federal officials estimated that an on-site disposal facility "could save \$1 billion in on-site versus off-site costs." John Huotari, New DOE landfill could cost \$1 billion, including construction, operation (February 23, 2015) available at <http://oakridgetoday.com/2015/02/13/new-doe-landfill-cost-1-billion-including-constructionoperations/>. The FSA fails to explain why an on-site disposal cell is effective at other FUSRAP sites, but would not be at the SLDA.

RESPONSE: The Corps of Engineers has clearly stated, in both the Feasibility Study (FS) and the Feasibility Study Addendum (FSA), that Alternative 4 would provide long-term effectiveness and permanence. The Corps of Engineers recognizes that an on-site disposal cell can, and would necessarily have to, be designed to meet applicable, or relevant and appropriate waste disposal regulations to provide long-term protection of human health and the environment. The reason that Alternative 5 provides a higher degree of long-term effectiveness is because the wastes would be permanently removed from the site and the land would be suitable for unrestricted use. Alternative 4 would permanently restrict all future land use and relies on perpetual environmental monitoring to ensure the disposal cell remains effective, including CERCLA five-year reviews, over the 1,000-year performance period. The long-term effectiveness of Alternative 4 is also based on the assumption that the land owner will commit to maintaining the disposal cell, and any associated land use restrictions, in perpetuity to prevent people from accessing the site. If perpetual maintenance and stewardship of the disposal cell is not sustained, the long-term effectiveness of Alternative 4 is questionable.

**Comment
38**

Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.

The FSA Mischaracterizes the Risks Associated with Alternative 5 and Overstates Alternative 5's Short-Term Effectiveness and Implementability.

RESPONSE: The Corps of Engineers disagrees with this statement for the reasons explained in the responses to Comments 38(a) and 38(b).

<p>Comment 38(a)</p>	<p>Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.</p> <p>The FSA underestimates the transportation risk associated with Alternative 5.</p> <p>The FSA states that the transportation risk created by Alternatives 4 and 5 are “considered effectively the same.” FSA at 10. Alternative 5 requires the hauling of radioactive material on U.S. roads and railroads while Alternative 4 would avoid the transportation of radioactive waste off-site. The transportation risks of the two alternatives are thus fundamentally different. Alternative 5’s transportation risk exceeds that of Alternative 4 (and, likely, that of Alternatives 2 and 3).</p> <p>RESPONSE: As stated in the FSA, the Corps of Engineers recognizes that Alternatives 4 and 5 involve the transport of different materials, namely bulk construction materials for Alternative 4 and radiologically contaminated wastes for Alternative 5. However, while the materials differ, as do the nature of their associated risks, the Corps of Engineers determined the level of risk presented by each alternative is roughly equivalent. For example, Alternative 4 is expected to result in greater heavy truck traffic on local roads in the vicinity of the site due to the amount and locations of materials needed to construct the disposal cell. Alternative 5 presents less truck traffic, but results in increased rail traffic. Hauling of bulk materials for Alternative 4 would most likely be accomplished with dump trucks acquired from local trucking companies and/or quarries. In contrast, transport of radiological wastes may only be conducted by transporters who have met stringent United States Nuclear Regulatory Commission and Department of Transportation requirements for the transport of those materials. The higher level of regulatory oversight and driver qualifications applicable to the waste haulers mitigates the greater risk associated with the transport of radiological wastes as opposed to construction materials.</p> <p>Another mitigating factor that reduces the risk associated with transport of the radiological wastes are the shipping containers, known as intermodal containers, or IMCs, that are specifically designed to safely contain the wastes and are sealed shut from the time the IMCs leave the site until they arrive at the disposal facility.</p> <p>According to the Association of American Railroads (AAR), railroads are the safest mode for transporting hazardous materials, as evidenced by the fact that in 2014, 99.999 percent of rail hazardous materials shipments reached their destination without a release caused by a train accident. (AAR, <i>Railroads: Moving America Safely</i>, May 2015) This is another significant mitigating factor that reduces the risk associated with transport of the radiological wastes.</p> <p>The Corps of Engineers determined that the transportation of fully-contained radiological wastes, in a limited area by truck and then by rail, both in a highly regulated manner, is roughly equivalent to Alternative 4’s transportation of construction materials in a manner that requires a greater number of heavy truck loads on local roads, making the transportation risks for both Alternatives 4 and 5 effectively the same.</p>
<p>Comment 38(b)</p>	<p>Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.</p> <p>The FSA ranks Alternative 5’s implementability too favorably.</p> <p>The FSA has ranked the implementability of Alternative 5 as Medium/High. This rating is unsupported by the record. Alternative 5 is now projected to cost nearly ten times more than prior cost estimates, apparently due to challenges in implementing the remedy as originally planned. Notwithstanding these apparent implementation difficulties, the FSA has given Alternative 5 an implementability rating of Medium/High. This is a more favorable rating than that contained in the original FS and ROD, which ranked the Alternative’s implementability as Medium, while estimating its cost as \$35.5 million. See FS at Table 4-5, ROD at 34 (Table 5). Meanwhile, Alternative 1, the No Action Alternative, received a High rating. It is dubious that a complex excavation remedy, involving exhaustive characterization and handling procedures, multiple agency oversight, extensive security precautions, and long-distance transportation of radioactive material, could fairly be considered similar in implementability to the No Action Alternative. It is also unlikely that the implementability of Alternative 5 could fairly be considered to have improved even as its cost and complexity have vastly increased. On the other hand, the implementability challenges associated with Alternative 5 -- including retrieval and characterization of material, as well as long-distance transportation of radioactive material via public roadways or railroads -- arguably exceed those of Alternative 4, which the FSA rates as Low for implementability.</p>

