MEETING NOTES

Shallow Land Disposal Area (SLDA) FUSRAP Site
Technical Project Planning Meeting
Coraopolis, Pennsylvania
August 27 and 28, 2002

I. INTRODUCTION

The United States Army Corps of Engineers (USACE) conducted a Technical Project Planning (TPP) meeting on August 27 and 28, 2002 for the remediation of the Shallow Land Disposal Area (SLDA) site located in Parks Township, Armstrong County, Pennsylvania. The purpose of the meeting was to establish a project team, develop a working relationship between the project delivery team and the stakeholders, summarize existing site information, identify project goals, develop specific data quality objectives, and develop a consensus on a general approach to site remediation. Information presented in these meeting minutes was summarized from presentation material, transparency notes generated from discussions, notes submitted by attendees and notes taken during the meeting.

Representatives from the following organizations attended the TPP meeting:

- Pennsylvania Department of Environmental Protection (PADEP)
- Pennsylvania Department of Health
- United States Nuclear Regulatory Commission (NRC)
- United States Environmental Protection Agency (USEPA)
- BWX Technologies (BWXT)
- Atlantic Richfield Company (ARCO)
- United States Army Corps of Engineers (USACE)
    - Pittsburgh District
    - Buffalo District
    - Great Lakes and Ohio River Division
    - USACE Headquarters
    - Hazardous, Toxic and Radioactive Waste Center of Expertise
- Department of Army Headquarters (HQDA)
- Argonne National Laboratory (ANL)
- URS Corporation (URS)

A list of TPP meeting attendees is attached to these meeting notes.

II. EXPECTATIONS

At the beginning of the TPP meeting, each of the attendees expressed what he/she hoped to gain from the meeting. The following list presents expectations identified by attendees:

- Learn more about the SLDA project and the remediation process.

- Learn more about the existing data collected.
- Share existing knowledge gathered during extensive field investigations.
- Provide a review of documents for conformance with current law.
- Accept existing data and move to remediation without a significant additional data collection effort.
- Develop an approach to determining cleanup concentrations.
- Develop an approach to determining data usability for risk assessment and engineering purposes.
- Develop a better understanding of the required tasks to site remediation.
- Understand project constraints and what is important to each group of the project team.
- Identify data needs.
- Understand the perspectives of the various project team members.
- Identify actions that may expedite the cleanup process.
- Develop clear project objectives and a reasonable strategy for achieving them.
- Meet the attendees and establish a project team.
- Establish a roadmap for the next several years.
- Develop a working relationship among the project team and share existing site knowledge.
- Determine the role of the Pennsylvania Department of Health.
- Determine solutions to key issues.
- Develop an approach to carefully and safely terminate the NRC license.
- Determine the role of USEPA, if any.

III. SUMMARY OF EXISTING SITE INFORMATION (AS PRESENTED BY URS)

Remediation Requirements: Public law 107-117, Section 8143 directs the USACE to cleanup ***radioactive waste*** at SLDA. The cleanup is to be consistent with a Memorandum of Understanding (MOU) between the USACE and the NRC. SLDA was legislated as a Formerly Utilized Sites Remedial Action Program (FUSRAP) site and will be remediated following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

Memorandum of Understanding between USACE and NRC: The MOU signed in July 2001 was created to minimize dual regulation and duplication of regulatory requirements at FUSRAP sites with NRC-licensed facilities. The MOU applies to USACE response actions meeting the decommissioning requirements of 10CFR20.1402, "Radiological Criteria for Unrestricted Use".

CERCLA Process: The site designation and preliminary assessment stages of the CERCLA process are complete and we are currently at the remedial investigation (RI) stage. The feasibility study (FS), proposed plan, record of decision, remedial design, remedial action and project completion stages are forthcoming. Public involvement is an integral part of the CERCLA process. A public informational meeting was held on May 8, 2002 at Parks Township Volunteer Fire Department No. 1 and an Internet web site has been created. Public informational meetings will be conducted as the project moves forward.

Schedule: Current projections indicate remedial action will start in December 2005 (assuming unconstrained funding).

Site Description: The site occupies approximately 44 acres and can be described as vegetated, unimproved land. The 44-acre site is comprised of the original 32-acre SLDA site, surrounded by a chain-link fence, and a new area, approximately 12 acres in size, located directly southeast. BWXT is the current owner. Surrounding land use consists of a mix of small communities, individual residences, small farms, forests and light industrial facilities. The topography of the site slopes from southeast to northwest toward the Kiskiminetas River.

