

Core Team Recommendation Leads to Identification of Recommended Preferred Alternative for Project Completion at the West Valley Demonstration Project – 9262

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ABSTRACT

The West Valley Demonstration Project (WVDP) is a United States Department of Energy (DOE) environmental management action being conducted at the nation's only commercial used (spent) fuel reprocessing facility which operated from 1966-1972. The WVDP is approximately 0.8 square kilometers, located in western New York State, 48 kilometers south of Buffalo, within the New York State-owned Western New York Nuclear Services Center (WNYNSC).

In 2001, DOE completed a highly successful program that solidified over 98 percent of the radioactivity (approximately $8.88 \times 10^{+5}$ tetrabecquerels) from the liquid high-level waste stored at the site into borosilicate glass contained in 275 stainless steel canisters. However, efforts begun over a decade before to establish a path forward on WVDP completion (decontamination and decommissioning) and site closure and/or long-term management made little progress due to complexities and uncertainties regarding off-site waste disposal availability, application of hazardous and radioactive waste regulations, evaluation of long-term site stability, division of state and federal responsibilities, and evaluations based on remediation costs versus potential risks.

In an effort to move forward, DOE revised a draft Environmental Impact Statement (EIS) that had been developed in 1996 and provided it to the involved state and federal agencies in 2005 for preliminary internal review. The number and types of comments provided by the agencies on that document made it clear that a new approach was needed. In 2006, DOE requested that the involved agencies form a core team composed of key staff to identify and resolve technical issues that impeded the issuance of a draft EIS and the development of a preferred alternative (course of action).

The West Valley Core Team was composed of staff from the joint lead agencies for preparation of the EIS: DOE and the New York State Energy Research and Development Authority (NYSDERA), the site owner, and four cooperating agencies on the EIS: the New York State Departments of Environmental Conservation (NYSDEC) and Health (NYSDOH), the U.S. Environmental Protection Agency (EPA), and the U.S. Nuclear Regulatory Commission (NRC).

The agencies' involvement in and commitment to the Core Team process was vital to furthering the implementation of the National Environmental Policy Act (NEPA) process at West Valley. On December 5, 2008 a draft EIS [1] containing the preferred alternative supported by the West Valley Core Team was made publicly available for review.

INTRODUCTION

The core team approach is not new. Core Teams have been employed by EPA and DOE as a tool to expedite cleanup at DOE facilities including the Savannah River Site in South Carolina and the Brookhaven National Laboratory in New York State. EPA describes the core team approach as a, "...formalized, consensus-based process in which those individuals with decision-making authority,

including DOE, EPA, and State remedial project managers, work together to reach agreement on key remediation decisions.” [2]

EPA and state environmental departments typically are involved in DOE cleanup actions pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and/or the Resource Conservation and Recovery Act (RCRA). The core team approach evolved to improve the efficiency of the standard process of planning and conducting characterization and preparing and submitting the required documentation to the regulators for review. Without a common understanding of the approach and plan, this process would often result in a lengthy sequence of formal submittals, comments, and resubmittals. The core team approach focuses on enhancing communications between all parties early in the remedial process to develop a consensus on the technical issues expediting document development. [2]

The West Valley Core Team’s operation is a valuable case study. The core team approach had been developed to address technical challenges in achieving specific cleanup objectives through the various federal statutes and processes. The West Valley application took the core team structure of forming a group composed of key personnel from the involved agencies and used it to address a complex mix of technical, regulatory and real world radioactive waste management issues.

BACKGROUND

Pre-West Valley Demonstration Project (WVDP)

The West Valley site was one of the first attempts at developing commercial nuclear activities in the United States. In 1961, New York State purchased a 13.5 square kilometer site which became known as the Western New York Nuclear Services Center (WNYNSC). The WVDP is located on approximately 0.8 square kilometers within the WNYNSC boundary.

In 1962 a private firm, Nuclear Fuel Services (NFS), leased a portion of the site from New York State, and in 1963 began to construct a used-fuel reprocessing facility and also began to accept commercial low-level waste for on site disposal.

Reprocessing was conducted from 1966 into 1972 when NFS halted operations to conduct facility upgrades including facility expansion. Following four years of pursuing modifications to the plant, NFS decided the costs and regulatory requirements of reprocessing made the venture impractical. The company decided to exercise its right to leave the site after its lease expired in 1980, transferring ownership and responsibility for the waste and facility to the State of New York.

