



DEPARTMENT OF THE ARMY

BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

REPLY TO
ATTENTION OF

Environmental Project Management Team

APR 04 2012

SUBJECT: Responses to Stakeholder Comments on the Waste Disposal Options and Fernald Lessons Learned Technical Memorandum for the Niagara Falls Storage Site

[REDACTED], Chief
Radiation and Indoor Air Branch
United States Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Dear [REDACTED]

Thank you for providing comments on the Waste Disposal Options and Fernald Lessons Learned Technical Memorandum (TM) for the Niagara Falls Storage Site (NFSS). Enclosed are our responses to stakeholder comments we received on the TM.

We look forward to working with you during the development of the Feasibility Study for the NFSS Interim Waste Containment Structure Operable Unit. Please contact me at [REDACTED] if you have any questions or additional comments.

[REDACTED]
NFSS and LOOW Program Manager

Enclosure

NFSS_08.01_0549_a

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
1	[REDACTED]	The Niagara Falls Storage Site (NFSS) is a 191 acre Federal property in Lewiston, New York, which houses approximately 2,000 Curies of radium-226 in a 10 acre Interim Waste Containment Structure (IWCS.) Radioactive residues and wastes were originally placed in temporary surface storage at the site during the Manhattan Project and then illegally placed beneath the surface in 1986 by the Department of Energy (DOE.) The DOE interim action of placing the residues and wastes into subsurface storage was claimed to be an interim action without significant environmental impact, but has resulted in an increase in volume of contaminated material, contamination of groundwater and created difficulty in extraction of the residues for appropriate off-site long-term management. These are all significant environmental impacts.	Comment noted.
2	[REDACTED]	The NFSS is not suitable for storage of radioactive material, being a wet environment where the water table seasonally rises to within feet of the surface. The proximity to Lake Ontario and the Great Lakes, a major source of fresh water, further prohibit the storage of any radioactive materials. The NFSS residues are currently improperly classified as 11e. (2) byproduct despite an activity which renders them as hazardous to the public as high-level (HLW) wastes. Such materials should be placed in dry isolation for 10,000 years. The current repository for these residues, the IWCS, does not even meet the design criteria specified for the isolation of byproduct material, as specified in 10 CFR 40, Appendix A.	Comment noted.

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3		<p>Review of past environmental surveillance reports for the NFSS reveals that the IWCS has not been appropriately monitored for over twenty years. The DOE abandoned monitoring of groundwater beneath the IWCS and severely curtailed monitoring of groundwater around the IWCS in the mid 1990's. A resumption of comprehensive groundwater monitoring in 2008, reveals the previously undetected evidence of IWCS leakage. Radioactive contamination has traveled a considerable distance from the IWCS in the groundwater. Total uranium levels in groundwater east of the IWCS continue to show a steadily increasing trend, consistent with leakage: From 216.5 pCi/L in 2003 to 253.7 pCi/L in 2008 to 274 pCi/L in 2009 to 326 pCi/L in 2010 Spring results for total uranium in well OW 11B (NFSS RI Addendum Report, April 2011).</p>	<p>The Environmental Surveillance Program (ESP) at NFSS was initiated by the US Department of Energy (USDOE) in 1981, prior to construction of the on-site IWCS. In 1997, when the responsibility for the site was transferred to the U.S. Army Corps of Engineers (Corps), the Corps' Buffalo District continued to follow the USDOE ESP with some modifications over the years. The data from approximately 30 years of environmental monitoring at the NFSS show that the measured parameters of the surveillance program satisfy the USDOE guidelines for protection of human health and the environment. The number of sampling points included in the ESP has increased over time, including the 2008 addition of ten groundwater monitoring well locations. The RI Addendum Report includes an analysis of long-term groundwater concentration trends for wells surrounding the IWCS based on data collected during the RI and monitoring data collected by the ESP. Concentration trends for wells near the IWCS show steady-state to declining contaminant concentration levels for total uranium, suggesting that the IWCS is performing as designed. One exception to this observation was noted at well OW11B, which exhibits an increasing trend in uranium concentrations. OW11B is located east of the IWCS. The Corps disagrees that this observation noted at well OW11B indicates that the IWCS is not performing as designed. It is expected that if the source of the increased uranium concentrations were derived from material within the IWCS that wells MW862, A50, A51, and MW860 which are located within approximately 30 feet of the eastern IWCS boundary, would exhibit the same trend as OW11B. Additionally, OW11B is located over 180feet east and upgradient. OW11B is located near where there was multiple underground pipelines. Well A50 is part of the ESP and data from this well has shown no increase in radionuclide concentrations. The remaining wells (MW862, A51, and MW860) were sampled during the RI and exhibited much lower total uranium concentrations (less than 17 pCi/L) than reported for OW11B, indicating that the IWCS is performing as designed. The Corps will conduct additional field sampling activities near well OW11B during the Balance of Plant (BOP) FS, including investigation of the integrity of the underground utility lines south and east of the IWCS to help determine the cause of the trend.</p>

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4		Given that the IWCS is currently failing to isolate its contents and if long-term maintenance costs are to be avoided, it is recommended that the contents of the IWCS should be removed entirely from the NFSS. The preferred solution for dealing with the residues would be vitrification and subsequent storage at the Nevada National security Site (NNSS) or at Energy Solutions, Utah. Further remaining contaminated soils and rubble should be entirely removed from the NFSS and disposed of as low level radioactive waste.	Comment Noted. The Remedial Alternatives TM will include the evaluation of several technologies including those noted in the comment (i.e. off-site disposal, vitrification).
5		Review of the volumes of radioactive residues and wastes contained in the IWCS reveals that volumes are comparable to the volumes of residues and wastes removed from the Fernald site and disposed elsewhere. In contrast with the Fernald site, the major use of land in the greater area around the NFSS is residential. Lewiston is increasingly dependent on tourism and this should be a major consideration with respect to anticipating future land use. Long-term residential and agricultural use would necessitate clean up of the NFSS for unrestricted use. The area schools are located in close proximity to the NFSS and this fact should also be taken into consideration when determining the level of clean up appropriate for the NFSS.	Comment Noted. Once a decision has been made regarding the IWCS, decisions regarding the balance of plant and groundwater at the site can be made. The future land use of the site will be considered during the Feasibility Study for the balance of plant. The Corps will consider the existing surrounding land use of the site (which currently includes a municipal and a hazardous waste landfill, along with residential and school properties further away from the site), along with municipal plans and zoning in determining what future land use should be used to evaluate the remedial action objectives for the balance of plant and groundwater operable units in accordance with the CERCLA and the NCP Please also see the response to comment #19.

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6	[REDACTED]	At the NFSS, concern has been expressed about the impact of neighboring landfill and clay mining operations on IWCS integrity and groundwater. The Corps is currently evaluating such impacts. To date no assessment has been released to the public.	There are two water-bearing zones present at the NFSS: the upper water-bearing zone (UWBZ) and the lower water-bearing zone (LWBZ). The UWBZ and LWBZ are separated by a low-permeability clay unit, which impedes interaction between the two water-bearing units. In July 2005, the Corps met with Modern to discuss the potential impacts of the groundwater extraction on NFSS contaminant transport. Modern historically pumped groundwater from the LWBZ during construction of earlier landfill cells. Based upon the range of Modern pumping rates, groundwater modeling, and review of hydraulic heads on both NFSS and Modern, the pumping at Modern had a maximum radius of influence in the LWBZ of up to 2,000 feet from the dewatering point on Modern. This influence of Modern pumping on the LWBZ was demonstrated by potentiometric surface maps from past Environmental Surveillance Technical Memoranda (see the 1996 Technical Memorandum for example). The groundwater flow direction in the UWBZ remained unaffected. The hydraulic gradient in the LWBZ (or change in water levels over the change in distance between the two monitoring wells), however, was minimal (i.e. 0.003 to 0.007 ft/ft). Therefore, although past Modern pumping activities reversed groundwater flow direction at NFSS, the impact to contaminant migration was negligible. Additionally, all future dewatering activities will occur progressively further away from the NFSS than previous dewatering activities.
7	[REDACTED]	Regarding transport of residues and wastes, the community has previously voiced concern about a rail link to the NFSS, the concern being that the rail link could equally well be used to transport hazardous and municipal waste into the community.	The community's concern is noted. All transportation methods for remedial alternatives evaluated will be considered and discussed in the Remedial Alternatives Technical Memorandum and further evaluated in the FS.
8	[REDACTED]	The unique nature of the Great Lakes watershed and the binational concern should warrant high priority disposal by off-site relocation.	The Corps recognizes the importance of the resources mentioned in the comment. Overall protection of human health and the environment is one of the CERCLA criteria used to evaluate remedial alternatives in the FS, so protection of water resources will be important and considered in determining the future actions for the IWCS.