Site Ownership/Use: In the early 1900s, the Upper Freeport Coal seam was deep mined beneath the majority of the site. Coal was later strip mined from the western end of the site. Nuclear Materials and Equipment Corporation (NUMEC) owned the site between the 1950s and 1967. From 1967 and 1971, ARCO owned the stock of NUMEC. Between 1961 and 1970, radioactive and non-radioactive wastes were placed into shallow, unlined trenches in accordance with the now rescinded 10CFR20.304. BWXT purchased the site in 1971 and is the current owner. NRC license SNM-2001 was established for the SLDA site in 1995. In 2002, the boundary of NRC license SNM-2001 was expanded to include an additional 12-acre area directly southeast of the site.

Disposal Trenches: Radioactive and non-radioactive waste from the nearby Apollo nuclear fuel fabrication plant was placed into ten disposal trenches at the SLDA site. Trenches 1 through 9 are located in the northeast quadrant of the site (Upper Trench Area) while Trench 10 is situated in a topographically lower area at the western end of the site (Lower Trench Area). The depth of trench excavation ranged between 11 and 16 feet below ground surface and the total surface area measures approximately 1.2 acres. The estimated trench volume ranges from 23,500 to 36,000 cubic yards.

Materials placed in the trenches reportedly included process wastes (ash, residue, slag, crucibles, unrecoverable sludges, etc.), beryllium waste, protective clothing, metallic oxide powder, contaminated organic liquids, contaminated sand, the roof of the Apollo facility, contaminated equipment, filter cake, barn debris, truck (Trench 10) etc. Materials placed in the trenches were controlled by frequency, concentration of radionuclides and location. Soil was used to separate waste disposals both vertically and horizontally.

Upper Trench Area Stratigraphy: There are five principal hydrostratigraphic units in the upper trench area. The Subsoil/Weathered Shale Bedrock varies between 10 and 20 feet thick and is composed of overburden soils and weathered shale. The First Shallow Bedrock zone is approximately 10 to 20 feet thick and is composed primarily of sandstone and siltstone layers with many and frequent facies changes. The base of the First Shallow Bedrock zone becomes more shaley, which delineates the transition into the underlying Second Shallow Bedrock zone. The Second Shallow Bedrock zone is also 10 to 20 feet thick and is similar in composition to the First Shallow Bedrock. The Upper Freeport Coal lies below the Second Shallow Bedrock. The Upper Freeport coal seam is approximately four feet thick and dips to the southeast. Underlying the coal seam is a continuous red underclay of variable thickness. The Deep Bedrock Aquifer lies below the underclay and consists of a sequence of sandstone and siltstone units of unknown thickness due to minimal investigation.

Upper Trench Area Hydrogeology/Hydrology: Surface water in the upper trench area flows northwest to the lower trench area and northward toward Dry Run, generally following topography. Shallow groundwater flow within the subsoil generally mimics topography. Groundwater seeps are present along the slopes of Dry Run. Groundwater flow within shallow bedrock flows northward under Dry Run with some vertical infiltration into deeper zones. Groundwater infiltrating into the Upper Freeport coal mine workings migrates to the southeast

and discharges to Carnahan Run at an outfall. It is likely that some infiltration occurs into the Deep Bedrock Aquifer which flows to the south.

Lower Trench Area Stratigraphy: There are three principal hydrostratigraphic units in the lower trench area. The thickness of the mine fill averages 20 feet with a measured saturated thickness of between zero and three feet. The Upper Freeport coal was strip mined from the majority of the lower trench area. There is evidence that the mine spoils placed up against the high wall area (the steep sloped area separating the upper trench area from the lower trench area) are likely creating a direct hydraulic communication between the mine spoils and the open mine.

Lower Trench Area Hydrogeology/Hydrology: Surface water flows northwest toward the Kiskiminetas River and to the north toward Dry Run, generally following topography. Surface flow within Dry Run infiltrates through the permeable mine spoils near Trench 10. During times of high flow, surface water from Dry Run will continue and discharge to the Kiskiminetas River. There is evidence that groundwater within the mine spoils migrates into the open mine and then to the southeast where it discharges to Carnahan Run at an outfall. Some infiltration occurs into the Deep Bedrock Aquifer which flows to the south.

SLDA Geology/Hydrogeology: SLDA site geology/hydrogeology is complex due to the presence of Dry Run, site stratigraphy and the effect from previous mining operations. Interbedded siltstone/sandstone and shale layers present in the First and Second Shallow Bedrock (upper trench area) contain both horizontal and vertical groundwater flow components and barriers.

