

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Idaho**

Site Summary Level: **Idaho National Engineering and Environmental Laboratory**

Project **ID-OIM-118 / Process Water Treatment System**

Report Number: **GEN-01b**

Print Date: **3/10/2000**

HQ ID: **0188**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

The Idaho Nuclear Technology and Engineering Center (INTEC) Percolation Pond Replacement Project at the Idaho National Engineering and Environmental Laboratory (INEEL) will relocate the Service Waste System (SWS) discharge from the existing percolation ponds to a new location. As presently planned the existing discharge will be rerouted to a series of new lined, hold and sample basins with subsequent discharge to new percolation ponds. Other alternatives have been evaluated from an environmental impact perspective and have been included as sub-projects in the Draft Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement (EIS). These alternatives include: direct discharge of the service waste waters to the Big Lost River, new percolation ponds, or an injection well; discharge to lined hold, sample, and release ponds with subsequent discharge to the Big Lost River, new percolation ponds, or an injection well; discharge to a lined evaporation pond; and construction of a partial recycle system and a total recycle system. This construction project data sheet is being prepared in anticipation that the outcome of the EIS will be favorable to a new percolation pond solution. If another solution is recommended by the EIS then a new Mission Need Statement, conceptual design, and construction project data sheet will be prepared and submitted through the budget cycle. The project Mission Need Statement will be updated annually or as conditions warrant to enable a quick change or re-alignment of cost, scope, and schedule.

The INEEL site, including INTEC, was placed on the National Priorities List in November 1989 because of soil and groundwater contamination resulting from operations. A Federal Facility Agreement and Consent Order (FFA/CO) was negotiated with the Environmental Protection Agency (EPA) and the Idaho Department of Health and Welfare (IDHW) to direct the cleanup activities at the INEEL. As a part of the cleanup activities, a comprehensive study, or remedial investigation baseline risk assessment (RI/BRA) indicated that soil at certain release sites and groundwater contamination at INTEC pose a potential risk above acceptable levels to human health and the environment. The groundwater beneath INTEC is recharged primarily from the existing percolation ponds and occasionally, during wet years, from the nearby intermittent Big Lost River. These recharge sources have formed several perched water zones beneath INTEC at depths ranging from 100 to 420 feet.

During normal operations, INTEC processes generate 1.5 to 2.5 million gallons per day of wastewater. The wastewater, commonly called service waste at the INTEC, consists of steam condensate, cooling water, ion exchange water softener regeneration, boiler blowdown, and other nonhazardous, nonradioactive liquids. The service waste system consists of collection headers, pipes, tanks, valves, pumps, monitoring and diversion stations (located in multiple buildings throughout INTEC), and the two percolation ponds. The service waste system monitors the waste streams for radioactivity and transfers the waste to one of two large percolation ponds for rapid infiltration surface disposal.

Total radioactivity discharged from the service waste system averaged hundreds of curies per year through 1988. Since 1989, total radioactivity in the service waste system discharged to the percolation ponds has averaged less than one curie per year. It is probable that since 1989 the minimal radionuclide discharges are due to residue left in the existing piping systems from earlier discharging practices. As a result of these discharges, the perched water beneath INTEC has been contaminated by downward transport of contaminants, primarily radionuclides (strontium-90 and tritium), from the overlying surface soils, and from prior use of an injection well for disposal of service wastewater. The injection well was capped and is no longer operable. The water flow in the perched water zones recharge the Snake River Plain Aquifer (SRPA). Consequently, the perched water is a contaminant transport pathway between contaminated surface soils and the SRPA. The SRPA serves as the water source for the region.

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Reducing and controlling perched water recharge will reduce the flux of contaminants to the aquifer and ultimately reduce the contaminant concentrations in the aquifer. The service waste percolation ponds account for the majority of perched water recharge flow. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Proposed Plan for Operating Unit OU3-13 requires closure of the service waste percolation ponds as the preferred alternative for reducing migration of contaminants to the SRPA. The service wastewaters have been discharged to the two unlined percolation ponds since 1984. Between 1984 and 1992 wastewaters containing radioactively contaminated solution were sent to the percolation ponds. The intentional discharge of these liquids to the ponds ceased in 1993 when a new process called the Liquid Effluent Treatment & Disposal (LET&D) was brought on line at INTEC.

The project will provide a new discharge location for the service waste water which will preclude recharge of the perched water directly beneath INTEC. Construction of the new ponds will allow the existing percolation ponds to be closed as required by the CERCLA Record of Decision. Pond replacement will require an extension to the existing Wastewater Land Application Permit, WLAP #LA-000130-02 which expires September 17, 2000, and a new permit to be approved by the Idaho Division of Environmental Quality (IDEQ).

A properly permitted service waste stream is critical to the continued operations of INTEC. If the service waste system is forced to shutdown, INTEC will not be able to perform its mission, nor will DOE-ID be able to meet legal agreement milestones or carry out its mission at the INEEL. In order to meet the needs discussed above in a timely manner, the requested FY 2001 budget appropriation will be used to perform design activities.

Project Status in FY 2006:

Project construction will be complete 4th quarter of FY 2003.

Post-2006 Project Scope:

N/A All construction will be complete by 4th quarter of FY 2003.

Project End State

The Idaho Nuclear Technology and Engineering Center (INTEC) Percolation Pond Replacement Project at the Idaho National Engineering and Environmental Laboratory (INEEL) will relocate the Service Waste System (SWS) discharge from the existing percolation ponds to a new location.