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9	[REDACTED]	Is there any way the K65 waste can be reprocessed for recovery or remediated (neutralized on-site)?	Radioactive materials, such as the K-65 residues, cannot be chemically altered to reduce their radioactivity. Instead, treatment methods typically used are those that physically bind the wastes to reduce their mobility or potential for exposure. The Remedial Alternatives TM will evaluate recovery as a potential treatment method for the types of wastes in the IWCS.
10	[REDACTED]	What are the disposal methods for the Fernald waste in Texas or is this not relevant to the IWCS wastes?	The Fernald K-65 residues were solidified and placed into containers at Fernald prior to shipment by flatbed truck to Waste Control Specialists (WCS) in Texas. Once at WCS, the waste form was accepted for direct placement into permanent storage in the 11e. (2) byproduct cell at WCS. The disposal methods for the K-65 residues at Fernald do have relevance to the NFSS.
11	[REDACTED]	A map (contour) with drainage patterns, water table depth; location, nature, extent and depth of questionable materials would help.	Topographic maps showing surface drainage patterns, the depth to groundwater and maps depicting the distribution of contaminants of concern were included in the RI Report (USACE 2007), the RI Addendum Report (USACE 2011), and the Groundwater Fate and Transport Modeling Report (USACE 2007 and 2011). These reports are available on-line at http://www.lrb.usace.army.mil/fusrap/nfss/index.htm .
12	[REDACTED]	Also could use an acronym definition list.	Commonly used acronyms are included in each document published by the Corps. In this TM, it can be found at the beginning of the document. An acronym list will be provided as a handout at future meetings with the community.
13	[REDACTED]	Can the K65 waste be reprocessed for use in a reactor? Or other?	The K-65 residues cannot be reprocessed for use in a reactor because there is little uranium present in the K-65 residues and the uranium is not enriched with the necessary radioactive materials. Resource recovery will be taken into consideration as part of the technology screening in the Remedial Alternatives TM.

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14	<i>LOOW Community Action Council</i>	<p>Overall, the September 28 workshop worked well. Information was at the right level of detail and well presented. The community appreciated the opportunity to discuss issues in more detail in small groups and the direct interaction with Corps staff and contractors. Having the slides and speaker notes available was also very useful. Recommendations for future workshops include:</p> <ul style="list-style-type: none"> ○ Plan for a short break in the middle of the meeting, ○ Review presentations to identify where topics can be made more concise without losing any of the core information, ○ Provide the opportunity for people to listen to presentations live through conference call and/or web access, ○ Make the videos of the workshops accessible on the web shortly following the workshops, ○ Provide basic background information about the site such as maps, timelines, process diagrams, history, etc. This can be done as posters or table information and also within the toolbox concept discussed below. 	The Corps will work to incorporate these recommendations into future workshops where possible.
15	<i>LOOW Community Action Council</i>	<p>There is a great deal of technical information involved in this process. Not all stakeholders start at the same place and most do not have a detailed understanding of the site necessary to follow and contribute to the FS process. Better background information would be useful to new attendees and as a refresher for ongoing participants. Having a consistent set of materials available at each meeting would also be helpful. A community toolbox of information including items like maps, a glossary, lists of acronyms, tables and charts of key information, process charts, and timelines should be created. The CAC, working with the Corps' Technical Facilitator, is willing to take the lead in preparing this important tool. The CAC would appreciate Corps support in identifying and obtaining appropriate information to accomplish this task.</p>	The Corps will work with the technical facilitator to assist the Lake Ontario Ordnance Works (LOOW) Community Action Council (CAC) in the development of the community toolbox.

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16	<i>LOOW Community Action Council</i>	There is concern about the level of misinformation and miscommunication in the community. The CAC hopes to play a significant role in helping to inform the community about the NFSS and looks to ongoing cooperation and support from the Corps in ensuring that timely and accurate information is made available.	The Corps will work with the technical facilitator, the LOOW CAC, and any other interested person/group to ensure accurate information is provided to the community in a timely manner.
17	<i>LOOW Community Action Council</i>	The community would like a much better understanding about the actual risks presented by the site and the materials stored in the IWCS, both in its present state and in possible future scenarios. This information needs to be presented to the community in an understandable and straightforward manner.	The <i>Waste Disposal Options and Fernald Lessons Learned Technical Memorandum</i> (i.e., WDO/Fernald LL TM) discusses the technical and engineering actions conducted at the Fernald Remediation Project. It is not intended to evaluate risks presented by material stored in the IWCS. Further discussion of health effects from hypothetical exposures to the IWCS contents will be presented in the Health Effects TM. Additionally, the Radon Assessment TM will provide estimates of potential radon levels from the IWCS wastes under specific scenarios which must be addressed as part of the FS evaluation for the IWCS OU. These other TM's will be discussed with the public in a workshop to be held in Spring 2012.
18	<i>LOOW Community Action Council</i>	The community would like better tools and information to provide all stakeholders the ability to understand technical issues and issues explaining exposure and protection.	Comment noted.

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19	LOOW Community Action Council	<p>The community is just beginning to envision the NFSS beyond its current state, and look forward to being involved in an ongoing discussion of the possibilities. The following key points as potential future land use of the NFSS is considered:</p> <p>Long-term residential and agricultural uses would not likely be supported by the community,</p> <ul style="list-style-type: none"> • The community would not like to see the NFSS property become available for expansion of neighboring landfills, • The community would very much like to see a productive reuse on any parts of the NFSS property that could provide safe reuse. Open space, nature preserves, and industrial uses should all be explored, • There is also some interest in exploring opportunities for using the NFSS to teach people about the Cold War legacy and what we have learned about the use and disposal of radioactive materials, • The CAC would also like to understand how land use decisions affect cleanup levels and would like to have more detailed discussion of this issue as the FS proceeds. 	<p>The Corp welcomes input regarding the community's desired end-state for the NFSS.</p> <p>The Corps currently maintains the NFSS, performs site surveillance, environmental monitoring, and has instituted security measures to be protective of human health. The Feasibility Study for the NFSS is being staged in three operable units in order to address the radioactive residues and wastes in the IWCS first. Once a decision has been made regarding the IWCS, decisions regarding the balance of plant and groundwater at the site can be made. The future land use of the site will be considered during the Feasibility Study for the balance of plant. However, at the NFSS public workshop held on September 28, 2011, a discussion with the community regarding future land use of the site was started, and some feedback from those workshop participants was given to the Corps. In addition to input from the community regarding visions for future land use of the site, the Corps will consider the existing surrounding land use of the site (which currently includes a municipal and a hazardous waste landfill, along with residential and school properties further away from the site), along with municipal plans and zoning in determining what future land use should be used to drive remedial action objectives for the balance of plant and groundwater operable units. Long-term stewardship actions and any requisite institutional controls for the NFSS will be established consistent with the target land use.</p>