Field Sampling Programs: The following field sampling programs were completed at SLDA:

- Waste Exhumation – Trenches 2, 4, and 5, completed by NUMEC in 1965
- Health and Safety Monitoring, completed by BWXT between 1972 and present
- Aerial Radiological Survey, completed by EG&G in 1981
- Radiological Survey, completed by the Oak Ridge Associated Universities in 1981 and 1982
- Site Characterization, completed by Babcock and Wilcox (B&W)/ARCO between 1990 and 1994
- Quarterly Monitoring Program, completed by B&W/ARCO between 1991 and present
- 1995 Field Investigation, completed by B&W/ARCO in 1995
- 1999 Fate and Transport Analysis, completed by B&W/ARCO in 1999

Remediation and Confirmation Sampling Programs Completed at SLDA: The following surface soil remediation and confirmation sampling programs were completed between 1986 and 1990.

- Surface Soil Remediation, completed by B&W in the upper trench area in 1986
- Post Remediation Confirmation Sampling, completed by the Oak Ridge Associated Universities between 1986 and 1987
- Surface Soil Remediation, completed by B&W in the upper trench area in 1989
- Post Remediation Confirmation Sampling, completed by the Oak Ridge Associated Universities between 1989 and 1990
- Surface Soil Remediation, completed by B&W in the upper trench area in 1990

Soil Gas Surveys: A soil gas survey was completed along the centerline of the trenches during the Site Characterization in 1993. Volatile organic compounds (VOCs) were detected in 54 of 64 samples. The total VOC concentrations were all below 1 part per million (ppm). Vinyl chloride, dichloroethene and trichloroethylene were the most common VOCs detected.

A Petrex soil gas survey was also completed in the area between the upper trenches and Dry Run during the 1995 Field Investigation. Numerous soil gas samples contained trichloroethylene, trichloroethane, dichloroethene, dichloroethane, chloroform and total petroleum hydrocarbons.

Background Sampling: Background samples were collected from both on-site and off-site during previous site investigations. A total of 18 surface soil, eight vegetation and five surface water samples were collected from off-site. A total of four surface soil, eight coal, four vegetation, one subsurface soil and one groundwater sample(s) were collected on-site. USACE expressed concern that background samples were not analyzed for metals. In addition, an ANL representative suggested that only off-site background samples should be used to determine background levels for site contaminants.

Surface Soil Sampling: A total of 131 surface soil samples were collected during the Oak Ridge Associated Universities study completed in 1981 and 1982. Concentrations of U-235 and U-238 exceeding NRC guidelines for unrestricted use (30 picoCuries/gram [pCi/g]) were detected in numerous samples collected from the upper trench area. Several of the samples contained enriched uranium. These soils were subsequently remediated by B&W between 1986 and 1990.

A total of 206 surface soil samples were collected during the 1995 Field Investigation. Americium, uranium and plutonium were detected in surface soils in the vicinity of Trench 10. The affected area measures approximately 3,300 square meters.

Subsurface Soil Sampling: A total of 171 subsurface soil samples were collected during the Oak Ridge Associated Universities study completed in 1981 and 1982. Soil contamination was limited to the upper two feet with only one sample from below this depth containing U-235 and U-238 levels above 30 pCi/g.

A total of 300 subsurface soil samples were collected by B&W/ARCO during the Site Characterization and 1995 Field Investigation. Most of the borings advanced during the Site Characterization were located around the perimeter of the trenches. Several of these samples contained uranium, thorium, americium, and/or plutonium above background or expected background levels. In addition, VOCs, semivolatile organic compounds (SVOCs) and metals were detected at concentrations above Pennsylvania ACT 2 cleanup levels.

Surface Water, Sediment and Groundwater Seep Sampling: Six surface water samples were collected during the Oak Ridge Associated Universities study completed in 1981 and 1982. In addition, the quarterly monitoring program initiated by B&W/ARCO included two surface water, seven sediment and five groundwater seep sample locations. Twenty-seven additional sediment samples were collected during the Site Characterization and 1995 Field Investigation completed by B&W/ARCO. Uranium and thorium were present in sediment samples at concentrations above background levels. Tributylphosphate, considered a site-specific marker of trench-related constituents, was also detected in sediment samples. Gross alpha was present in groundwater seep samples at levels above the B&W/ARCO screening criteria of 7

picoCuries/liter (pCi/L). In addition, VOCs were detected above Pennsylvania ACT 2 cleanup levels and a site-specific marker of trench-related contamination (8-hydroxyquinoline) was present in groundwater seep samples.