RESPONSE: The “implementability” evaluation criterion is only one of 9 criteria for evaluation required by the NCP. It is defined in Section 300.430(e)(9)(iii)(F) as:

“The ease or difficulty of implementing the alternatives shall be assessed by considering the following types of factors as appropriate:

(1) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

(2) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions);

(3) Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.”

Alternative 1 ranked the highest for implementability because:

- the status quo is inherently the most technically feasible and presents the least technical difficulties and unknowns because it requires no action;
- it’s administratively feasible because the SLDA legislation (P.L. 107-117) requires that the site be remediated, but it does not say how or by when; and
- it presents no need for services, materials, treatment, staff, or technology.

Alternative 5 is ranked as Medium/High for implementability because:

- The remediation work completed in 2011, notwithstanding the safety shutdown, demonstrated that the remedial activities associated with this alternative are technically feasible, and the technologies that will be employed are available and reliable. Anticipated changes to the work plans and methodologies that will be employed have increased the implementability of both Alternatives 4 and 5.
- In contrast to the commenter’s assertion, in accordance with Sections 300.430(e)(9)(iii)(F) and (G) of the NCP, cost is not a factor in determining the implementability of remedial alternatives. Rather, cost is evaluated as a separate balancing criterion.
- Using a different type of remediation contract will enhance the implementability of Alternatives 4 and 5.
- It’s administratively feasible because the SLDA legislation (P.L. 107-117) requires that the site be remediated, but it does not say how or by when; certain Energy and Water Development Appropriations Acts (P.L. 105-62, and P.L. 106-60) authorize USACE to clean-up certain contaminated sites throughout the United States in accordance with CERCLA; an MOU between the NRC and the Army specifically addresses those FUSRAP sites that are subject to NRC licenses; and an interagency MOU specifically addresses potential site conditions under an Alternative 5 remediation.
- Long distance transport of radioactive material via public roadways or railroads has been demonstrated as a proven method for remedial actions for literally hundreds of other remediation project across the country. Transportation of wastes occurs on public roadways and railroads every day and is absolutely implementable.

Alternative 5 is not rated as high as Alternative 1 because it involves complex remedial activities.

Alternative 4 is ranked lowest for implementability because: although design and construction of an on-site disposal cell is technically feasible, and the technologies to be employed are available, the administrative feasibility of this alternative diminishes its implementability. While the SLDA legislation affords flexibility, the existing MOUs between the Army and NRC are not sufficient to address a remediation under this alternative. Additionally, perpetuating the presence of a LLRW disposal facility at the SLDA site requires long-term stewardship, operation, and maintenance that Alternative 5 does not. That casts a pall of uncertainty over the future availability of services, materials, specialists, and other provisions to ensure implementation success. Additionally, a new on-site LLRW facility increases likelihood of additional, long-term coordination with the state and PRP.