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20	<i>LOOW Community Action Council</i>	<p>The community is concerned about a wide range of issues related to potential impacts of the NFSS on the community and community health. Key topics where the community would like the Corps to focus attention and provide detailed information as the FS process proceeds include the following:</p> <p>The primary concerns of the public are on public and worker health and safety, cleanup and protection of the environment, and the safe containment and disposal of all radioactive and hazardous materials present at the NFSS.</p> <p>The Lew-Port Schools campus is a major community asset and will be an ongoing concern because of its proximity to the site. All risks and alternatives should include discussion on possible impacts to the campus.</p>	<p>Potential impacts to off-site receptors, including the Lewiston-Porter School campus, will be identified and evaluated as part of any alternative in the IWCS OU FS. The evaluation of potential remedial actions for the wastes in the IWCS are being evaluated based on several hypothetical receptors including nearby residents, workers, and those that work or attend school in the vicinity. The results of the assessment will be presented in the <i>Radon Assessment Technical Memorandum</i> [i.e. Radon Assessment TM] and the <i>Radiological Exposure Assessment Technical Memorandum</i> [i.e. Health Effects TM]).</p>
21	<i>LOOW Community Action Council</i>	<p>Continued community involvement is critical. Workshops and participation at the CAC monthly meetings will continue to be essential to the feasibility study process.</p> <p>The community needs to work together to be successful and we look to the Corps to support a cooperative approach toward site decision-making and remediation.</p>	<p>The Corps is committed to working with the community throughout the development of the IWCS OU FS to develop and sustain an ongoing dialogue and interaction with the community.</p>

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22	LOOW Community Action Council	There is a great deal of community interest in the impacts of vicinity properties on the NFSS and the surrounding community. The CAC will want to explore the issues as they affect and impact the NFSS as the FS process proceeds.	Vicinity properties are those properties that are located within the boundaries of the former LOOW, but are outside the boundaries of what is now the NFSS. Remedial action at some of the vicinity properties was completed by the USDOE in 1986. Wastes from the 1986 remedial effort are now stored in the IWCS. The USDOE released most of the vicinity properties for unrestricted use. The Corps will characterize vicinity properties not certified closed by the USDOE (vicinity properties E, E' and G). A final review and assessment of select USDOE Vicinity Properties is detailed in an October 2010 report titled <i>Niagara Falls Storage Site Vicinity Properties, New York: Review of Radiological Conditions at Six Vicinity Properties and Two Drainage Ditches</i> . This document can be accessed at the following website: www.lm.doe.gov/Niagara_VP/NFSS_VP_Report(2).pdf . Additionally, a fact sheet on the USDOE Vicinity Properties is available at the USDOE Office of Legacy Management website (www.lm.doe.gov). The Corps will share and discuss information on the vicinity properties with the CAC as it becomes available and as it applies to the FS process.
23	LOOW Community Action Council	Any final decisions must fully protect groundwater and other bodies of water in the region and information related to water impacts will be important to the community.	The Corps acknowledges that final remedial decisions selected for the NFSS will need to be protective of groundwater. As part of the FS process, Applicable or Relevant and Appropriate Requirements (ARARS) will be identified for the IWCS OU. These ARARs will include specifications for the protection of groundwater. The CERCLA process for the NFSS is being staged in three operable units in order to address the radioactive residues and wastes in the IWCS first. Once a decision has been made regarding the IWCS, decisions regarding the balance of plant OU and groundwater OU can be made.

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24	LOOW Community Action Council	<p>The impacts of trucking are a concern, as there is already a great deal of truck traffic in this area. Trucks will also affect other communities along the route. The CAC would like to have access to detailed information about transportation volumes, impacts, and routes in the consideration of all remedial alternatives. A close evaluation of the trucking routes from Lewiston, NY to all realistic disposal locations should be included in the FS.</p> <p>The feasibility study should also explore the possibilities for using rail transport, including dedicated trains.</p>	Both rail and truck transport will be evaluated as part of any alternatives that includes off-site disposal of materials from the NFSS. The results of the evaluation will be discussed with the public when available.
25	LOOW Community Action Council	<p>The CAC recognizes that only a preliminary range of possible alternatives currently exists. However, the set of possible options is not large. The community has been involved in this process for a long time, and has arrived at a number of key conclusions and concerns regarding the cleanup of the site. We look forward to robust interaction with the Corps as the FS proceeds. Key initial thoughts and concerns include the following (captured below).</p> <p>At a minimum, the community believes that the highest risk materials (the residues) must be removed from the NFSS site.</p> <p>Overall remediation of the site must be conducted in consideration of community values and concerns.</p> <p>Limited or no action alternatives will not be well received by the community.</p>	The public's concerns and preferences are considered in accordance with CERCLA and the NCP and the Corps considers public participation and input seriously throughout the FS process.
26	LOOW Community Action Council	Those with long-term involvement in the site do not believe the IWCS is a suitable long-term disposal facility for radioactive waste, however, many in the community do not fully understand site conditions and risks. The CAC looks forward to a robust FS process and information that fully explores the choices and ramifications of all reasonable options for a long-term solution.	The WDO/Fernald LL TM focused on what lessons from the Fernald Remediation Project can be used to provide information relevant to the NFSS and whether there are off-site disposal facilities available for the IWCS wastes. The pertinent lesson learned from Fernald is that a facility does exist where disposal can be performed. The Corps is fully engaged in continuing community dialogue that is supported by the technical facilitator.

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27	LOOW Community Action Council	There is significant community concern that sufficient funds will not be available to conduct an appropriate level of cleanup at the NFSS. The community would like to work closely with the Corps to understand potential costs of cleanup funding sources and mechanisms, and the community support and advocacy that will be needed to ensure that those funds are made available.	Anticipated cost is a component required to be evaluated for each remedial alternative and will be presented for each alternative in the Feasibility Study.
28	LOOW Community Action Council	The community also recognizes that any remedy involving complete removal and off-site disposal will be difficult to justify given the likely costs and the long-term proximity of the wastes stored at CWM.	The Corps will be evaluating potential remedial alternatives by dividing the IWCS into subunits based on radioactivity and location, with residues (including the K-65s) included in subunit A, and other wastes (less radioactive) included in the two other subunits for the IWCS. A range of alternatives will be developed for the various subunits (including removal and off-site disposal of one, two, and/or all three of the IWCS subunits) so that the FS evaluates and compares the effectiveness, implementability, and costs for each alternative.
29	LOOW Community Action Council	The community has concerns regarding traffic, noise, and other impacts of construction and would like to see these factors explained and considered in the decision-making process.	Specific actions taken during any potential remedial activities (such as traffic, noise, etc.) are considered short-term impacts and are evaluated as part of the effectiveness and implementability criteria that will be conducted in the detailed analysis of the FS. The Corps will continue to provide information and updates to the CAC and the public regarding the potential impacts when available.

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30	<i>LOOW Community Action Council</i>	<p>Overall, the community appreciated the opportunity to learn about the cleanup decision and approaches taken at Fernald and are supportive of the Corps using these lessons to focus and streamline consideration of alternatives at the NFSS.</p> <p>The main lesson learned from Fernald is that effective remediation of this material is achievable.</p> <p>It is important to recognize that the conditions and community at NFSS are very different than Fernald, and while there are important lessons to be learned, the NFSS requires a thorough site-specific FS.</p> <p>There are significant differences between the silos used to contain K-65 at Fernald and conditions inside the IWCS. The most important part of the process will be safe removal of the residues and control of radon gas emissions, something that the Fernald site did very well, though in a significantly simpler setting.</p>	Comment noted.
31	<i>LOOW Community Action Council</i>	<p>Accurate location of the wastes inside the IWCS will be important to safe retrieval. Measurements of the elevations of the surface of the IWCS above each of the above locations are necessary to determine the volume of contaminate soil requiring excavation in order to access the residues.</p>	<p>An accurate understanding of waste placement within the IWCS is necessary for the planning of any waste removal or excavation activities. Placement of the wastes within the IWCS is being reviewed and preliminary results of this review will be provided in the Remedial Alternatives TM. Review of waste placement activities will continue as part of the IWCS OU FS in order to refine the current understanding of where different types of wastes and associated volumes have been stored within the IWCS.</p>

