MANAGEMENT APPROACHES FOR IMPROVING ENVIRONMENTAL RESTORATION AT THE SAVANNAH RIVER SITE: PROJECTIZATION, PERFORMANCE, AND COMMUNICATIONS; SAVANNAH RIVER SITE, AIKEN, SOUTH CAROLINA (U)

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ABSTRACT

The purpose of this paper is to communicate how new and established management techniques are applied to environmental restoration projects at the Savannah River Site. Specifically, the paper discusses application of four (4) management approaches:

- Total Quality Principles
- Task Team Structure
- Cost Time Management
- SAFER (Streamlined Approach for Environmental Restoration)

The objective is to share Savannah River Site experience and document case studies where certain approaches have enhanced projects at hand.

Each management approach is demonstrated by its project application and impact on performance. The visibility given the project is discussed to emphasize communications as avenues for public information, technical exchange, and employee motivation.

APPROACH 1: TOTAL QUALITY PRINCIPLES

Total Quality Projectization

Total Quality emphasizes continuous improvement as a management technique. This case study focuses on large waste unit closures at the Savannah River Site (SRS) which were completed recently. Total Quality concepts such as communication and planning were applied to the closure of the Mixed Waste Management Facility (MWMF) and the F and H Seepage Basin Project (F/H SB). The MWMF marked completion of a fifty eight (58) acre radioactive waste landfill closure using dynamic compaction to stabilize the surface and a Kaolin cap to prevent water intrusion. The F/H SB project completed closure of seven (7) liquid radioactive waste basins using rock fill and Kaolin clay caps. Lessons learned were applied from one project to another. Both projects were in the construction phase at the same time with the MWMF several months in the lead.

Total Quality Performance Impact

Communication between projects was enhanced by planning the projects with several common team members including the project manager, project engineer, and quality control engineer. Frequent meetings facilitated communications and lessons learned from one project to another. Based on quick information, appropriate design changes could be made readily. As an example, Kaolin clay placement at the MWMF *proved difficult as the material is difficult* to handle. Thirteen (13) revisions to construction specifications were necessary due to design changes. Communicating improved clay placement methods to the F/H SB team resulted in only two (2) revisions to construction specifications on this project.

Careful planning by the F/H SB team also resulted in collection of data needed to eliminate a water treatment system, thus saving $6 million. The data allowed a computer model to predict water seepage and evaporation rates sufficient to obviate the need for a treatment system.

Total Quality Visibility

Internal recognition was achieved when the closure team engineer won the George Westinghouse Signature Award for treatment system cost savings. These large closures are recognized as most significant. Both print and electronic media documented this progress, videotape from these projects appears in highlight programs of ER accomplishments, photographs of these closures are on posters and exhibits which are on display at local environmental forum meetings and at technical conferences.

APPROACH 2: TASK TEAM STRUCTURE

Task Team Projectization

Multidisciplinary task teams are formed for each project to ensure all phases of facility or site assessment and closure are adequately evaluated. Membership of teams is based on project phase and/or safety classification. Leadership of the task team passes from assessment to closure as the waste unit enters that respective phase.

Monthly task team meetings provide structure for communication and assignment of responsibilities, and are also a powerful tool for gaining multiple perspectives. All activities

This case study centers on the Metallurgical Laboratory Basin (Met Lab) project team and the Low Level Radioactive Waste Disposal Facility (LLRWDF) project team.

Task Team Performance Impact

The Met Lab team performance was notable as the basin was closed in 1992. This basin, located next to a Carolina Bay, operated for thirty (30) years receiving solvents and rinse waters.

It was closed using a gravel base and a Kaolin clay layer. This team had a goal to stay under budget. Their dedication resulted in several large cost savings:

- A water treatment system was eliminated in favor of a sampling and release program, thus saving $250K;
- A water diversion system at the nearby Carolina Bay was rescoped to collect water runoff from the Met Lab closure rather than the entire area, thus saving $200K and allowing the Bay to collect sufficient water to sustain its ecosystem.

The LLRWDF project is much larger and involves closing thirteen (13) acres of solid radioactive waste landfill trenches. The closure plan is due in 1993. The task team implemented a test program in 1992 to determine if the same dynamic compaction criteria used in the MWMF closure could be used at the LLRWDF. This is noteworthy because the engineer's original intent was only to determine if the compaction at LLRWDF would damage the adjacent cap at the Mixed Waste Closure. After field testing the team recommended using a modified dynamic compaction criteria for the LLRWDF project which is in the early design phase. This should result in a compaction strategy which is better engineered to this landfill closure.