When reprocessing operations ceased and NFS’ lease terminated, a highly contaminated reprocessing facility, two shallow-ground radioactive waste disposal area, and approximately 2,271 kiloliters of very concentrated, high-level liquid waste in single-walled underground steel tanks were remaining at the West Valley site.

In the late 1970s, the West Valley site and the Love Canal site located less than 60 miles to the north, drew the full attention of the American public. Environmental activism was instrumental in forcing government action. For three years (1977-1980) Congress studied, debated, and finally in 1980, passed legislation to address waste management and remediation at the West Valley site. In October 1980, President Carter signed the West Valley Demonstration Project Act, Public Law 96-368, directing the DOE to take the lead role in solidifying the liquid high-level waste and decommissioning certain facilities at West Valley.

West Valley Demonstration Project Act

Public Law 93-368 (WVDP Act) authorized the Department of Energy (DOE) to conduct a high-level radioactive waste management demonstration project at the WNYNSC. DOE is directed to...

- Solidify the high-level radioactive waste at the West Valley site
- Develop containers suitable for permanent disposal of the solidified waste
- Transport the solidified high-level waste to a federal repository for permanent disposal
- Dispose of low-level and transuranic waste produced by solidifying the high-level radioactive waste
- Decontaminate and decommission the tanks and other facilities in which the high-level radioactive waste solidified under the Project was stored, facilities used in the solidification of the waste, and any material and hardware used in connection with the Project.

In 1982 DOE, through agreement with New York State, assumed control of the developed portion of the West Valley site (approximately 0.80 square kilometers) within the Western New York Nuclear Service Center in order to conduct the West Valley Demonstration Project.

Responsibilities and Regulations

The entire 13.5 square kilometer WNYNSC is owned by New York State through NYSERDA including the area controlled by DOE to conduct the WVDP. The state continues to control the site outside the DOE managed WVDP premises.

New York State is the holder of the NRC license issued in the 1960s to conduct reprocessing and the associated operations. Under an agreement between DOE and NRC, the license does not apply to DOE's management of the WVDP. However, it is important to note that NRC has unique responsibilities prescribed by the WVDP Act regarding the Project.

Adjoining the WVDP premises is one of two radioactive waste disposal areas portion of the West Valley site. The disposal area outside the WVDP premises (State-licensed Disposal Area) was licensed by New York and operated as a commercial facility that accepted waste from across the country and is managed by NYSERDA. The other disposal area (Nuclear Regulatory Commission-licensed Disposal Area) is currently managed by DOE.

Radioactive wastes and contamination are the predominate hazards at the site, and originated from reprocessing and waste disposal operations in the 1960s and 1970s. DOE manages the WVDP in accordance with the Department's radioactive material and waste policies and procedures. WVDP facilities decommissioning will be done per requirements NRC prescribed in 2002 in accordance with the WVDP Act.

NYSERDA manages the State-licensed Disposal in accordance with applicable state requirements.

Hazardous materials and contamination are present at the WVDP and are managed by DOE in accordance with Resource Conservation and Recovery Act (RCRA) implementing regulations. NYSDEC is authorized to implement the RCRA program.

1982-2002

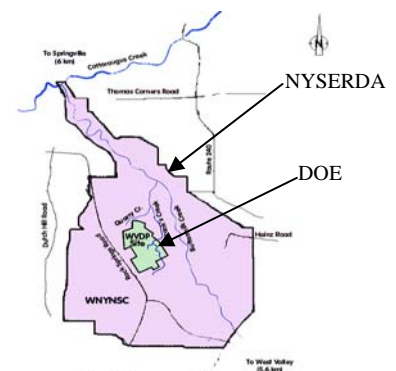


Fig. 1. The 13.5 square kilometer NYS site.

The potential threat posed by the 2,271 kiloliters of very concentrated high-level radioactive liquid waste stored underground in an aging, single-walled, carbon-steel tank was the impetus for the WVDP Act which directed DOE to remove and solidify the high-level waste.

After 14 years of testing and development, a system specially designed to blend and solidify the high-level waste into borosilicate glass began operation in 1996. In the same year, a draft EIS prepared jointly by DOE and NYSERDA to address options for completion of the WVDP by DOE and closure and/or long-term management of the 13.5 square kilometer site by NYSERDA was released for public review. As attention focused on the high-tech, around-the-clock high-level waste processing campaign, DOE and NYSERDA reviewed public and agency comments on the draft EIS and attempted to settle on a path forward (preferred alternative) to address both their separate and joint responsibilities.