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32	LOOW Community Action Council	<p>Because the structures were built as a water treatment plant, there are numerous roof support pillars making hydraulic mining of the residues more difficult than at Fernald. The Corps should evaluate various means to move the intake of any mining or excavation equipment up to and around these pillars.</p> <p>Walls of the existing buildings remain in place. These were robust reinforced concrete structures and the existence of pillars and walls should allow the installation of a roof to contain and collect the radon and/or maintain negative air pressure in Building 411, though this may be more difficult in the two circular buildings.</p>	The available removal technologies for the IWCS residues and wastes are being evaluated in the Remedial Alternatives TM and for the IWCS OU FS. The evaluation of the technologies will take into consideration the presence of the roof support pillars and other potential debris within Building 411 where the K-65 and other high-activity residues are located. The most promising removal technology(s) would be included in the alternatives that propose removal of the IWCS wastes.
33	LOOW Community Action Council	While it does not appear that there will be any real economic value of the radium contained in the residues, the Corps should evaluate methods to process the sluiced residues to separate the "slimes", which contain most of the radium, into separate containers for storage and transport. The isolation of the highest activity residues (which is also the source of radon production) could allow additional alternatives for transportation and long-term storage.	Before consolidation into the IWCS, the K-65 residues existed as wet clay containing about 30% water. According to the <i>Final Environmental Impact Statement</i> (USDOE 1986) two distinct types of materials are present within the residues: 73% is characterized as "slimes" (particle size of less than 37 microns [μm]) containing re-crystallized compounds, including radium-contaminated barium sulfate, and the remainder is sand (particle sizes of greater than 37 μm) (DOE 1986; Litz 1974; DOE 1981). Methods for waste handling, removal and processing will be evaluated during the FS and will consider the known characteristics of the residues including particle size and radiological content. The analysis of alternatives in the IWCS OU FS will consider whether it is technologically and economically feasible to separate and handle the waste based on particle size and radium concentration.
34	LOOW Community Action Council	In order to fully evaluate treatment, packaging, and transportation options, the Corps should consider obtaining samples of K-65, L-50 and L-30 residues to determine the radiation properties and chemical contents of the slimes and grain size fractions of the residues	Historic data from the NFSS and information regarding the remediation of the K-65 residues at Fernald is sufficient to evaluate the treatment, packaging, and transportation options for the IWCS FS. Based upon the selected remedy, if additional characterization data is needed for remedial design, samples will be collected at that time.

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Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

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35	<i>New York State Department of Environmental Conservation</i>	<p>The New York State Department of Environmental Conservation (the "Department") has received and reviewed the above referenced document which addressed the various residues stored within the Interim Waste Containment Structure (IWCS) at the Niagara Falls Storage Site (NFSS). The technical memorandum (TM) presents the current understanding of the residue inventory and discusses off-site waste disposal options and current viable waste disposal facilities. This TM also examines lessons learned from previous activities at the Fernald Closure Project Site in Fernald, Ohio as it related to planning, remedial design, removal, handling, packaging, shipment and disposal associated with the high activity radioactive K-65 residues which are similar to those located within the IWCS at the NFSS.</p> <p>The TM provides a detailed analysis of technical and administrative issues associated with the remedial project accomplished at the Fernald site and is directly applicable as part of the evaluations and analysis required for the IWCS feasibility Study. The TM identifies and discusses many issues (remedial technologies, removal challenges, radon control, disposal options, transportation, public input and acceptance) which will need to be addressed as part of the process.</p> <p>The Department agrees with the assessments made in the TM, especially those germane to the waste disposal options covered in chapter 6. As in the past, the Department will continue to express its opposition to the long term management of the K-65 wastes at the NFSS and maintain that this material is disposed of in an appropriate offsite facility. The Department also recognizes the fact that the Feasibility Study process will take time and even more time will be required to obtain funding to implement remediation of this facility.</p>	The States input will be considered throughout the development of the IWCS OU FS.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
36	[REDACTED]	Does the community want a radioactive waste disposal facility sited? This option was not understood by all public workshop participants. We don't want one.	The CERCLA process requires that a range of alternatives (including the no action alternative) be examined in the FS such that relevant information concerning the remedial options can be presented to the decision maker. The NCP requires evaluation of the "no action" alternative.
37	[REDACTED] /	The sequence of issuance for Corps' Technical Memorandums seems backwards, unless the Corps' objective is to wed the community to positions before the public understands the consequences of those positions to their health, safety, economic welfare and their future.	<p>The intent of preparing and publishing the technical memoranda was to provide the public with several opportunities to submit comments on the FS process. Although there is a specific public review period for each of the technical memoranda, this is intended to focus the community on a particular technical aspect of the FS process, not limit the scope of the comments.</p> <p>Because the development of one technical memorandum (TM) may be dependent on the conclusions of another TM, the order of completion for the TMs reflects a hierarchy as established in the FS Work Plan (USACE 2009). Also, please see the response to Comment #40 for a further explanation of this TM hierarchy.</p>
38	[REDACTED]	The IWCS Technical Memorandum ("TM") comparisons between Fernald and the NFSS were heavily biased and understate the risks and impacts of the NFSS.	Please see Section 1.1 of the TM. The purpose of the WDO/Fernald LL TM was to carefully appraise the technical approach Fernald took to dispose of the K-65 residues so that the options available and the potential difficulties in remediating the NFSS K-65 residues may be better understood. The intent of the WDO/Fernald LL TM was not to estimate NFSS risks. That will be the focus of two upcoming TMs (the Radon Assessment TM and the Health Effects TM).
39	[REDACTED] [REDACTED]	The failure of the Corps to release all laboratory data or to allow public input on Sampling & Analysis Plans, prior to field work also serves to understate NFSS risk.	The WDO/Fernald LL TM did not involve sampling, so a sampling and analysis plan was not issued for this TM. See response to Comment #46 for information on the availability of laboratory data from other NFSS investigations.
40	[REDACTED]	The five Corps-proposed "Technical Memorandum" topics do not parallel the Corps', "Steps in the Feasibility Study." This raises the questions about whether public participation will allow meaningful input into the decision-making process - not to make the decisions, but to have an opportunity to provide information to influence key decisions that impact us.	The Corps complies with CERCLA and the NCP public participation requirements. The Corps developed the TM approach in part to allow for more meaningful public participation during the FS process.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
41		<p>The decision-making process on the Feasibility Study (FS) began as far back as 2003 for other agencies, but began just three months ago for the community.</p> <p>5 years ago the Corps declined public requests for a <i>series</i> of meetings to begin digesting very technical, extensive and available information about “Fernald Lessons Learned.”</p> <p>Instead, the Corps hired a facilitator in 2011, reportedly at \$125,000 per year, to institute a predetermined, narrow and swift FS agenda for public “input.”</p>	<p>Over the past couple of years, the Corps has been transitioning from the R1 phase of the CERCLA process to the FS phase. Throughout this transition, the Corps has provided the community with regular updates and opportunities for input in the form of fact sheets, community bulletins, website access and public workshops. To enhance this public outreach effort and in response to requests from elected officials and the community, the Corps restructured its outreach program to promote openness and transparency and to provide the community with additional opportunities for public participation. As part of this outreach effort, the Corps hired a technical facilitator to enhance communication between the community and the Corps on technical matters. The Corps is committed to this outreach effort and is prepared to support the technical facilitator in developing a more open and effective dialogue with the community.</p>
42		<p>The Corps has conducted regular meetings or calls with agencies which have a role in the decision-making process. The interested public is largely in the dark as to the issues discussed, the agencies involved, and a real understanding of what authority or influence each agency has. Therefore, the public has no input before many initiatives which affect them are undertaken. Further, the Corps and DEC in the past have provided information to private Responsible Parties, not provided to the public.</p>	<p>The Corps maintains an open dialogue with several state and Federal agencies concerning the status of the work being conducted at the NFSS and maintains a robust public outreach effort. As part of the Corps’ restructured outreach program and in response to requests from elected officials and the community, the Corps hired a technical facilitator to enhance communication between the community and the Corps.</p>