Cost Baseline Comments:

The estimate comes from the completed Conceptual Design Report. It was prepared utilizing the INEEL Cost Estimating Guide (DOE/ID 10473) and the results of a Jury Review. Escalation rates applied to this cost estimate FY 2001-2.3%; FY 2002-2.4% and FY 2003-2.8% and FY 2004-2.9% based on Anticipated Economic Escalation Rates for DOE Construction Projects.

Safety & Health Hazards:

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Safety & Health Work Performance:

The Integrated Safety Management Program mandates that safety be an integral part of the work process. Hazards are identified through work planning, safety controls are implemented, and the work is conducted accordingly. Post job reviews are conducted to identify and discuss problems or successes. Useful information is then distributed through a Lessons Learned Program. Management and workers at all levels with assistance from

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safety and health professionals are responsible for the development, implementation, maintenance, and promotion of an effective employee safety and health program. This in part is accomplished by review and approval of all Work Control Documents including: work orders, operating procedures, construction and demolition projects, and maintenance plans. Safety and Health contacts are available for every activity/project to assist the responsible worker/manager in planning and executing work according to applicable requirements. The means to accomplish work safely are provided through work control documents with subject matter contacts available in specialty fields such as health, safety, environmental, radiological control, fire protection, occupational medicine, safeguards and security, and emergency management. Safety and health resources are planned and allocated into each activity/project proposal according to size of the activity/project and scope of work. Safety and health reviews assure compliance with appropriate Federal, State and local statutes, and contractual obligations. Reviews also assure that all company health & safety plans, procedures, and documents are included and followed. Personnel, as required, from the facility, safety, health, environmental, fire protection, radiological control, project management group, and other involved organizations or personnel whose expertise is needed is assembled to evaluate the work scope and the work location for hazards. Prior to the work activity an appropriate mitigation plan is formulated with the hazards and plan communicated to the employees. On construction projects a plan-of-the-day is performed by the supervisor with his employees to review the work tasks and associated hazards to be performed that day. Work control documents are prepared on a graded approach. The graded approach is used to determine the frequency of the work control document and who is required to review the document prior to that particular phase of work to be performed. Specific and repetitive tasks are reviewed and documented through the Job Safety Analysis for the identification and elimination of hazards. Unforeseen safety & health issues that are not covered in work control documents require the issuance of special work permits. Safe Work, Confined Space, Lock/Tag, and Construction Permits are issued by safety and health professionals after a complete review of the work activity. Work control planners, supervisors, foremen, and safety and health professionals are all highly skilled and trained professionals. At a minimum, planners are journeymen craftsmen with a skill level equal to or greater than the craftsmen for whom the work is planned. Supervisors and foremen are responsible for conducting a pre-job safety briefing prior to each activity and, workers at all levels of activity, have both the knowledge and authority to "stop work" under unsafe conditions. Safety and health professionals provide on-site assistance to both workers and supervisors and the Company Voluntary Protection Program (VPP) integrates safety and health into all aspects of the work planning and control process. Safety and Health FTEs average approximately \$100K/FTE/year.

PBS Comments:

Baseline Validation Narrative:

General PBS Information

Project Validated?

Date Validated:

Has Headquarters reviewed and approved project?

Date Project was Added: 3/17/1999

Baseline Submission Date:

FEDPLAN Project? Yes

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General PBS Information

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	Y	N	N	N	N	Y	N	N

Project Identification Information

DOE Project Manager: Jeffery G. Snook

DOE Project Manager Phone Number: 208-526-5920

DOE Project Manager Fax Number: 208-526-0553

DOE Project Manager e-mail address: snookjg@inel.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	0	0	0						0	0	0	0	0	0		
PBS Baseline (constant 1999 dollars)	0	0	0						0	0	0	0	0	0		
PBS EM Baseline (current year dollars)	0	0	0						0	0	0	0	0	0		
PBS EM Baseline (constant 1999 dollars)	0	0	0						0	0	0	0	0	0		
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)																

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	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (constant 1999 dollars)																
PBS EM Baseline (current year dollars)																
PBS EM Baseline (constant 1999 dollars)																

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
			2.70%	2.10%	2.10%	2.10%	2.10%	2.10%				
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project:

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):

Actual 1997 Cost:

Actual 1998 Cost:

Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):

0 Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):

0

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Project Reconciliation

Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 0

Project Cost Changes

Cost Adjustments Reconciliation Narratives

Cost Change Due to Scope Deletions (-):

Cost Reductions Due to Efficiencies (-):

Cost Associated with New Scope (+):

Cost Growth Associated with Scope Previously Reported (+):

Cost Reductions Due to Science & Technology Efficiencies (-):

Subtotal: 0

Additional Amount to Reconcile (+): 0

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 0

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
A-E WORK INITIATED			3/31/2001								
A-E WORK COMPLETED			12/31/2001								
PHYSICAL CONSTRUCTION START			6/30/2002								
PHYSICAL CONSTRUCTION COMPLETE			9/30/2003								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
A-E WORK INITIATED											Initiate all architectural and engineering (A-E) work.
A-E WORK COMPLETED											Complete all architectural and

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Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
PHYSICAL CONSTRUCTION START											engineering (A-E) work. Start the physical construction.
PHYSICAL CONSTRUCTION COMPLETE											Complete the physical construction