Comment 39	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The FSA has Ignored at Least Two Potentially-Viable Remedial Alternatives.</u></p> <p>The NCP provides that “[t]he development and evaluation of alternatives shall reflect the scope and complexity of the remediation action under consideration.” 40 C.F.R. § 300.430(e)(1). Additionally, the NCP states that “[t]he number and type of alternatives to be analyzed shall be determined at each site, taking into account the scope, characteristics, and complexity of the site problem that is being addressed.” Id. at § 300.430(e)(2). In light of the substantial changes to the complexity, cost, and approach to Alternative 5, the FSA should have considered other potentially-viable alternatives such as the ones set forth below.</p>	
<p>RESPONSE: Reconsideration of additional, potentially viable alternatives is neither required by the NCP nor necessary. The NCP provides that a feasibility study’s primary objective is to “ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected” (40 CFR 300.430(e)(1)). The administrative record for this action, including but not limited to the FS, ROD, FSA, and Proposed ROD Amendment, accomplishes this objective. Alternatives commensurate with the SLDA site, its scope, characteristics, and complexities, were initially developed in the FS/ROD. Those alternatives were reevaluated in the FSA in a manner consistent with the requirements of 40 CFR 300.430(e)(2) and 40 CFR 300.430(f).</p> <p>New information drove the Corps of Engineers to document proposed changes to the remedy’s methodology and implementation procedures (but not the remedy itself), as well as the costs associated with those changes, in a Proposed ROD Amendment consistent with 40 CFR 300.435(c)(2). However, preparation of a ROD Amendment does not compel a reconsideration of alternatives in the manner suggested by the commentor.</p>	
Comment 39(a)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The FSA did not consider combining Alternatives 2 and 3 in a hybrid remedy.</u></p> <p>One potentially viable remedy not evaluated in the FSA is a combination of remedial approaches set forth in Alternatives 2 and 3. This hybrid “Remedy 2.5” approach would consist of long-term monitoring of groundwater and site stability, combined with provisions for installing protective measures on an as-needed basis in the event of potential threats to groundwater. Such a remedy would be as protective of human health and the environment as either Alternative 2 or 3; consistent with ARARs; more implementable than Alternative 3; and more cost-effective than Alternatives 3, 4, or 5.</p>	
<p>RESPONSE: See Response to Comment 39.</p>	
Comment 39(b)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The FSA did not consider combining Alternatives 4 and 5 in a hybrid remedy.</u></p> <p>Similarly, the FSA does not consider a hybrid remedy that would combine components of Alternative 4 with components of Alternative 5. This hybrid “Remedy 4.5” approach would consist of off-site disposal of higher-level radioactive material, combined with disposal of lowerlevel radioactive material in an on-site cell. This type of hybrid approach has been used effectively at other FUSRAP sites, including the Fernald, Hanford and Oak Ridge sites. At the Fernald Site in Ohio, where the chosen remedy combines off-site disposal of higher-level radioactive material with on-site containment of lower-level radioactive material, DOE has described the disposal plan as a “balanced approach.” Fernald Performance Management Plan (November 2003) available at http://www.lm.doe.gov/land/sites/oh/fernaldd_orig/NewsUpdate/FPMP_PDFs/FPMP_11-03/08%20-%20Strategic%20Initiative%20-%20OSDF%20-%202011-03%20pgs%2017-18.pdf.</p>	
<p>RESPONSE: See Response to Comment 39.</p>	

Comment 40	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
The RODA Appears to Base Remedy Selection on Evidence Not in the Administrative Record.	
RESPONSE: See Responses to Comments 40(a) and 40(b).	
Comment 40(a)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The administrative record should contain the complete information on which remedy selection has been based.</u></p> <p>CERCLA requires the agency managing a response action to establish an administrative record, which must contain the information it relies on to select a remedy, as well as other materials that influenced or might have influenced the agency. See 42 U.S.C. § 9613(k)(1). The agency’s selection of a response action must be based on this administrative record, which must be available to the public at or near the facility at issue.² See <i>id.</i>; <i>Cooper Indus., Inc. v. U.S. Env’tl Prot. Agency</i>, 775 F. Supp. 1027, 1032 (W.D. Mich. 1991).</p> <p>Likewise, the NCP requires the lead agency to “establish an administrative record that contains the documents that form the basis for the selection of a response action.” 40 C.F.R. § 300.800(a). When it selects a remedial action, the responsible agency must document “all facts, analyses of facts, and site-specific policy determinations” considered in the remedy-selection process. <i>Id.</i> at § 300.430(f)(5)(i). As noted above, this information must be included in a “record of decision, in a level of detail appropriate to the site situation.” <i>Id.</i></p>	
<p>RESPONSE: The SLDA administrative record complies with the requirements of 42 USC 9612(k), 40 CFR 300 Subpart I (Administrative Record for Selection of Response Action), and 40 CFR 300.430(f)(5)(i). The NCP provides that the administrative record “typically, but not in all cases,” contains documents such as sampling data, guidance documents, technical literature, site-specific policy memoranda, and decision documents (40 CFR 300.810(a)). Documents that were final at the time of proposed ROD amendment publication were included in the administrative record. Documents not forming the basis of the agency’s decision and documents subject to applicable privileges are not included in the record file (40 CFR 300.810(b)-(c)).</p> <p>Consistent with 40 CFR 300.810(d), documents containing confidential or privileged information not otherwise available to the public were summarized in such a way as to disclose it, to the extent possible, in the FSA and ROD Amendment (e.g., references made to CSRA; materials difficult to characterize). An index has been generated delineating those documents residing in the confidential portion of the administrative record in accordance with 40 CFR 300.810(d).</p>	