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
43	██████████	<p>In 2008 the Corps said its RAB had dissolved in 2002, (or 2006), despite continuous operation. This 2008 notification came after the LOOW RAB shifted from domination by Responsible Parties, Contractors, and Regulators, to diverse community interests and academics, (albeit volunteers.)</p> <p>The Corps response to the 2007 RAB request for a facilitator to address issues between the RAB and the Corps was declined. Instead the Corps hired a facilitator, four years later, who announced at a recent public workshop that the RAB was “replaced.” The RAB has not been replaced and continues to function in the role given by the Corps since 1999, as amended.</p> <p>The community would be better served if the federal government, instead, provided the \$125,000 per year to the Niagara County Health Dept. for engaging technical experts. The Corps would be expected to support such funding if it believes its investigations and analysis are scientifically defensible. County Health’s Community LOOW Project identified gaps through 2007; it should be revived to identify those the Corps has since, and will potentially create prior to issuing the R.O.D.</p>	<p>The Corps will continue to sponsor an outreach program that is compliant with CERCLA and the NCP and supports a variety of public involvement activities including public meetings and discussions with the local community. The Corps remains open to continued discussions with all interested individuals and community groups through the outreach program activities. As part of the Corps’ outreach program and in response to requests from elected officials and the community, the Corps hired a technical facilitator to enhance communication between the community and the Corps on technical issues.</p>
44	██████████	<p>The failure of the Corps to provide for teleconference capability (if not Skype) for its TM public workshop (or others) to enable volunteer technical experts outside the community to participate on behalf of the community, is unconscionable.</p>	<p>Comment noted.</p>

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

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45		The Remedial Investigation and Addendum were flawed, but are being used to form the basis of the risk against which remedial options will be measured. This seems an inappropriate "balance" for a community which has assumed all of the risk for 70 years, and received no benefit as a result.	<p>The RI and the RI Addendum activities were conducted to define the nature and extent of chemicals and radionuclides of concern at the NFSS. The RI included three phases of fieldwork which began with a wide investigation of the site, involving the collection of groundwater, surface water, sediment and soil samples that were analyzed for radiological and chemical parameters. Subsequent investigative phases were guided by sampling results obtained during earlier work and focused on areas that appeared to be adversely impacted by past activities at the site. Investigations conducted for the RI Addendum further focused on specific data gaps to ensure that site contamination and risk are properly quantified.</p> <p>The Baseline Risk Assessment used the investigative data to model exposures for hypothetical on-site receptors and to estimate risk to the receptors based on EPA-approved models and parameters to estimate risk to these receptors. The mathematical models used by the Baseline Risk Assessment were recommended by regulatory agencies as a reasonable means to provide a conservative estimate of the effect of chemicals of concern and radionuclides of concern on human receptors. The Health Effects TM will further assess potential health effects from hypothetical exposures to the IWCS contents, and will focus on two main concerns: (1) direct exposures at the IWCS, and (2) airborne releases that impact air and soil both on-site and off-site. For the second pathway, the Health Effects TM will build upon the information presented in the Radon Assessment TM.</p> <p>The Baseline Risk Assessment together with Health Effects TM allows the Corps to define the potential impacts from the IWCS wastes and forms the basis for future remedial action that will be evaluated as part of the IWCS OU FS, including the analysis of remedial technologies and remedial alternatives.</p>

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
46		The Corps has not provided the community with; complete data, an opportunity to comment on sampling plans in advance of field work, or funding for technical assistance to independently review long and complex documents generated during the past several years, in addition to extensive historical documentation.	<p>The technical memoranda approach was developed to help reduce the length and complexity of a single Feasibility Study document which the public would have to review. The Corps has digitized the NFSS Administrative Record converting documents from hard copy to electronic version to allow greater accessibility of information to the community. In the meantime, many site documents, including the RI Report, the Baseline Risk Assessment, the Groundwater Flow and Contaminant Transport Modeling Report and the RI Addendum Report are available electronically on the NFSS website at http://www.lrb.usace.army.mil/fusrap/nfss/index.htm. In addition, environmental data for the NFSS investigations, which is extensive and includes approximately 1,400 samples with more than 150,000 results, is also available electronically in Appendix AA of the RI Report. A hard copy of the NFSS Administrative Record is available in the Lewiston library. Electronic copies of the Administrative Record are available in the Lewiston and Youngstown libraries.</p> <p>Information regarding supplemental sampling conducted for the recently completed RI Addendum Report was posted to the NFSS web site as it was completed, and well before release of the report. These documents were made available to the public on the following dates:</p> <ul style="list-style-type: none"> • NFSS RI Addendum - Sampling and Analysis Plan – November 2009. • NFSS RI Addendum – Sampling Locations – May 2010. • NFSS RI Addendum - Validated Radiological and Chemical Data – August 2010. • NFSS RI Addendum Report – April 2011.
47		Retrieval of radioactive residue/waste is not adequately evaluated for the IWCS, (only Fernald.) This is perhaps the most significant issues for the NFSS, which the TM should evaluated at length.	The purpose of the WDO/Fernald LL TM was to review the technical approach Fernald took to dispose of the K-65 residues, so that the options available and the potential difficulties Fernald encountered while managing the K-65 residues are understood. The upcoming Remedial Alternatives TM will evaluate the potential removal (retrieval) technologies for the IWCS OU based upon effectiveness, implementability, and cost.