In 1999, DOE and NYSERDA entered into formal negotiations to try and reach agreement on a WVDP completion and long-term site management approach/alternative and their responsibilities for achieving it. While progress was made, by the end of 2000, the complexity of the issues proved too much; in December the negotiations were ended as the transition of the Presidency approached in January 2001. An unsuccessful attempt was made early in 2001 to restart negotiations.

During this same period when DOE and NYSERDA were trying to resolve their issues on WVDP completion and long-term site management, the involved regulatory agencies were working to identify the applicable regulatory cleanup requirements and expectations for the West Valley site, and to identify the roles and responsibilities of their respective agencies. The agencies, NRC, EPA, NYSDEC, and NYSDOH, issued a *Regulators Communication Plan on Application of Cleanup Requirements for Decommissioning the West Valley Site* which documented their results and was intended to provide guidance to DOE and NYSERDA.

In 2002, solidification of the high-level waste was completed and the processing system was shutdown. The focus of the Project then became decontamination and decommissioning, WVDP completion and long-term site management. However, in order to progress in these areas, it was evident that progress had to be made with the EIS.

While DOE and NYSERDA had not been able to agree on their long-term responsibilities, they did agree to revise the 1996 draft EIS and focus on evaluation of alternatives for long-term management. The EIS would address what could be done not which agency would be responsible for specific actions. DOE took the lead and developed a revised draft based on its understanding of the WVDP Act requirements and the applicable regulations.

In September 2005, a preliminary draft was provided to the regulatory agencies and NYSERDA for their review with no preferred alternative identified. By March 2006, the five agencies had submitted more than 1,700 comments. It was clear there were significant issues to resolve in order to move forward in the NEPA process.

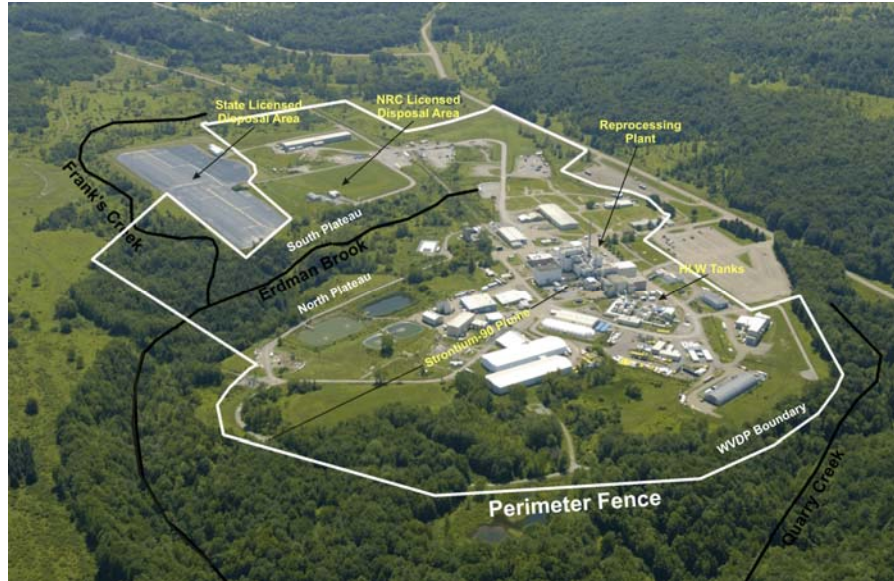


Fig. 2. WVDP site in 2006.

The following year DOE asked that the agencies form a West Valley Core Team to work collaboratively on identifying and addressing the technical issues that were hindering the development of the Draft EIS.

WEST VALLEY CORE TEAM

General Organization

After discussions among the agencies regarding participation, the first West Valley Core Team meeting was held in November 2006. A firm that had provided facilitation services for core teams at other DOE facilities was hired by DOE for the West Valley effort. The first meeting focused on the core team approach, meeting logistics and initial agenda topics.

Each agency designated one or more staff members to participate and generally each agency had one person responsible for insuring that communications between the Core Team and their agency were maintained. All but one agency had multiple participants, which resulted in an average meeting attendance of 12-15 people.

In the West Valley case, the participants' office locations came into play in meeting planning. DOE and NYSERDA staff offices are located near the West Valley site in western New York and the other Core Team members came from across New York State and the Washington, D.C. area. Early in the process, it was decided to rotate meeting locations at different agencies' offices to help equalize members' travel. Two day meetings were planned on a monthly basis to balance travel and meeting time.