Task Team Visibility

The Met Lab closure was featured in newspaper articles and trade journals. It is also now displayed in our recent poster exhibits locally and at conferences. The LLRWDF team has been recognized internally by SRS as a good model for the technology evaluation and selection process. The team in an effort to gain more objectivity has added representatives from the Oak Ridge site as well as other departments at SRS. This will also facilitate technical information exchange.

APPROACH 3: COST TIME MANAGEMENT

Cost Time Projectization

Principles of Cost Time Management are used to measure savings, reduce schedule time and reduce the number of documents required on projects.

The principles focus on combining documents, accomplishing multiple phases of work in parallel, and making use of regulatory documents to satisfy project engineering requirements. This case study will examine the CERCLA Program as well as two (2) large projects, the Low Level Radioactive Waste Facility and the Sanitary Landfill.

Cost Time Management Performance Impact

In the CERCLA Program, it was determined after discussions with regulators that two (2) phased characterization workplans for waste units could be combined into a single document. Likewise on risk assessments, rather than preliminary and baseline documents being submitted separately, they could be combined into one regulatory submittal. The average time saved on waste site assessment is two (2) years with up to $250K cost reductions per waste unit. With over 100 units projected to go fully through the CERCLA process, the savings are impressive.

Both regulatory and project engineering requirements must be met in assessing and cleaning up waste sites. ER professionals are teaming with Systems Engineering personnel to develop documentation to satisfy both requirements. For example, a technology selection document for the Low Level Radioactive Waste Disposal Facility (LLRWDF) can serve as a CERCLA feasibility study for selection of closure options for the site and as an alternatives study to support the functional design criteria (FDC)required by DOE order 4700.1. The closure plan for the LLRWDF will support modified dynamic compaction with a flexible cap capable of tie-in with the Mixed Waste Management Facility closure.

Other efficiencies can be gained from using RCRA documents in meeting CERCLA requirements.

In the case of the Sanitary Landfill, the closure plan contains functional design criteria derived from the engineering process and therefore it contains an alternative evaluation. Therefore, the closure plan is greatly utilized in writing the feasibility study.

The Sanitary Landfill closure plan calls for no dynamic compaction and no thick clay layer. Rather, the concept proposed contains an innovative flexible cap with a bentonite layer and geogrid components.

Cost Time Management Visibility

The ER team at SRS won cost time management awards for their application of these principles and were personally recognized by business unit general managers. The Westinghouse Productivity and Quality Center continues to sponsor workshops to develop this skill and recognize its impact.

APPROACH 4: STREAMLINED APPROACH (SAFER)

SAFER Projectization

The Streamlined Approach for Environmental Restoration (SAFER) is recognized by the Department of Energy ER Programs. It works within the existing regulatory requirements of RCRA and CERCLA by combining elements of the Data Quality Objectives (DQO) process and the Observational Approach. The latter approach allows the remedial alternative selection process to develop while the characterization of waste units is still in the early stages.

SAFER Performance Impact

At SRS, SAFER focuses on planning to ensure data collection appropriately supports the decision making process. For example, during development of the waste unit characterization plan, investigations personnel work closely with remedial assessments personnel to ensure sampling proposed in the workplan supports data needs of the feasibility study and treatability study. This minimizes schedule delays and allows convergence on a remedial alternative more rapidly.

Additionally, SAFER supports more efficient timing of document submittals. The SRS logic is that once it has regulator comments on a draft feasibility study and determines comfort level with a preferred alternative, it can move

ahead with the proposed plan and record of decision. This results in the draft proposed plan submitted with the draft final feasibility study. It also allows submittal of the draft record of decision with the draft final proposed plan. This can save fourteen (14) months of the schedule and reduce costs by $35K on every waste unit.

SAFER Visibility

The SRS examples of SAFER have been recognized at the 1992 DOE-ER Workshop in Albuquerque, at previous technical conferences and at the Westinghouse Productivity and Quality Center.

CONCLUSION

ER Programs must continue to apply management approaches which improve the quality and efficiency of waste site assessment and closure. Waste sites are numerous, regulatory requirements can be burdensome, and budgets are limited, making the management of these programs a key challenge for the decade and the next century.

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