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Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
48		<p>Groundwater evaluation should be <u>included</u> as part of this TM and FS because remediation of the IWCS will inevitably affect groundwater.</p> <ol style="list-style-type: none"> 1. Performance monitoring after construction identified water collecting inside the IWCS. 2. Increases in Uranium detections in wells near the IWCS also reflect the probability that the IWCS is already leaking 3. Residues in the IWCS were originally dewatered, but now may well be in a saturated zone. This possibility was not evaluated in the TM and should be. 	<p>See section 1.1 of the TM. It was not the purpose of the WDO/Fernald LL TM to specifically address groundwater at NFSS. The groundwater OU will have a separate FS.</p> <p><u>Response to bullets 1 and 3.</u> Geophysical studies performed in 2001 and 2003 did not indicate extensive water saturation within the IWCS. The potential for water saturation within the IWCS will be evaluated as part of the IWCS OU FS.</p> <p><u>Response to bullet 2.</u> The IWCS is performing as designed and the U.S. Environmental Protection Agency (EPA) agrees with this assessment. Groundwater plumes exist adjacent to the IWCS, which are attributable to past historical operations as detailed in the RI Addendum Report. Trends in uranium concentrations in groundwater wells used to monitor cell integrity are presented in the RI Addendum Report and further demonstrate that the IWCS is performing as designed. The Corps will continue to maintain and monitor the site and evaluate, in the IWCS FS, long-term remedies to ensure future protectiveness of human health and the environment.</p>
49		The question of “When” remedial options are needed was not properly evaluated. “Long-term” and “short-term” are not well-defined, but should be.	See section 1.1 of TM. The purpose of this TM was not to evaluate long-term nor short-term effectiveness of any specific technology. The potential technologies for the IWCS OU will be presented in the Remedial Alternatives TM and the short-term and long-term impacts will be defined and evaluated for each alternative in the IWCS OU FS.
50		IWCS wastes were never characterized for gamma and beta activity. Site characterization under the NFSS Remedial Investigation did not successfully address (include) the IWCS. This warrants discussion in the TM	See section 1.1 of TM. It was not the purpose of the WDO/Fernald LL TM to provide a detailed characterization of the IWCS contents. Historic characterization data exists for the residues stored within the IWCS and this data will be used for the FS. Direct sampling of the contents of the IWCS to further characterize the residues and waste was not conducted during the RI because there is sufficient information for completing the RI/FS without penetrating the protective cap.
51		A more detailed and comprehensive estimate of off-site removal costs for all waste vs. just K-65 should be included. Adding 4-6 months to a 5-10 year project to accomplish <u>complete</u> removal and clean up may be more economically advantageous than to add another <i>permanent</i> overhead cost to the list of DOE properties.	A more comprehensive estimate of the cost for the range of alternatives will be developed for the FS. Understanding what options (such as which off-site disposal facilities could accept IWCS wastes) is an essential component of evaluating potential remedial alternatives that include removal, treatment and off-site disposal.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
52	██████	The Technical Memorandum should be expanded to evaluate Environmental Impacts of leaving the IWCS residues/wastes in place, and include better prediction models for containment failure of the current structure. Comparisons to Fernald were skewed and should be re-evaluated to include:	The detailed analysis that will be conducted for the IWCS OU FS will evaluate the short- and long-term impacts of each potential remedial alternative.
53	██████	The Population within 50 miles of the NFSS could be almost 10 times greater than Fernald and should be disclosed. (This is used for dose rate calculations.)	Discussion of the off-site risks from hypothetical exposures to the IWCS contents will be presented in the Radon Assessment TM and the Health Effects TM scheduled for release in early 2012. The WDO/Fernald LL TM addresses waste disposal options and lessons learned from the Fernald Remediation Project. It was not intended to evaluate off-site risks to nearby populations. On-site risks associated with a residential exposure to IWCS materials was evaluated in the Environmental Impact Statement (EIS) issued for NFSS by the USDOE (1986), and was then reevaluated by the National Research Council (NRC) in a report published in 1995. The Corps will work closely with the community through our facilitator to provide the technical support necessary to educate the public on the risks involved with the potential remedial alternatives.
54	██████	When comparing Fernald detections one mile away, the TM neglected to note NFSS discharges of radioactive material three miles away, into Lake Ontario. The Lake is the sole drinking water supply for Toronto and surrounding areas, and is heavily relied upon by Rochester and many other Upstate NY communities.	The NFSS is located approximately four miles south of Lake Ontario and three miles east of the Niagara River. The domain of the groundwater contaminant fate and transport model completed for the NFSS extended well beyond the site boundaries to take advantage of the well-established natural boundaries of Lake Ontario and the Niagara River. The 3D solute transport model was applied to predict the migration of 24 constituents of potential concern and for IWCS-based sources. The model indicated that exceedances at the NFSS property boundary are not predicted to occur within the next 1,000 years. The groundwater modeling results serve to allay concerns that residues in the IWCS pose an imminent threat to groundwater quality on or around the NFSS. The FS process will evaluate remedial alternatives for the NFSS that will account for the protection of local and regional surface water and groundwater.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
55		The TM neglects to mention that the NFSS is in a region the state hopes to make a world class tourist destination.	This TM focused on the lessons learned at Fernald and potential waste disposal options. The Corps welcomes input regarding the community's desired end-state for the NFSS. Please also see the responses to Comments #5 and #19 for a discussion of identification of future land use for the site.
56		The TM did not emphasize that a radioactive waste disposal facility was open and operating for 10 years before the K-65 residues were removed from Fernald. Neither were the historical permitting practices by the NYS DEC for landfills surrounding the NFSS, which also began as "local" in nature, and quickly expanded to become international.	Comment noted.
57		The TM discusses the aquifer near Fernald, but not the three aquifers situated beneath the NFSS, identified by DOE.	See section 1.1. The WDO/Fernald LL TM addresses waste disposal options and lessons learned from the Fernald Remediation Project. For information on the nature of the site please see RI and RIR Addendum found at http://www.lrb.usace.army.mil/fusrap/nfss/
58		TM used improper comparisons of only adjacent land uses and ignored the real residential distances from the IWCS vs. Fernald and nearby denser populations such as Lewiston and Niagara Falls.	The presence of the K-65 residues at both Fernald and the IWCS provides an opportunity to identify numerous aspects of the Fernald Remediation Project that could be applicable to future IWCS remedial activities including; the retrieval, treatment, shipping, and disposal of the K-65 residues and other wastes; radiological control program; and stakeholder and workforce involvement. This TM focused on comparing engineering aspects of Fernald activities and identified potential waste disposal options. Please also see the responses to Comments #5 and #19 for a discussion of identification of future land use for the site.
59		Impacts from groundwater pumping, from adjacent north, east and west properties from of the NFSS was not evaluated.	Please refer to the response to Comment #6.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
60		<p>NFSS risk from surrounding activities such as fires for fires, reactions, leaks and “inadvertent storage of explosives” were not evaluated in the TM.</p> <p>Instead, photos distracted public workshop participants from radiological danger that is not visible to the eye. The “after” photo of Fernald seems virtually identical to “before” at the NFSS and CWM Chemical, which have experienced fires, explosions, leaks, discharges and other adverse impacts.</p>	Risks from surrounding activities are not evaluated in the WDO/Fernald LL TM. The FS will evaluate each potential remedial alternative against the CERCLA criteria.
61		<p>Some Fernald residents may have been satisfied with an enormous radioactive waste landfill left behind because they have not experienced the problems that arise from them. This community recognizes the difference between waste pits and landfills, and landfills and other types of disposal have not been operated safely in this location.</p>	CERCLA and the NCP requires that a range of alternatives (including no action) be examined in the FS.
62		<p>The TM indicates that technical advisors were provided to the Fernald CAB only during remedial activities. If accurate, this may also account for why that community acquiesced to on-site disposal of radioactive wastes.</p>	As detailed in Section 5.1 of the WDO/Fernald LL TM, the public outreach program began prior to 1989 when Fernald was placed on the National Priorities List. Section 5.1 further describes that one of the many public involvement activities conducted by Fernald was the use of area scientists, public meetings, and outreach programs. The Corps has obtained the services of the technical facilitator associated with the Fernald Remediation Project to assist the community in understanding the technical issues and to enhance communication between the Corps and the community.
63		<p>The Corps public presentation and solicitation of public input on this TM asked for future land use preferences, before telling the public what those preferences would mean to the level of clean-up standards (ARARS) as well as health and safety.</p>	No decision regarding future land use has been made. The preliminary discussions with the public regarding future land use will continue. Please also see the responses to Comments #5 and #19 for a discussion of identification of future land use for the site.

**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical
Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011**

Comment No.	Commenter	Comment	Response
64	[REDACTED]	The fact that the NFSS is not on the NPL was a matter of timing as the TM noted. The NFSS is considered much higher risk than many NPL sites – a combined NPL and FURAP ranking should be undertaken with public input. If that context is not possible, the reference to NPL should be removed as it is otherwise misleading.	The intent of the discussion in the WDO/Fernald LL TM regarding the National Priorities List status was to provide information on how the two sites differ in regard to funding and administrative procedures such as participation from regulatory agencies (e.g. EPA). Regardless, the same CERCLA process for assessing risks, evaluating remedial technologies, developing alternatives, and selecting a remedy will be implemented at NFSS.
65	[REDACTED]	The travel and storage history of residues and wastes, from first arrival at the LOOW, around the LOOW, through or not through the Silo, and to the IWCS was not fully addressed. Gaps should be clearly identified. The known and potential co-mingling in categories the Corps created (K-65 vs. other vs. tower, vs. Rubble/waste vs. R-10 vs. soils) warrants more evaluation in the TM.	The history of the waste storage is presented in the RI Report published in December 2007, which is available on the NFSS website. The FS will evaluate each potential remedial alternative against the CERCLA criteria.
66	[REDACTED] /	The NFSS has been temporary Storage in one form or another since the 1940s. The TM should consider other temporary storage sites in addition to Disposal sites for transfer of wastes – to dryer and more seismically stable containment.	Temporary storage would be considered if permanent disposal facilities were not available for the IWCS wastes. As identified in the WDO/Fernald LL TM, there are viable options for the disposal of the residues which have been designated as 11e. (2) waste for the purpose of disposal.
67	[REDACTED]	There are many improperly defined or important omitted terms in the Glossary. Uranium is defined as solely naturally occurring, confusing the fact that there is Uranium at the NFSS which is not naturally occurring. Strontium-90 is not a defined term. The health hazardous of these radioactive materials and many other contaminants of concern, such as thorium, are not mentioned, in contrast to the glossary definitions for Radium 226 and Radon.	The residues stored at the NFSS and placed into the IWCS contain uranium progeny (e.g., thorium and radium) left after most of the uranium was removed from naturally occurring pitchblende ores. Uranium isotopes are present in site media as a result of waste storage practices conducted at the NFSS prior to construction of the IWCS. The glossary is intended to provide definitions used in this TM, not to provide definitions and health effects for all of the radionuclides or constituents of concern at the NFSS. The upcoming Health Effects TM will address the health effects of IWCS-sourced constituents.