Goal

The West Valley Core Team's primary goal was to share technical information and advice regarding issues identified through internal review of the 2005 Preliminary Draft EIS in order to make progress with respect to the Draft EIS for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center.

This goal, of course, called for identification of the technical issues that had led the agencies to submit more than 1,700 comments on the draft EIS that DOE had developed. The Core Team initially identified at its first meeting three specific objectives to achieve this goal. These specific objectives were...

- Define end state options
 - requirements – performance standards
 - actions – technical/engineering solutions
 - analysis – calculations/testing/modeling
- Scope individual source areas/release sites
 - define existing conditions
 - identify and evaluate response actions
- Identify areas of agencies' agreement and disagreement

Operation

Members of a core team participate in order to reach consensus through collaboration. However, it is understood that agreements that are reached often require ratification or confirmation from others in the agencies. This was especially true for the West Valley Core Team.

At other DOE sites where the core team approach has been applied, typically a federal facility or interagency agreement exists that binds the agencies to common goals. No comparable agreement exists at West Valley.

To a great extent, the lack of such a formal mandate was replaced in the West Valley case by the dedication of the involved agencies to resolving issues and making progress. The agencies' upper management, which for years had met only sporadically, began meeting every three months to hear directly from the Core Team on the group's progress.

The Core Team schedule evolved where every third or fourth meeting became a two-day Core Team meeting combined with a one-day meeting with upper management, which was facilitated by rotating meetings among the agencies' headquarters.

The direct management involvement was a very positive force. Meeting directly with Core Team members demonstrated the agencies' commitment and enhanced common understanding of key issues.

West Valley Core Team Chronology and Progress

Four of the six agencies that would come to be the West Valley Core Team attended the first meeting in November 2006; DOE, NRC, NYSDEC, and NYSDOH. An important discussion at the first meeting was whether to start with a "bottoms-up" approach by focusing on the specifics of individual site facilities and waste areas or a "top-down" approach by focusing first on potential site end states. It was decided to start with the "bottoms-up" approach, and two site areas were chosen to begin the discussions.

Accordingly, presentations for the December and January meetings focused on a radioactively contaminated, filled-in wastewater treatment system lagoon (holding pond) and the underground waste

tanks that had contained high-level waste. The intent was to go through details on each area including: dimensions, infrastructure, radioactive and hazardous contamination, historical operations, etc.

The level of site-specific knowledge by members of the Core Team was an important factor in how the group approached discussions. All the members of the Core Team had been involved with the West Valley site through their agencies for an extended period, some for many years. There were no individuals on the Core Team without West Valley experience.

Due to their background, the choice to begin with the “bottoms-up” approach was logical. This exercise proved to be a key learning process for the Team members that changed their thinking regarding issues that impeded development of a preferred alternative. Two contaminated areas/facilities were selected to begin discussions.

One of these facilities was the underground carbon steel tanks that had contained high-level radioactive waste. These tanks epitomized the challenge at West Valley of meeting hazardous and radioactive regulations, and making a logical decision on a course of action that could be implemented. There are two closure/decommissioning options for the tanks; exhume the tanks, package the material, dispose of the material off-site or close the tanks in-place with robust engineered systems.

Through the discussion on the tanks, the Core Team members confronted the complex issues that affected final closure decisions on certain facilities. It became clear that for the underground waste tanks and the two shallow-ground disposal facilities, there was currently no final closure option on which all involved agencies could concur. These difficult facilities were blocking a site-wide, final end state decision and in turn, prevented action on facilities for which there was agreement on a possible final end state.

At the February meeting, a concept evolved on how to deal with decisions on key facilities while making further cleanup progress. The concept was based on moving from making a site-wide end state decision now, to a sequential decision making approach. This approach became known as the *Way Ahead*.

In March 2007, NYSERDA officially joined the Team and EPA followed in April. At this point, the owner of the site (NYSERDA), the agency responsible for carrying out the WVDP Act (DOE), and all four state and federal regulatory agencies with responsibilities at the site were represented on the Core Team. NYSERDA and EPA had been following the Team’s progress and rapidly became fully engaged.

With the complete Team in place, technical discussions began on the phased approach. The phased approach was no longer to be an all-inclusive, site-wide, end state description. The phased approach would describe near term decommissioning of certain facilities and provide a plan to reach final decisions in the future for long-term management of other facilities.