<p>Comment 40(b)</p>	<p>Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.</p>
<p>The selection of Alternative 5 appears to be based on “new information” that is not part of the public administrative record.</p> <p>The FSA and RODA appear to rely on unspecified “new information” in the selection of Alternative 5 as the preferred remedy. The final paragraph of the FSA states, “[u]pon reevaluation of the remedial alternatives identified in the FS Report (DA, 2006a), when considered in light of the new information gained from the implementation of the selected remedy, the preferred alternative continues to be Alternative 5.” FSA at 16 (emphasis added). Neither the FSA nor the RODA, however, explains what this “new information” is.</p> <p>At several points, the FSA and RODA appear to suggest that the “new information” driving the changes in the complexity, procedures, magnitude, and cost of Alternative 5 was discovered during the remedial work that USACE began at the site in August 2011. This work was abruptly halted, without explanation, on September 30, 2011. The closest the FDA and RODA come to an explanation of the work stoppage is the RODA’s statement that the Corps “encountered materials that were difficult to characterize, which caused an unanticipated and immediate need for fundamental changes to site operations, project work plans, waste disposal options, and site infrastructure.” RODA at 4. Although this statement attributes major changes in the planned remediation to the September 2011 incident, it does not explain what the incident was, why the incident “caused an unanticipated and immediate need” for major changes to the remedy, or what “materials” may have been involved. Neither does it explain how the major changes in Alternative 5 set forth in the RODA are rationally related to an encounter with materials that were “difficult to characterize.” Without an understanding of what USACE identified in its prior excavation, it is impossible to offer evidence-based analysis of the selected alternative or to evaluate the consistency of that alternative with CERCLA criteria. See 40 C.F.R. § 300.430(e)(9)(iii).</p> <p>At public information meetings, the Corps has taken the position that information regarding the 2011 incident is confidential, and perhaps classified. If the Corps has based the proposed RODA and FSA on such purportedly confidential information, the RODA and FSA are silent on the issue. Namely, there is no indication that any confidential or classified information is necessary to understand USACE’s remedy selection. Yet, if the Corps seeks to rely on any confidential material, the Corps must follow NCP requirements and procedures. Under the NCP, confidential information on which a remedy is based must be summarized in the administrative record “in such a way as to make it disclosable,” and that confidential information “shall be placed in the confidential portion of the administrative record file.” 40 C.F.R. § 300.810(d). If information cannot be summarized publicly, the NCP requires that such detail be placed in a confidential portion of the administrative record and that the information be listed in the index to the administrative record file. Id. There is no such listing, however, of any such documents in the administrative record. Neither is there any evidence of a confidential portion of the administrative record.</p> <p>Notably, neither the FSA nor the RODA states that any material encountered in 2011 was more hazardous or radioactive than anticipated. Indeed, neither document states that the excavation actually encountered anything unexpected. Instead, the documents merely note that the excavation encountered materials that were “difficult to characterize.” It is unclear from this language whether the reported characterization difficulty arose from the nature of the material encountered or from inadequate characterization procedures. This leaves open the possibility that USACE’s 2011 “discovery” was not a discovery of a new or unexpected type of material in a disposal trench, but was rather a failure of the contractor’s procedures. Whatever the case, the community, stakeholders and PRPs cannot evaluate USACE’s response to the “new information” obtained in 2011 without knowing what that information was. As it stands, the FSA and RODA have failed to provide sufficient information to support the conclusion that remediating less than the original volume of material will now cost nearly ten times the original project budget and will require major modifications to remedial techniques. This absence of basic information is not consistent with CERCLA or the NCP.</p>	
<p>RESPONSE: See Response to Comment 40(a).</p> <p>40 CFR 300.5 defines community relations and public participation as a “program to inform and encourage public participation.. and to respond to community concerns.” The term “public” includes “citizens directly affected by the site, other interested citizens or parties, organized groups, elected officials, and potentially responsible parties (PRPs).” The Corps of Engineers’ FSA and Proposed ROD Amendment comply with the community relations components of the NCP (40 CFR 300.415, 430, and 435), and the SLDA administrative record provides information of sufficient detail and specificity from which the public became informed and provided substantive comments.</p>	