Groundwater Sampling: A total of 25 groundwater samples were collected from open boreholes during the Oak Ridge Associated Universities study completed in 1981 and 1982. Concentrations of radionuclides were comparable to background levels. The quarterly monitoring program conducted by B&W/ARCO included sampling of 22 monitoring wells and nine piezometers. Additional groundwater sampling was completed after the on-site installation of the 46 wells and nine piezometers. Gross alpha and gross beta levels above the B&W/ARCO action concentration of 7 and 14 pCi/L, respectively were detected in several monitoring wells. Some of the data is argued by B&W/ARCO to be erroneous due to lab problems, well materials, or the presence of the Upper Freeport coal, however, even discounting these data, there remain several wells with elevated levels. In addition, several VOCs were detected above Pennsylvania ACT 2 cleanup levels and the site-specific markers of trench-related contamination (tributylphosphate and 8-hydroxyquinoline) were present in several samples. Analysis of groundwater samples for specific radionuclides was not done and is considered to be a data gap.

Leachate Sampling: A total of 58 two and four inch diameter, PVC temporary waste sampling points (TWSPs) were installed within the trenches to facilitate leachate sample collection. Thirty-one samples were collected during the Site Characterization and 30 samples were collected during the 1995 Field Investigation. Uranium, thorium, cesium and cobalt were detected at concentrations above background or expected background levels. Concentrations of VOCs, SVOCs and metals were also detected above Pennsylvania ACT 2 cleanup levels. In addition, the site-specific markers of trench-related contamination, tributylphosphate and 8-hydroxyquinoline, were detected in leachate samples as expected.

Assessment of Existing Data: A significant amount of data has been collected for site media over the past two decades. However, no sampling and analysis has been completed of the material within the trenches. Many of the data validation reports are currently not available; therefore, the quality of the data has not been assessed to date. At a minimum, the data can be used to define on a preliminary basis the nature and extent of contamination and to support project planning activities. Efforts are continuing to determine more completely the usability of these data and the approach to fill in data gaps.

IV. PROJECT TEAM

The project team identified during the meeting consists of the individuals listed on the attached TPP attendee list in addition to representatives from the following groups:

- Private Citizen Groups
- Elected Parks Township Officials (not present at TPP but did attend site visit on 8/26/02)
- Congressman Murtha's Office

It was the opinion of Todd Richardson of USEPA Region III that PADEP will be the lead state regulatory agency; representatives of NRC and PADEP expressed their agreement with this opinion.

V. STATEMENT OF THE ULTIMATE PROJECT GOAL

The ultimate project goal was identified as remediation of the SLDA site in accordance with legislation enacted for this site and the MOU between USACE and NRC. Since this site is considered a FUSRAP site, it will be remediated following the CERCLA process.

There are two significant requirements of the legislation enacted mandating the clean up of the SLDA site and the MOU.

1. The first is the requirement to clean up ***radioactive waste***. The distinction between radioactive waste and chemical waste is an important factor since chemical (non-radioactive) waste is not the objective of this remediation. Waste that contains only radiological constituents or waste that is co-mingled with chemical and radiological constituents will be targeted for remediation. Representatives of PADEP expressed a concern that the intent of the legislation may have been to also include the chemical contamination that is not co-mingled. **However, it was clarified by USACE and NRC that only FUSRAP-related radioactive waste and co-mingled waste can be cleaned up under FUSRAP consistent with the MOU.**

2. The second requirement is to clean up the site to "unrestricted release" conditions as described in 10CFR20.1402. The clean-up criteria for unrestricted release conditions includes 25 millirem/year (mrem/yr) dose to the average member of the critical group when considering all exposure pathways. No consideration of chemical risks is included in the determination of unrestricted release conditions consistent with the authorizing legislation and MOU.

VI. REMEDIATION ALTERNATIVE PRESENTED BY USACE – TWO OPERABLE UNITS

USACE presented a remediation alternative that consisted of addressing the trench contents and all other media as two separate operable units (OUs). This approach would involve preparation of a streamlined RI/FS for the trench contents first and a second RI/FS for the residual contamination present in all other media on or off site. As a result, two separate Records of Decision (RODs) would be required.