The *Way Ahead* proposed a phased decision-making approach. Phase 1 of the decision making would entail removal of the former reprocessing plant (over 40 years old), the source area of a groundwater plume, and a series of contaminated liquid waste management lagoons and certain other facilities within the WVDP premises. Phase 1 activities would also include additional characterization of site soil contamination and studies to provide additional technical information and support of the technical approach to be used to complete site decommissioning. Decisions on the disposal areas and underground waste tanks would be made later in Phase 2 after evaluation of additional studies and analysis. The Core Team’s ensuing technical discussions over the spring and summer began with long-term considerations and moved to near-term actions.

The Team readily agreed upon the technical aspects of removing the reprocessing plant and lagoon system, and generally agreed with deferring technical discussions on the tanks and disposal areas, but was

challenged with determining a reasonable timetable for resolving outstanding technical issues. After lengthy discussions, agreement was reached on conducting regular reviews, at least every five years, of new data regarding options for the remaining facilities and that the final decisions on the tanks and disposal areas (Phase 2) should be made no later than 30 years from the final decisions on the reprocessing plant and lagoons (Phase 1). Once agreement was reached on the Phase 2 decision process a number of near-term actions became possible.

With demolition/removal of the facilities in Phase 1 to occur over seven to ten years and additional data to be collected on the options for completion of decommissioning actions or long-term management of the tanks and disposal areas, a number of actions to improve site management now could be addressed. Referred to as interim actions they included...

- removal of additional liquids from the underground tanks and installation of a drying system to manage water infiltration.
- reducing water infiltration at one of the disposal areas by placing a synthetic cover over the area and installing in-ground slurry walls up-gradient to block groundwater flow.
- installing mitigation measures along the leading edge of an on-site plume of contaminated groundwater to contain its expansion.

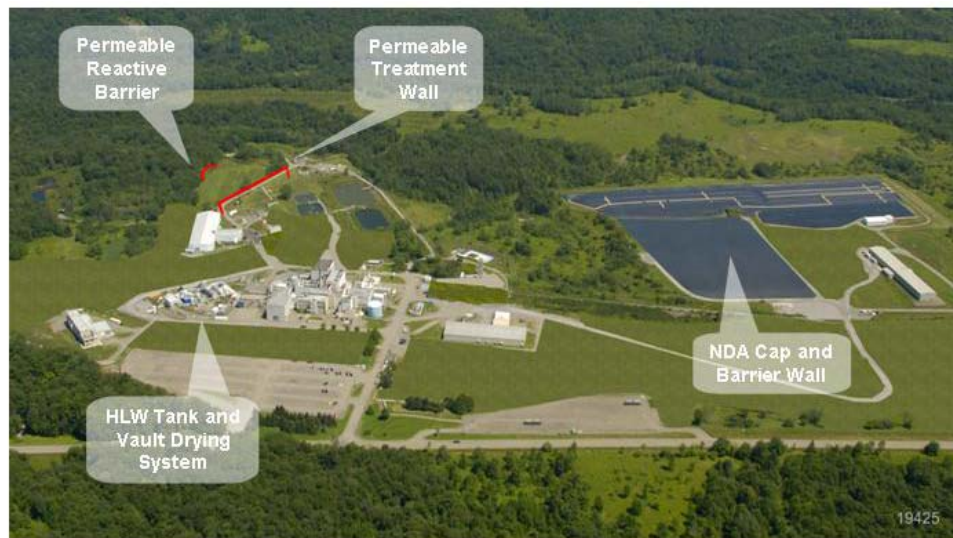


Fig. 3. WVDP site after completion of Interim Actions.

These actions had been discussed over past years, but were always postponed waiting for a final all-inclusive decision on a site-wide end state. The Core Team's proposal for a phased decision and implementation approach to WVDP completion and long-term site management allowed for decisions to be made on the interim actions now. Through the summer, the Team focused on the specifics of these interim actions.

By fall, discussions returned primarily to resolving technical issues surrounding the preferred alternative and how the regulatory requirements could be met through this approach. By the end of 2007, the Core Team agreed upon the technical aspects of the preferred alternative and in January 2008, the Team met with an established citizen group (West Valley Citizen Task Force) to present and discuss the alternative.

Fourteen months after beginning work the Team had succeeded in recommending a preferred alternative needed to move forward on completion of the draft EIS.