Comment 40(c)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The FSA and RODA appear to rely on evidence regarding geotechnical stability that is not in the administrative record.</p> <p>As discussed above, the FSA and RODA rely on assertions about subsidence risk to justify the elimination of Alternatives 2 and 3 at the screening stage. To the extent that USACE considered any up-to-date evidence in making this determination, that evidence is not contained in the administrative record.</p> <p>In this regard, the FSA states that “[a] review of available information regarding the abandoned mines and current technology related to mine stabilization was conducted for this FSA.” On the basis of this review, the FSA concluded that “[t]o date, no scientific consensus exists on an accurate method to predict when and where sinkhole subsidence and trough subsidence will occur for a shallow mine with remnant coal pillars.” FSA at 4-5. The FSA’s statement that a review was conducted “for this FSA” and its use of the words “to date” suggest that USACE conducted an analysis recently and relied on new information. But USACE has neither identified this information nor included it in the record. Indeed, apart from the RODA, FSA, and associated materials, the only documents USACE has added to the administrative record since the September 2011 incident are news releases, transcripts from public meetings, a plan for a beryllium-related program, and a set of groundwater and surface water monitoring data.</p>	
RESPONSE: See Response to Comment 40(a).	
Comment 41	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The FSA and RODA Do Not Describe with Specificity the Planned Changes to the Selected Remedy or the Need for Those Changes.</p>	
RESPONSE: See Response to Comment 41(b).	
Comment 41(a)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The NCP requires the record to contain information supporting a decision to fundamentally alter a remedy.</p> <p>The NCP requires that the agency responsible for a remediation under CERCLA “[p]ropose an amendment to the ROD if the differences in the remedial . . . action . . . fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost.” 40 C.F.R. § 300.435(c)(2)(ii). In such case, the responsible agency must “make the proposed amendment to the ROD and information supporting the decision available for public comment.” Id. at § 300.435(c)(2)(ii)(B) (emphasis added). As noted above, the NCP requires that a ROD provide “all facts, analyses of facts, and site-specific policy determinations considered in the course of carrying out activities in this section,” and must document its decision “in a level of detail appropriate to the situation” Id. at § 300.430(f)(5)(i).</p>	
RESPONSE: See Response to Comment 40(a).	

Comment 41(b)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>New excavation methodologies and procedures are set forth in the FSA and RODA in a generic and superficial manner.</u></p> <p>The RODA states that USACE has “devoted the greater part of the last two years [to] considering best methods and practices for the characterization, excavation, and management of trench materials associated with future on-site activities.” RODA at 4. The FSA and RODA do not, however, (a) identify the methods and practices evaluated with any specificity; (b) provide sufficient detail regarding the methods and practices selected as part of Alternative 5; or (c) identify the information relied on in selecting those methods and practices. The FSA and RODA therefore do not contain sufficient information to evaluate whether the characterization, excavation, and management methods and practices that form the basic substance of Alternative 5 are, in fact, appropriate constituents of that alternative.</p> <p>As an example, Page 12 of the RODA states: “the methodologies and procedures necessary to safely remediate the contamination is [sic] markedly different than the response initially planned.” But the RODA never explains how these “methodologies and procedures” are “markedly different” or why the methodologies and procedures need to be “markedly different.” Similarly, the draft RODA states that additional efforts are necessary for nuclear criticality safety support, health physics support, and project management, but does not identify what, specifically, those additional efforts are, let alone why they are necessary. In addition, the RODA calls for approximately 18 additional labor discipline teams to execute the remediation, but it does not explain what disciplines are involved or what these teams would be doing, let alone why they are required or how they would contribute to safe and effective implementation of Alternative 5. In light of this lack of specific information, it is not possible to ascertain from the FSA and RODA what specific changes to Alternative 5 are, in fact, being proposed and whether those changes are consistent with the NCP.</p>	
<p>RESPONSE: The Proposed ROD Amendment explains, consistent with 40 CFR 300.810(d), that the underlying reasons for most of the changes in remediation methodology and procedure are due to the information gained regarding the trench wastes during the 2011 remedial activities. Information gained during, and subsequent to, the excavation emphasized the uncertainty associated with the reported trench waste materials. Many of the changes to the implementation of the amended remedy are a direct result of the increased uncertainty regarding the contents of the trenches, and input from the independent agency responsible for nuclear security and safety, the NRC. The Corps of Engineers considers the excavation of the decades-old buried wastes to be a process of discovery, wherein we apply a risk-based approach to in-situ identification, excavation, removal, and disposal of materials consistent with best engineering and health physics practices. Close coordination between the Corps, its contractor, supporting agencies, and the community further reduces risk and assures public and worker safety before and during the remediation process. The Corps of Engineers is committed to safety in anticipation of finding materials that may have been processed by NUMEC or are not listed in the historical documentation.</p>	