The rationale for using this approach assumed that it would require a significant time period to model groundwater pathways and prepare the corresponding baseline risk assessment. Therefore, securing a ROD for the trench contents in a much shorter time period appeared to be a sound approach. However, during the course of the meeting, the PADEP representative accepted the use of the RESRAD model to develop clean-up criteria for soils. The agreement to use RESRAD eliminates the need for a comprehensive, site-specific numerical ground-water model to determine if soil cleanup goals will be protective of ground water. Using RESRAD default parameter values, and site-specific inputs where relevant, will greatly reduce the time required to develop appropriate and protective cleanup goals. Since the site is to be cleaned up to unrestricted use, selection of the remedial technology will be based on the CECLA process. Several TPP meeting attendees stated that they felt the technology selected will involve excavation of the trench contents because the site must be cleaned up sufficiently to meet unrestricted use criteria (25 mrems/yr dose).

Since PADEP will accept RESRAD to model site media, it was determined that the best approach to remediation would be to prepare one RI/FS, addressing the entire site. As a result, only one ROD will be needed.

The following is a more detailed summary of discussions on the two operable unit approach. (Later in the TPP, a preference was developed for a single OU approach using RESRAD for groundwater modeling.)

1. Operable Unit 1 – Trench Contents

RI/FS Objectives

It is assumed that the trench contents are co-mingled; however, some segregation may be feasible during an excavation scenario. Radiological dose assessments already completed for this site indicate that existing conditions would result in a dose in excess of 25 mrem/yr under certain future scenarios in which access to the wastes could inadvertently occur. Since 25 mrems/yr is the dose at which remediation is required for unrestricted use, remedial action is required at SLDA. A RI is necessary to obtain the data required to complete a FS and determine the best remediation alternative. The nine alternative evaluation criteria will be considered and incorporated into the development of the RI/FS. Objectives of the RI identified at the TPP meeting consisted of:

- Refining the nature and extent of chemical and radiological contamination. It was agreed that there is limited documentation regarding disposal operations. An important task to better understand the nature of the trench contents would involve a review of all available historical records.
- Determining the physical and toxicological characteristics of the trench contents.
- Updating the radiological dose assessment.
- Determining worker health and safety requirements.

Objectives of the feasibility study identified at the TPP meeting consist of:

- Evaluating applicable or relevant and appropriate requirements (ARARs) and establishing cleanup goals.
- Evaluating remediation alternatives using the nine CERCLA criteria: protectiveness of human health and the environment; compliance with applicable or relevant and appropriate requirements (ARARs); long-term effectiveness and permanence; reduction of toxicity, mobility and volume through treatment; short-term effectiveness; implementability; cost; state acceptance; and community acceptance. This task will likely involve material handling and transportation issues.

Bounding Cost and Scope of RI/FS for OU1

Additional data regarding the composition of trench contents would allow a more detailed feasibility study and cost evaluation. However, physically intrusive investigation within the trenches is undesirable for a number of reasons including:

- Trenching within the waste may violate provisions of the existing NRC license. According to the NRC, the USACE must discuss and coordinate with BWXT any

necessary site-related activities associated with investigation prior to requesting license suspension.

- Trenching within the waste would provide the best characterization data but would also generate the largest volume of investigation-derived waste (IDW).
- Disposal of IDW can be very costly and unpredictable.
- Trenching within the waste may disrupt the effect of disposal controls imposed under 10CFR20.304 (layering of clean soil between waste disposals).
- Investigation within the trenches using a drill rig instead of trenching may not generate useful data regarding the physical composition of the waste. Evaluation of disposal costs can be significantly affected by the physical composition of the waste.
- The risk of contaminating site media significantly increases during excavation within the trenches.

It was decided during the TPP meeting that a review of site history and specifically an evaluation of available disposal records is required before determining the type of trench investigation necessary. A paper exercise should be completed to better determine the best and worst case scenarios and associated costs. Decisions regarding the scope of the RI need to be made based on risk (financial, health and safety, etc.) as well as other factors. If intrusive work is required within the trenches, the scope of work should be such that the material is only handled once.

Data Needs for OU1

Present data are sufficient for many of the RI objectives and also indicates a need for remedial action based on the dose assessment. For example, geophysical surveys completed in 1981 and 1993 have provided a scientific basis for trench delineation. Similarly, leachate sampling data in conjunction with downhole gamma logging data, historical disposal records and regulations in affect at that time have allowed estimation of the uranium source term. Therefore, the data requirements are primarily to support the feasibility study, record of decision, and remedial action. Some of the alternatives to be considered include disposal, treatment, treatment and disposal of all or some of the trench contents. The project team must be aware of the costs/risks associated with intrusive investigations within the trenches as well as the benefit derived from such work.