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS), Lewiston, New York; July 2011

Comment No.	Commenter	Comment	Response
68	[REDACTED]	<p>EPA has completed its review of the Waste Disposal Options and Lessons Learned Technical Memorandum for the Niagara Falls Storage Site, Lewiston, NY, dated July 2011. This document provides a detailed evaluation and correlation between the Fernald Site and the Niagara Falls Storage Site (NFSS) with the associated disposition options, including the possibility of an On-Site Disposal Facility (OSDF). While an OSDF was a viable option at Fernald, this may not be a viable and/or cost effective option at the NFSS. As you are aware from previous discussions and previous correspondence dating back to the time period when the NFSS Interim Waste Containment Structure (IWCS) was first constructed, EPA believes the best alternative would be off-site disposal at a facility that is equipped to handle the high activity residues and wastes contained in the IWCS. EPA has in the past corresponded with the U.S. Department of Energy (DOE) on this Formerly Utilized Remedial Action Program (FUSRAP) site, as well as the U.S. Army Corps of Engineers (USACE). DOE originally had responsibility for FUSRAP before it was transferred to the USACE. I have enclosed three letters which I believe give the historical perspective of our position regarding a possible OSDF: (1) June 25, 1986 letter from EPA Regional Administrator [REDACTED] to [REDACTED] Manager Oak Ridge Operations, DOE; (2) May 1, 1987 letter from [REDACTED] EPA Region 2 Federal Facilities Coordinator to [REDACTED], Office of Nuclear Energy DOE; and (3) my letter to [REDACTED] on September 9, 2009. To summarize our position, 40 CFR 191, <i>Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Radioactive Wastes</i>, should apply to the NFSS as an Applicable or Relevant and Appropriate Requirements (ARAR). Additionally and as you know from your continued compliance, the 40 CFR 61, <i>National Emissions Standards for Hazardous Air Pollutants (Rad NESHAP)</i>, also apply to the NFSS IWCS. Such CFRs are considered Relevant and Appropriate (R&A) ARARs for the current status of the NFSS and during the site remediation phase. While there may be radioactive wastes that have radioactivity levels consistent with EPA's 40 CFR 192 <i>Uranium Mill Tailings Radiation Control Act Standards</i> and these may also be considered as an ARAR as such, we do not believe that most radioactive wastes or residues can be effectively handled long term using 40 CFR 192 as an ARAR. We also would point out that the UMTRCA standards were designed for land use far different from that currently in the Lewiston area.</p>	<p>EPA's input on applicable and relevant and appropriate requirements (ARARs) and remedial alternatives for the IWCS Operable Unit (OU) will be evaluated in the upcoming Remedial Action Objectives (RAO) and ARAR Technical Memorandum, and the Remedial Alternatives Technical Memorandum, respectively. The ARAR evaluation will also consider that Congress designated the residues in the IWCS as 11e.(2) byproduct material for the purpose of disposition in 2004.</p>

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1868

JAN 23 2012

[REDACTED], PE, PMP, FUSRAP Program Manager
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207-3199

Dear [REDACTED]:

EPA has completed its review of the Waste Disposal Options and Lessons Learned Technical Memorandum for the Niagara Falls Storage Site, Lewiston NY, dated July 2011. This document provides a detailed evaluation and correlation between the Fernald Site and the Niagara Falls Storage Site (NFSS) with the associated disposition options, including the possibility for an On-Site Disposal Facility (OSDF). While an OSDF was a viable option at Fernald, this may not be a viable and/or cost effective option at the NFSS.

As you are aware from previous discussions and previous correspondence dating back to the time period when the NFSS Interim Waste Containment Structure (IWCS) was first constructed, EPA believes the best alternative would be off-site disposal at a facility that is equipped to handle the high activity residues and wastes contained in the IWCS. EPA has in the past corresponded with the U.S. Department of Energy (DOE) on this Formerly Utilized Remedial Action Program (FUSRAP) site, as well as the U.S. Army Corps of Engineers (USACE). DOE originally had responsibility for FUSRAP before it was transferred to the USACE.

I have enclosed three letters which I believe give the historical perspective of our position regarding a possible OSDF: (1) June 25, 1986 letter from EPA Regional Administrator Christopher Daggett to Joe LaGrone, Manager Oak Ridge Operations, DOE; (2) May 1, 1987 letter from Robert Hargrove EPA Region 2 Federal Facilities Coordinator to Gale Turi, Office of Nuclear Energy DOE; and (3) my letter to Michelle Rhodes on September 8, 2009. To summarize our position, 40 CFR 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, should apply to the NFSS as an Applicable or Relevant and Appropriate Requirements (ARAR). Additionally and as you know from your continued compliance, the 40 CFR 61, *National Emission Standards for Hazardous Air Pollutants (Rad NESHAP)*, also apply to the NFSS IWCS. Such CFRs are considered Relevant and Appropriate (R&A) ARARs for the current status of the NFSS and during the site remediation phase. While there may be radioactive wastes that have radioactivity levels consistent with EPA's 40 CFR 192 *Uranium Mill Tailings Radiation Control Act Standards* and these may also be considered as an ARAR as such, we do not believe that most radioactive wastes or residues can be effectively handled long term using 40 CFR

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**Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011**

192 as an ARAR. We also would point out that the UMTRCA standards were designed for land use far different from that currently in the Lewiston area.

Should you have any questions or would like to discuss the content of this letter in more detail, do not hesitate to contact me at [REDACTED]

[REDACTED]
[REDACTED]
Radiation and Indoor Air Branch

Cc: [REDACTED] - EPA Western NY Public Information Office
[REDACTED], Ph. D.

Enclosures [3]

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278

JUN 25 1986

Manager
Oak Ridge Operations
Department of Energy
P.O. Box E
Oak Ridge, Tennessee 37831

Dear [redacted]:

The Environmental Protection Agency (EPA) has reviewed the final environmental impact statement (EIS) for the Long-Term Management of Existing Radioactive Wastes and Residues at the Niagara Falls Storage Site (NFSS), located near Lewiston, New York. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7606, PL 91-6040 12(a) 84 Stat. 1709).

The final EIS defines and analyzes nine generic alternatives for the long-term management of 11,000 m³ of radioactive residues (produced from the processing of uranium ores) and 180,000 m³ of radioactive wastes (primarily existing in the form of contaminated soils). The residues have an average radium-226 concentration of 67,000 pCi/g (870 Ci of radium-226); the wastes have an average radium-226 concentration of 36 pCi/g (7.8 Ci of radium-226). By comparison, uranium mill tailings have an activity of about 200 to 500 pCi/g.

The generic goal of the management scheme would be to assure that the material complies with Uranium Mill Tailings Radiation Control Act (UMTRCA) Standards (40 CFR 192). The document indicates that the Department of Energy's (DOE) preferred generic alternative is long-term management at NFSS (alternative 2). There are two options indicated for alternative 2: alternative 2a, which is referred to as modified containment, and consists of the construction of a "long-term" cap; and alternative 2b, which is referred to as modified containment plus modified form, and consists of both the construction of a long-term cap and the physical and/or chemical modification of the residues. The preferred option is not identified.