Comment 41(c)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>Certain changes to Alternative 5 appear to be facially unsupported.</u></p> <p>In certain instances, the RODA describes an anticipated change that seems to be of questionable necessity and does not appear to be supported by the administrative record. For example, the RODA notes that the wastewater treatment plant will need to be expanded to four times its original capacity and significantly re-designed, resulting in a fifteen-fold increase in cost. The RODA claims that the original wastewater treatment plant was not cost-effective and had to be re-designed. But neither the FSA nor the RODA explain how the new wastewater treatment plant, which will be fifteen times more expensive, will be more cost-effective. Just as importantly, the FSA and RODA fail to explain why wastewater volume is now expected to increase from 50 to 200 gallons per minute -- especially given that the amount of material to be remediated is only 90% of that present at the time of the prior ROD and the pace of the planned remediation is expected to be approximately 50% slower.</p> <p>Similarly, the RODA states that the number of confirmatory samples to be collected is increasing by a factor of three. Because the RODA does not explain why this increase is necessary, it is impossible to evaluate the appropriateness or cost-effectiveness of the new sampling regimen. Even without supporting information, though, it is difficult to understand how the revised sampling plan could be cost-effective, since the RODA anticipates that the planned tripling of samples will lead to a 2,200% increase in sampling costs.</p> <p>Oversight and security costs are also unexplained in the FSA and RODA. The documents indicate that this category of costs will account for \$39 million going forward – only \$5.5 million less than the initial ROD’s estimate of total remedial costs. Moreover, this cost category lumps together “all labor, equipment and materials associated with Corps supervision, administration, and construction management during implementation of the remedial action, as well as physical security measures employed at the SLDA, for the duration of the project.” RODA at 10. Given the catchall nature of this cost category, it is not possible to determine the approximate amount projected to be spent on physical site security, let alone what security measures are anticipated, whether such measures are appropriate, and whether more cost effective alternatives exist.</p>	
<p>RESPONSE: In the case of the wastewater treatment plant, the Proposed ROD Amendment states that, consistent with 40 CFR 300.810(d), “[b]ased upon experience gained from the remediation conducted in 2011, the specifications for the wastewater treatment plant have changed significantly.” Or stated differently, the changes to the specifications for the wastewater treatment plant were based upon actual conditions encountered in the field during the remediation activities in 2011.</p> <p>See Response to Comment 41(b). The threefold increase to the number of confirmatory samples is one reflection of the increased uncertainty associated with the trench waste materials.</p> <p>As the Corps of Engineers has consistently stated during public meeting and to the media, we must comply with all DOD and NRC physical and information security requirements, and details regarding the physical security measures at the site cannot and will not be publically disclosed. The Corps of Engineers summarized this cost category to the extent feasible so that it may be disclosed to the public. If additional details regarding the cost of the separate elements in that category were revealed, it may allow an adversary to gain specific knowledge related to the physical security measures.</p>	

Comment 41(d)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The FSA and RODA fail to provide information necessary to understand the evaluation of costs and contingencies.</u></p> <p>The RODA states that, in estimating costs, USACE relied on a cost and schedule risk analysis (“CSRA”) to estimate costs and contingencies. The FSA and RODA do not, however, provide the inputs and other parameters utilized during the CSRA. Without this foundational information, it is impossible to evaluate the validity of the CSRA’s conclusions.</p> <p>A significant figure apparently yielded by the CSRA process is the estimate of a \$122,745,000 contingency. The contingency is the single largest contributor to the overall cost increase, adding a 54% premium on top of non-contingency costs. The contingency estimate alone is more than 300% of the cost estimate in the initial ROD for the entire remediation. Although the RODA provides the ultimate contingency estimate, it provides no substantive explanation of underlying major risk drivers. And it appears that the administrative record does not contain either the CSRA or any underlying risk register identifying anticipated risks and the potential associated mitigation actions and costs. Furthermore, the FSA and RODA contain no discussion of the strategies that might be employed to mitigate risks, and the administrative record does not appear to contain a risk management plan. Without this kind of information, it is unclear whether either USACE’s contingency calculation or its approach to addressing and managing risks are consistent with the NCP and appropriate for this site.</p>	
<p>RESPONSE: The Corps of Engineers determined that due to the level of detail contained in the government’s current cost estimate for the amended remedy, including the CSRA and supporting documentation, the cost estimate is considered to be a procurement sensitive document and may not be publically released. The level of cost detail presented in the Proposed ROD Amendment and FSA is consistent with the level of cost detail provided in the ROD.</p>	
Comment 41(e)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p><u>The FSA and RODA fail to explain what techniques will be used to screen for anomalies.</u></p> <p>There are numerous methods of screening radioactive material for anomalies and characterizing, isolating, treating, and disposing of unidentified materials. The costs of dealing with unidentified materials can vary widely depending on the strategies used to manage the material, the degree of conservatism employed, judgments made regarding how much characterization is needed, decisions on whether or how to retrieve an item, and decisions about what further treatment or packaging of an item is required prior to disposal. For example, greater efficiencies can sometimes be (sic) achieved by treating unidentified materials as worst-case without extensive, time-consuming, and costly characterization. The FSA and RODA do not provide sufficient information for interested parties to determine the fundamental approach USACE plans to take in response to any unidentified items.</p>	
<p>RESPONSE: The Corps of Engineers will not rely upon an estimate of what is buried in the trenches. The Corps of Engineers considers the excavation of the decades-old buried wastes to be a process of discovery, wherein we apply a risk-based approach to in-situ identification, excavation, removal, and disposal of materials consistent with best engineering and health physics practices. Close coordination between the Corps, its contractor, supporting agencies, and the community further reduces risk and assures public and worker safety before and during the remediation process. The costs of managing the excavation of unidentified materials, with the primary objective being the safety of workers and the public, are included in the FSA where uncertainties have been calculated. Identification and explanation of specific techniques at this stage in the process is premature. Specific methods to be used in remediation involving the screening of radioactive material for anomalies and characterizing, isolating, treating, and disposing of unidentified materials will be documented in the remediation plans of the future remediation contractor after careful analysis and review by the project team.</p>	