Approach to Streamlined RI/FS – OU1

The project team will initiate development of the RI/FS based on existing data supplemented by any new site information. A correlation of disposal records with existing downhole gamma logging data will be completed to better characterize the trench contents. It was agreed at the TPP meeting that previous dose assessments could be used as a basis for the baseline risk assessment. The parameters from previous dose assessments (i.e. Draft Environmental Impact Statement) will be evaluated and used if still deemed to be appropriate. The most recent approved version of RESRAD will be used for the baseline radiological risk assessment. A chemical baseline risk assessment will not be completed.

A creative approach to development of the Feasibility Study may be required not only for alternative screening but also for phasing of trench remediation. This may include development of a flow chart or decision diagram to address the disposition of trench material during trench remediation.

2. Operable Unit 2 – Soil, Groundwater, Surface Water, Sediment

Existing Data Concerns

Documentation to determine the quality of historical data to support a RI/FS is generally lacking. Data presented in reports summarizing the findings of the Site Characterization and 1995 Field Investigation are summary tables rather than complete analytical data packages. In addition, data validation reports used to qualify these data are generally missing even though there were specific references to the validation reports. ARCO agreed to attempt to search its files, and to cooperate with BWXT in a review of its existing files, to locate additional analytical data packages or data validation reports. USACE will submit a written request to ARCO for specific documentation to support historical data.

Approach to OU2

The surface soils in the vicinity of Trench 10 were already targeted for remediation by B&W/ARCO. All other media impacted by radiological constituents need to be identified. A significant discussion ensued regarding the interface between OU1 (trench contents) and OU2 (specifically, the residual soil remaining in the trenches).

The following approach to addressing OU2 was proposed at the TPP meeting:

- Identify on-site media contaminated with radioactive constituents.
- Determine dose from residual contamination and evaluate the potential need for additional remediation after OU1 has been addressed.
- Employ RESRAD model using updated site-specific parameters to determine soil clean-up criteria.

This approach was accepted by PADEP representatives and ultimately was the key to combining OU1 and OU2 into one RI/FS and obtaining one ROD. This conclusion was a significant deviation from the initial premise that OU1 and OU2 would be addressed by obtaining two RODs.

3. Single Operable Unit Approach

The use of RESRAD for dose assessment and site modeling offers a streamlined approach to determining site clean-up criteria. With the statement from PADEP that RESRAD modeling would sufficient, the motivation for completing two separate RI/FS' and two RODs was removed. The consensus of the TPP meeting was that a single RI/FS would be completed for both the trench waste and contaminated soils and one ROD would be prepared.

Under the single OU, one set of cleanup goals would developed for the entire site, including trench soils and contaminated surface soils. However, the possibility of a separate set of cleanup goals for the lower trench area was raised during the meeting. This may be necessary due to the different hydrology at Trench 10. Different options were discussed, but a decision regarding the use of a single OU was not concluded.

VII. INFORMATION NEEDS

The following information needs were identified at the end of the TPP meeting:

- Develop an effective method to allow the project team to access data.
- Analyze groundwater samples for individual radionuclides.
- Analyze media contaminated with plutonium for individual isotopes (Pu-239 and Pu-241).
- Investigate the area added to existing license SNM-2001 in 2002.
- Obtain the report prepared by the Oak Ridge Associated Universities (issued on 2/2/87) documenting the results of a B&W surface soil remediation program completed in 1986. Collect and analyze additional samples from the remediated areas to corroborate the confirmation sample results and/or obtain sufficient data to evaluate the effectiveness of the remediation.
- Analyze additional Dry Run sediments. PADEP believes that the existing number and location of samples were acceptable to characterize Dry Run sediments.
- Analyze samples from the upper trench area for plutonium.
- Be aware of final closeout sampling procedures for NRC license termination and what, if anything, could be done at an earlier stage.
- PADEP suggested that a meeting be conducted when a significant project deliverable was to be submitted to them for review so the author could present assumptions, approach, etc.
- Obtain additional information from the Pennsylvania Bureau of Abandoned Mines Reclamation Office to determine the extent of mining activities, mineral rights, etc.
- Determine whether there is classified or confidential information in the possession of governmental agencies that may assist in determining the contents of the trenches.