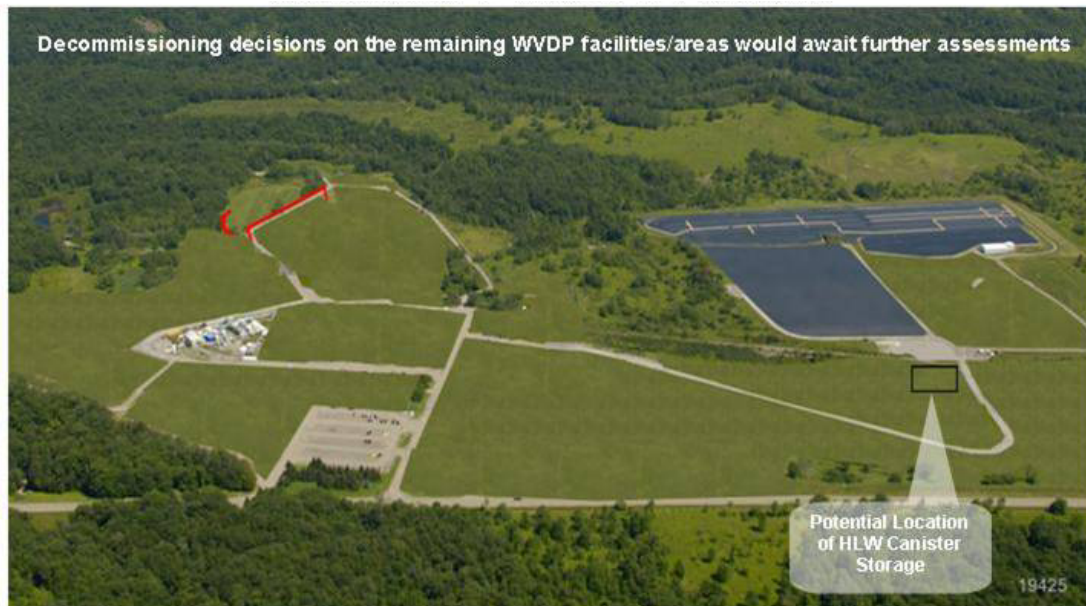


Fig. 4. WVDP site after Phase 1 actions.

In 2008, the members of the Core Team began to function more within their primary agency roles. As sections of the draft EIS were written, the Core Team acted as a venue through which to coordinate initial review of the draft for overall accuracy before it was prepared for public release. All the agencies represented on the Core Team are also official cooperating agencies on the EIS. While they took an active role in the review of the draft for accuracy and completeness, the agencies will still conduct official reviews of the draft during the public review period.

The draft EIS was completed in October 2008 and was made publicly available on December 5, 2008 for a six month public review period.

OBSERVATIONS ON THE WEST VALLEY CORE TEAM

The West Valley Core Team was successful in clearing the way for a path forward for the West Valley site when repeated past attempts had failed. The agencies' involvement in and commitment to the Core Team process was vital to achieving success in furthering the NEPA process at West Valley. The collaborative approach clearly worked. Of interest are the factors that led to the implementation and success of the approach at West Valley at this time.

1. Timing – In 2006, it was essential to promote a specific path forward (preferred alternative) if cleanup at West Valley was to continue. With completion of high-level waste processing in 2002 and the lack of acceptance of the draft EIS prepared in 2005, all the agencies understood that time was running out. If cleanup was to continue without work interruption, agreements on a “way ahead” had to be reached.
2. People – The personnel that were assigned to the Core Team had considerable experience with the West Valley site. They knew many of the issues and could rapidly integrate new ideas and approaches. In addition, many of the individuals had worked together on other projects and several had previous experience working on a core team at another DOE site.

3. Facilitation – This function cannot be over emphasized. In dealing with a complex set of technical, regulatory, and policy issues, a facilitator that clearly grasps both the process and the issues can be of great assistance to the group. In the West Valley case, the firm that provided the facilitation service had people experienced in the core team process as it was applied to similar sites.
4. Upper Management Involvement – For the West Valley Core Team the quarterly meetings with upper agency management were a significant help. Not only did these high level meetings motivate the Team by setting deadlines and demonstrating the agencies’ commitment to achieving the goal, they also allowed upper management to hear, discuss, and immediately address issues that the Core Team raised.

REFERENCES

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2. United States Environmental Protection Agency and Department of Energy, *Expediting Cleanup through a Core Team Approach*