<p>Comment 41(f)</p>	<p>Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.</p> <p>The FSA and RODA provide no evidence that uncertainty regarding trench contents has increased.</p> <p>The RODA states that the crucial information gained during 2011 remedial activities “emphasized the uncertainty associated with the reported trench waste materials.” RODA at 4. Despite this assertion, neither the FSA nor the RODA contain evidence that uncertainty has increased. In fact, given that 10 percent of material has been characterized and removed, it seems that uncertainty regarding trench contents might be expected to have decreased.</p> <p>The 2007 ROD established cleanup goals for eight Radionuclides of Concern: americium-241 (Am-241), plutonium-239 (Pu-239), plutonium-241 (Pu-241), radium-228 (Ra- 228), thorium-232 (Th-232), uranium-234 (U-234), uranium-235 (U-235), and uranium-238 (U238). The 2007 ROD also recognized the presence of non-radioactive contaminants. In response to a comment asking about “other contaminants (beryllium) buried with the radioactive materials” at the site, USACE stated that “[t]he Corps is aware of these contaminants and will ensure the safe handling of all materials at the site during cleanup activities.” ROD App’x A at 16. Therefore, neither the presence of radionuclides for which cleanup goals were set in 2007 nor the “documented presence of beryllium wastes” -- noted in the RODA -- should be the basis for an increase in uncertainty. RODA at 8. To the extent that there is any basis for concluding that uncertainty has increased, the FSA and RODA should explain what that basis is. Moreover, if increased uncertainty is accounting for significant cost increases, the FSA should have considered whether additional pre-mobilization sampling could reduce uncertainty. Such sampling also could provide information that would allow USACE to plan future excavation procedures more effectively.</p> <p>RESPONSE: In addition to the information gained from the complex material encountered during the 2011 remedial activities, information from NRC historical and investigative documents obtained subsequent to issuance of the ROD, and added to the Administrative Record, reinforce and enhance the uncertainty associated with the contents of the SLDA trenches historically acknowledged by the Corps of Engineers in the SLDA administrative record.</p> <p>For example, a March 6, 2014 report titled “<i>NRC Oversight of Decommissioning Activities at the Shallow Land Disposal Area Consistent with USACE MOU</i>”, by the NRC’s Office of the Inspector General (OIG) was released to the public on March 13, 2014 by Senator Robert Casey. It states that the, “OIG found that missing and/or incomplete AEC inspection records and incomplete burial records preclude [...] the Government’s ability to know with certainty what is buried on the SLDA site and in what precise locations.” The report continues by stating that, “[m]oreover, according to the president and founder of the company that buried materials at the SLDA site, the documents used as a basis for the current FUSRAP remediation effort grossly underestimate the material buried there.” This is repeated elsewhere in the report as, “...the NUMEC president concluded that the record grossly underestimates the amount of SNM and special isotopes buried at the site.” The OIG report also states that, “The founder and president of NUMEC [...] recalled that the AEC asked via a special request that he store radioactive materials for the AEC and dispose of nuclear waste from other facilities.”, i.e., facilities other than the NUMEC Apollo facility.</p> <p>By way of further example, with respect to the information gained during the 2011 remedial activities, the NRC OIG report states that, “The DWMEP director said although it turned out that the material exhumed was SNM Category III, the fact remained that the material discovered, which initially appeared as if it may have been a Category I item, was unexpected.” (emphasis added). Elsewhere in the report, the NRC SLDA project manager insisted that “...additional contingencies should be included in USACE Work Plans to address for a wider spectrum of potential unexpected situations.” (emphasis added).</p> <p>When looked at comprehensively, the information gathered subsequent to release of the ROD supports the Corps of Engineers’ assessment that there is now <u>greater</u> uncertainty regarding the contents of the trenches. Additional sampling would not provide more definitive information regarding the trench wastes due to the composition and forms of the wastes and debris in the trenches. The Corps of Engineers considers the excavation of the decades-old buried wastes to be a process of discovery, wherein we apply a risk-based approach to in-situ identification, excavation, removal, and disposal of materials consistent with best engineering and health physics practices. Close coordination between the Corps, its contractor, supporting agencies, and the community further reduces risk and assures public and worker safety before and during the remediation process. The Corps of Engineers continues to review historical documentation and anecdotal information provided by concerned persons and government agencies in order to gain a better understanding of what may be buried in the SLDA trenches.