VIII. PROJECT CONSTRAINTS

Several project constraints were identified during the course of the TPP meeting that merit closer evaluation. The following project constraints and potential resolutions were identified:

- Remediation-related work will proceed at a rate allowed by available funding.
- Only radioactive waste or co-mingled radioactive and chemical waste are targeted for remediation under the legislation enacted for this site. ARCO/BWXT may wish to coordinate with USACE during investigation and remediation of radioactive waste to address chemical contamination.
- There is a lack of detailed disposal records. A complete review of SLDA-related documents and interviews with past and present employees may be sufficient to characterize the materials placed in the trenches. In the event the characterization is incomplete, this paper exercise will likely reduce the data required.
- Intrusive investigation within the trenches, such as drilling or excavation, may be in violation of NRC license SNM-2001. Several attendees at the TPP meeting stated that they felt the best course of action was to avoid excavation within the trenches and to characterize the trench contents through existing data, using non-intrusive techniques and, if necessary, a limited drilling program.

- The CERCLA process requires evaluation of all viable alternatives and their associated costs during the feasibility study. Excavation is likely the best alternative for the trench contents in an unrestricted use scenario, especially with the potential for mine subsidence beneath the site.
- Data validation reports or complete analytical data packages may not be available for historical data. A determination needs to be made regarding the usability of these data with or without supporting documents.
- Failure to notify, in a timely manner, the appropriate party of proposed plans to investigate or remediate as required by the Right of Entry may adversely affect the schedule.
- Any type of testing more invasive than currently set forth in the draft right of entry may require an amended or new Right of Entry.
- There are investigation or remediation health and safety concerns related to the proximity of the adjacent community of Kiskimere.
- There is no direct or immediate access to rail or interstate highways.
- It will be difficult to complete investigation on the southeast side of Trench 10 due to the presence of a steep slope (high wall area).
- The natural radioactivity of coal makes it more difficult to evaluate migration of trench-related constituents.
- There is a high perched water table within the trenches.

IX. NOTES FROM ATTENDEES – PROJECT APPROACH, DATA NEEDS, CONSTRAINTS AND DEPENDENCIES

The following is a listing of notes that were submitted by the meeting attendees but not necessarily discussed during the TPP meeting. No attempt was made to interpret or explain the notes.

1. OU1 – determine cleanup/risk numbers for radiation.
2. Determine state and federal action levels/risk levels.
3. Should RI include areas outside the known trenches?
4. Difficulty establishing ownership of the remaining coal underlying the site and acquiring mineral rights.
5. Is additional work needed to distinguish between natural radioactivity associated with coal and radioactivity due to site wastes?
6. Are Trench 10 waste packages in contact with any mine adits? Confirmatory sampling may be required between Trench 10 and high wall adits.
7. Evaluation of well screens and boring logs are required to determine accurate vertical gradients. Well maintenance needs are evident.
8. Pool of groundwater in mine.
9. Find out what horizon Trench 10 wells are screened in (wells north of trench).
10. Due to lack of data validation reports, there are questions regarding usability of the data.
11. Detailed assessment of disposal records and link with gamma logs.
12. Construction of trenches:
    - Are they broken into cells by soil separators? Are levels of dirt present that separate different lifts/layers of waste?
    - Are all trenches constructed similarly?
    - Is soil segregable (clean/dirty)?
    - Use GPR, test pits?

13. Onsite background investigation should be more comprehensive; four sets surface/subsurface background samples may not be statistically adequate to be considered representative of background conditions on/around the site.
14. Aerial photo.
15. There are a lot of allegations about dumping beyond the site boundary. USACE is charged with cleanup of SLDA site. Who and how other sites would be addressed needs to be determined and communicated to Congress and the community.
16. Establish an effective regulatory consensus mechanism to ensure that at each critical project step there is documented concurrence from all regulators, precluding delays from that sector of the process.
17. Citizen groups are not a part of project team.
18. Remove waste as an interim (emergency removal) or part of RI.
19. The MOU states "Radiation Criteria for Unrestricted Use". Are there alternatives other than off-site disposal?
20. Seems like there is general consensus on overall approach. What is left is how to better characterize the wastes sufficiently to move forward.
21. If we end USACE involvement with only clean up of radiological constituents, in what condition (physical and chemical) do we leave site? Must owner deal with residual chemical contamination?
22. Complete a detailed report summarizing historical disposal records and gamma logging to possibly avoid trench excavation at RI.
23. More investigation is needed to characterize trenches and remainder of the site.
24. To satisfy USEPA regulatory requirements, risk must be evaluated from radiological and other chemical contamination in order to ensure protection of humans and ecological receptors.
25. The pros and cons of soliciting USEPA involvement should be carefully evaluated.
26. What do we do with VOC/SVOC constituents that are <u>not</u> co-mingled with radiological wastes? Will such soil and groundwater be remediated by USACE or PADEP?
27. High water in trenches could re-contaminate excavated OU1 backfilled soil.