DOE has used EPA's UMTRCA Standards time frames for its assessment of environmental radiation risk and consequences (pp. 4-2, 4-3). This analysis is appropriate for the 180,000 m³ of wastes which have an activity below the range of uranium mill tailings. The radioactive residues, however, have an activity level that is 100 to 400 times higher than mill tailings, and must be

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011

2

managed, stored or disposed of in a manner that provides for greater protection than under UMTRCA. In previous correspondence (letter of May 24, 1985), EPA identified substantial concerns about the need to assure an adequate level of protection for the residues, and also raised concerns about potential groundwater impacts through contamination of recharge water in and around NFSS. Several containment options were suggested for review, including matrix stabilization, and use of concrete vaults and/or concrete capping material to decrease infiltration and leaching.

The 2b alternative identified in the EIS proposes on-site management using some form of matrix enhancement for the residues. Four such methods are reviewed in Appendix C of the EIS: vitrification, asphalt/bitumen, cement and urea-formaldehyde. None of these are described in sufficient detail to provide a positive indication of their feasibility or workability, although conceptually, some version of the 2b alternative may be acceptable. It is our judgement, however, that the 2a alternative will not provide an adequate level of protection for the residues and is, therefore, environmentally unacceptable.

Given the lack of detailed technical, engineering/design, and groundwater data available at this time, we find the EIS inadequate for the purposes of determining the environmental acceptability of the selected generic alternative of on-site management (with the caveat stated above that 2a is unacceptable for the residue material). This is consistent with our May 24, 1985, correspondence in which we indicated that more detailed technical and design information was needed to complete our review of the project, and that the residue material would require a higher level of protection.

EPA's Office of Radiation Protection (ORP) currently has underway an extensive rule-making effort for low-level wastes, and has recently promulgated final standards for high-level radioactive wastes. The NFSS residues pose hazards just short of those considered by the high-level standard, and therefore fall within the scope of the low-level waste standards program. EPA is prepared, within the context of the ORP standards setting program, to advise DOE of the radiation protection requirements for the residue material.

In addition, EPA has determined that the NFSS is subject to the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). We propose to use the framework of a CERCLA Federal Facilities Agreement (to be negotiated between our respective agencies) to assure that appropriate levels of protection will be provided at NFSS. It is our understanding that the anticipated time frame for selection and development of the preferred containment scheme by DOE is several years away. We suggest that an initial, conceptual agreement be negotiated with EPA, leading to a more detailed agreement at a later date. We also strongly recommend that the DOE consider issuing supplemental NEPA documentation (possibly a supplemental EIS) on the selection of the specific on-site containment option.

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011

3

A meeting between EPA and DOE to discuss the residue material, and agree upon a time frame for future coordination is recommended. [REDACTED] the Region II Federal Facilities Coordinator, will be contacting your office shortly to arrange for such a meeting. In the interim, he may be reached at FTS [REDACTED] if there are any questions about our comments.

Sincerely,

[REDACTED]
Regional Administrator

[REDACTED] Commissioner
New York State Department of Environmental Conservation

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011

MAY 1 1987

Division of Facility and Site
Decommissioning Projects
Office of Nuclear Energy
U.S. Department of Energy
Washington, D.C. 20545

Dear [REDACTED]

The Environmental Protection Agency (EPA) has reviewed the additional information regarding the environmental acceptability of the interim storage of the K-65 residues at the Niagara Falls Storage Site (NFSS), submitted with your letter dated March 13, 1987.

As was agreed in the meeting between our respective agencies held in Washington on January 21, 1987, the K-65 residues are not covered by any Federal regulations because the residues result from naturally occurring radioactive materials. However, the appropriate level of protection appears to be to consider the K-65 residues as transuranic or transuranic-like waste and to use 40 CFR 191 (Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Wastes), Subpart A as the bench mark from which to determine environmental acceptability. The specific standard is contained in 40 CFR 191.03(b) which calls for reasonable assurance that the combined annual dose equivalent to any member of the public in the general environment, resulting from discharges of radioactive material and direct radiation from management and storage of transuranic waste at facilities operated by the DOE and not regulated by the U.S. Nuclear Regulatory Commission (NRC) or an Agreement State, shall not exceed 25 millirems to the whole body and 75 millirems to any critical organ.

The DOE published the final environmental impact statement (EIS), "Long-Term Management of the Existing Radioactive Wastes and Residues at the Niagara Falls Storage Site" (DOE/EIS-0109F) on April 1986. Table 4.10 of the EIS entitled, "Radiological Doses to Nearby Individuals During the Action Period," shows that the dose for Alternative 1, the alternative being utilized for the management and storage of the K-65 residues, will be less than 0.001 mrem/yr to the whole body and to the bone, the lung, and the bronchial epithelium. This is shown in footnote 4 of that Table. In the additional information presented, it is indicated that dose levels will remain below 0.001 mrem/yr even though the activity of the K-65 residues has been re-estimated to be 520,000 pCi/g instead of 200,000 pCi/g. This contention is supported by the analysis done as part of the EIS and we concur with DOE. In light of this analysis, we believe dose levels will be below 0.001 mrem/yr for the ten years projected for interim storage, and these doses are below the 25 mrem and 75 mrem dose limitations contained in 40 CFR 191.03(b).

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011

-2-

Based on the above analysis, EPA finds that DOE has offered reasonable assurance that the management and storage of the K-65 residues at the NFSS storage site for the next ten years will be in compliance with 10 CFR 191.03(b) and, therefore, we concur with the action.

If you have any questions regarding this matter, please contact [REDACTED] of my staff or [REDACTED] our Regional Radiation Representative at [REDACTED] respectively.

Sincerely yours,

[REDACTED]
Federal Facilities Coordinator
Environmental Impacts Branch

bcc: [REDACTED]
[REDACTED] 258RD-PS
[REDACTED] ORP/ANR-458
[REDACTED] ORP/ANR-460

Responsiveness Summary to Public Comments on the Waste Disposal Options and Fernald
Lessons Learned Technical Memorandum for the Niagara Falls Storage Site (NFSS),
Lewiston, New York; July 2011



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
290 BROADWAY
NEW YORK, NY 10007-1868

SEP 08 2009

██████████
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara Street
Buffalo, NY 14207

Dear ██████████:

The purpose of this letter is to provide an update to my original letter dated July 27, 2009, concerning EPA's input on Applicable or Relevant and Appropriate Requirements (ARARs) for the Niagara Falls Storage Site (NFSS).

Upon further consideration we would modify our ARAR recommendation contained in Recommendation 1 in that letter as follows:

The U.S. Army Corps of Engineers (USACE) should evaluate and implement radiation protection criteria for the NFSS. Radioactive wastes located at the site require a level of protection equivalent to that which would have been provided at a designated storage or disposal site for spent nuclear fuel and high-level radioactive waste. For wastes remaining on the site for periods longer than 10,000 years, the only precedent is the standard mandated by Congress through the Energy Policy Act of 1992, developed by the EPA pursuant to the Act, and documented in 40 CFR Part 197. The 40 CFR Part 197 standards are site-specific and are applicable solely to the proposed Yucca Mountain Geologic Repository. As such, we recommend that 40 CFR Part 191 now be considered as the equivalent of ARARs for the NFSS site and that further studies contain a discussion of this standard.

We would also modify Recommendation 2 in that letter as follows:

Similar to 40 CFR Part 191 ground water protection requirements, the USACE should consider the Safe Drinking Water Act when evaluating contamination in on-site and off-site groundwater.

Should you have any questions or would like to discuss the content of this or the previous July 27, 2009 letter in more detail, do not hesitate to contact me at ██████████

Sincerely,

██
Radiation and Indoor Air Branch