</p> <p>See also Responses to Comments 40(a) and 41(c). See also the NRC OIG report located here: http://www.casey.senate.gov/newsroom/releases/casey-releases-nrc-ig-report-on-nuclear-site-in-armstrong-county</p>
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Comment 41(g)	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The RODA delays development of elevated measurement criteria until after remedy selection is complete.</p> <p>The NCP requires the responsible agency, when it selects a remedy, to establish final remediation goals, which “shall establish acceptable exposure levels that are protective of human health and the environment” 40 C.F.R. § 300.430(e)(i). However, the RODA states that elevated measurement criteria, referred to as DCGL_{emcS}, “will be developed to ensure no localized areas of elevated radioactivity will remain that could potentially produce an unacceptable risk.” RODA at 3. The RODA states that DCGL_{emcS} “will be presented in the FSSP.” In light of this delayed determination of DCGL_{emcS}, it is difficult to evaluate the protectiveness or the cost-effectiveness of the selected remedy, since the DCGL_{emcS} will in part determine the extent of required cleanup activity.</p>	
<p>RESPONSE: DCGL_{emcS} for the SLDA were calculated for the initial phase of the project and are listed in the Final Status Survey Plan (FSSP). They are: Am-241, 420 pCi/g; Pu-239, 570 pCi/g; Pu-241, 13,000 pCi/g; Th-232, 5.3 pCi/g ; U-234, 240 pCi/g ; U-235, 110 pCi/g ; U-238, 520 pCi/g. These values will not change. Based upon our experience in remediation the Corps of Engineers believes that most of the cost of the selected remedy will be associated with meeting the DCGL_{wS}.</p>	
Comment 42	Atlantic Richfield Company/Babcock & Wilcox Government and Nuclear Operations, Inc.
<p>The current FSA and RODA fall short of the requirements of CERCLA and the National Contingency Plan. The FSA and RODA should be revised and reissued after a thorough and substantive evaluation of remedial alternatives consistent with CERCLA and the NCP has been conducted. The fundamental changes in Alternative 5 require a re-examination not only of the means and methods of implementing Alternative 5 but also of whether Alternative 5 should remain the selected alternative under the nine criteria for remedy selection set forth in the NCP. And that broader re-evaluation requires a more methodical and comprehensive examination of remedial options than is contained in either the FSA or the RODA. The FSA and RODA are insufficient -- both legally and practically -- for a remediation of any scale, but fall particularly short of the mark here, where the remedy may turn out to be one of the larger remedies undertaken pursuant to FUSRAP.</p>	
<p>RESPONSE: The Record of Decision Amendment fulfills the requirements of CERCLA, the NCP, and Corps of Engineers policy. The Feasibility Study Addendum (FSA) was performed to ensure a thorough, substantive, and open re-evaluation of alternatives to support the Record of Decision Amendment. Fundamental changes to the basic features of the remedy with respect to scope and cost are presented and justified, and appropriate alternative remedies evaluated.</p> <p>The NCP requires that the lead agency propose an amendment to the Record of Decision where the remedial action differs significantly from the selected remedy and those differences fundamentally alter the basic features of the remedy with respect to scope, performance or cost. 40 CFR 300.435(c)(2). The Corps of Engineers undertook a thorough reevaluation of available alternatives that satisfied the statutory requirements of CERCLA. See FS, FSA pp. 4, 5. For a remedial alternative to be selected it must be protective of human health and the environment and comply with the applicable or relevant and appropriate requirements (ARARs). 40 CFR 300.430(f)(1)(i)(A). Alternatives 4 and 5 were the only alternatives that met these statutory requirements. See FS, FSA pp. 4,5. Cost effectiveness of both Alternative 4 and 5 evaluated consistent with CERCLA and the NCP and discussed in the FSA and PP. See. FSA pp. 10-17, PP.</p>	

Appendix A

Public Meeting Transcript

January 27, 2015

Appendix B

Written Public Comments