X. SUMMARY OF ACTION ITEMS SUGGESTED BY VARIOUS TPP MEETING ATTENDEES

A formal list of action items was not generated during the TPP meeting. However, since several items were identified during the course of discussion, a summary of action item suggestions is presented below:

- Inform the public of the TPP meeting results and on the project status on a regular basis.
- Obtain additional aerial photographs for the site, including those in PADEP offices and those that may be classified.
- Develop an approach to allow the project team to access SLDA-related documents and data.
- Characterize the trench contents based on a thorough review of disposal records and downhole gamma logging data. This may involve interviewing current and former employees of BWXT.

- Search through existing files for complete data packages and data validation reports.
- Determine an approach to determining data usability.
- Determine disposal requirements/costs of the various disposal facilities.
- Obtain report from NRC (No. ML012140337) summarizing investigations completed at the new 12-acre area added to NRC license SNM-2001.
- Prepare the RI work plan to gather data necessary to properly characterize the entire site including the new 12-acre area added to NRC license SNM-2001, address data gaps, and complete the Feasibility Study.
- Determine site-specific parameters for the RESRAD model and run the model for all pathways including groundwater.
- Begin preparation of the RI/FS report and identify what data is not available.
- Determine the actual locations of a few samples collected during previous investigations.
- Develop a better understanding of the location of Trench 10 with respect to the strip mined footwall.
- Identify soil sample locations that may have been addressed by surface soil remediation efforts completed by B&W.
- Complete a thorough evaluation of boring logs and well installation records to better determine what hydrogeologic unit(s) the wells are screened across.
- Determine and develop a plan to address existing well maintenance needs.

ATTACHMENT

ATTENDEES OF TPP MEETING

NAME	ORGANIZATION
Frank Appelfeller	USACE - Great Lakes and Ohio River Division
Brian Greene	USACE - Pittsburgh District
Sam Bass	USACE - Hazardous, Toxic, and Radioactive Waste Center of Expertise
Brian Hearty	USACE - Hazardous, Toxic, and Radioactive Waste Center of Expertise
John Matviya	PADEP
Paul Shapiro	USACE - Pittsburgh District
Sam Harper	PADEP
Tom Fralick	URS Corporation
Kevin Shanahan	URS Corporation
Dan Rothman	URS Corporation
Bill Duggan	URS Corporation
David Frothingham	USACE – Buffalo District
Lisa Durham	Argonne National Laboratory
John Peterson	Argonne National Laboratory
Karen Keil	USACE – Buffalo District
John Laager (Representing ARCO)	Ballard, Spahr, Andrews & Ingersoll, LLP
John Bolakas (Rep. ARCO)	SECOR International, Inc.
Mat Masset	USACE – Buffalo District
Esteban Picazo	URS Corporation
Dennis Russell	BWX Technologies
Terry Chalker	BWX Technologies
Sharon Wagner	USACE – Washington D.C.
Frank Likar	USACE - Pittsburgh District
Fred Boglione	USACE – Buffalo District
Tony Cappella	USACE – Buffalo District
Michelle Barczak	USACE – Buffalo District
George Boguslawski	USACE - Pittsburgh District
Paula Johnson – Muic	USACE - Pittsburgh District
Janna Hummel	USACE – Buffalo District
Ron Church	USACE - Great Lakes and Ohio River Division
Jim Karsten	USACE - Buffalo District
Tom Hempfling	USACE - Great Lakes and Ohio River Division
Christine Brussolk	Pennsylvania Department of Health
Tomiann McDaniel	USACE – Headquarters
Amir Kouhestani	NRC – Headquarters
Todd Richardson	USEPA Region III
Dilip Kothari	USACE - Pittsburgh District
William T. Frederick	USACE - Buffalo District
Heidi Novotny	USACE - Hazardous, Toxic, and Radioactive Waste Center of Expertise
David Mashek (Rep. ARCO)	W. J. Green & Associates
Roy Woods	PADEP
Bruce Smith	Department of Army Headquarters
Walter Hufford	ARCO