Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

APR 2 4 1996

Mr. David L. Lundstrom
200 Area Section Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336-6018

Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352-0539

Dear Messrs. Lundstrom and Sherwood:

ENGINEERING EVALUATION/CONCEPTUAL PLAN (EECP) FOR THE 200-UP-1 GROUNDWATER OPERABLE UNIT INTERIM REMEDIAL MEASURE, BHI-00187, REV. 2

The subject document (Attachment 1) is attached for your information. Revisions have been made to incorporate the 200 Area Effluent Treatment Facility as a treatment alternative. Also provided as Attachment 2 are the revised cost estimates for the two treatment alternatives. The revised tables incorporate efficiencies in operations which have resulted in lower estimates than those identified in the EECP.

If you have any questions, please feel free to contact me on 376-5778.

Sincerely,

Donna Wanek

Donna M. Wanek, Project Manager
Groundwater Project

GWP:DMW

Attachments: As stated

cc w/attachs:
D. Einan, EPA
D. Goswami, Ecology
S. Mohan, Ecology

cc w/o attachs:
M. Buckmaster, BHI
G. Henckel, BHI
K. Porter, ITH
C. Wittreich, ITH

COST TO TREAT 200-UP-1 GROUNDWATER IN THE ETF

($ x 1000)	FY 1996	FY 1997	FY 1998
Operations & Maintenance Labor[1,2]		0	0
Consumables (Chemicals, IX Resin)[3]		35	35
Waste Disposal[4]		8	8
Sampling[5]		130	130
Electrical[6]		200	200
Modify ETF Process[7]	250		
Connect UP-1 to Transfer Line[9,10]	365		
Connect Transfer Line to LERF[9,10]	262		
Phase I Onsite Treatment[8]	1059		
Pump Groundwater[11]	50	50	50
Monitor Aquifer Cleanup[12]	279	279	279
Well Installation[8]	277		
Data Management/Reporting[8]	57	57	57
Escalation (2.3%)		17	35
Total Cost to Treat Groundwater	2599	776	794

1. Assumes groundwater is pumped continuously at 50 gpm through September 1998. The water would be treated by the UP-1 pilot-scale system until transfer to the ETF/LERF begins. Groundwater would be processed by the ETF at an average of 80 gpm. This Table assumes 24 months of 50 gpm flow (52,560,000 gal total) are treated at the ETF. Phase I Onsite treatment costs and ETF costs can be pro-rated as appropriate for different schedule scenarios.
2. No additional labor force is required to support UP-1 ground water treatment at the ETF. The labor force necessary is already present and funded due to the requirements for operation of the ETF to treat evaporator condensate and other streams such as the N-Basin water. The FY98 5-year Plan Target Budget assumes a $2.5M cost efficiency is achieved due to merger of 200 Area Liquid Effluent Operations with the 242-A Evaporator operation.
3. Includes $25K/year for sulfuric acid, sodium hydroxide, and hydrogen peroxide; and $10K/year for ion exchange resin.
4. Groundwater at 50 gpm and 1000 ppm TDS average produces 3510 ft3/year solid waste; disposal in ERDF @ $55/cy (unit cost provided by ERC).
5. Groundwater at 50 gpm fills 43.8 verification tanks at 600,000 gal/verification tank; sampling for environmental compliance costs $3000/verification tank.
6. Electrical cost is energy and demand charges of $30K/month when ETF is operating, minus energy and demand charges of $10K/month if ETF is not operating. Assessment to maintain site electrical system is not included as this would be paid by the site regardless of whether groundwater is treated in the ETF.
7. Includes design/engineering, piping changes, control system reprogramming, procedure updates, and training.
8. Estimate provided by ER.
9. Assumes flow monitoring with leak detection are acceptable alternatives to double-containment.
10. Includes construction, design, engineering/inspection, construction management, quality support, project management, general support, and contingency.
11. Same as Utilities cost for ER pilot-scale system.
12. Same as Performance Monitoring cost for ER pilot-scale system

NOTE: If re-injection water was desired ERC estimates raw water could be supplied at a cost of 2 cents per gallon including hook-up cost. This would add $526K to the cost in FY97 and FY98.

Pump-and-Treat Costs Using the Onsite 200-UP-1 Facility.

($ x 1000)	FY 1996[a]	FY 1997[b]	FY 1998[b]
Operations and Maintenance[c]	586	586	586
Consumables[d]	145	145	145
Waste Disposal[e]	3	3	3
Process Monitoring/Sampling[f]	326	326	326
Utilities	50	50	50
Performance Monitoring[g]	279	279	279
System Upgrades[h]	78	--	--
Well Installation[i]	277	--	--
Data Management/Reporting[j]	57	57	57
Escalation (2.3%/yr)	--	33	67
Total Cost to Treat	1,801	1,479	1,513

[a]Fiscal year (FY) 1996 activities include 12 months of operating existing system at 50 gal/min; design, procurement and installation of system upgrades; installation/tie-in of one extraction well.

[b]FY 1997 and 1998 activities include 12 months of operations at 50 gal/min.

[c]Operations and maintenance costs are based on actual FY 1996 cost accounts and include process operations labor, engineering support, field support, radiological control, site safety, quality assurance oversight, and associated overheads (G&A).

[d]Consumables include ion-exchange resin, granular activated carbon (GAC), process filters and miscellaneous materials for maintenance.

[e]Waste disposal costs include materials (drums, labels, etc.), waste designation and disposal. Disposal costs assume 1,065 ft^3/yr of ion-exchange resin disposed of at the ERDF @ \$55/yd^3 and 75 ft^3/yr of GAC @ \$55/yd^3.

[f]Process monitoring/sampling includes two influent and two effluent samples per 500,000 gal of groundwater treated (analyzed onsite), 2 monthly treatment system efficiency/confirmatory samples analyzed by an independent laboratory (offsite), five samples per month for waste designation (analyzed offsite) and supporting quality assurance/quality control samples. Process monitoring costs also include sample disposal costs.

[g]Performance monitoring includes monthly sampling of approximately 12 monitoring wells to assess interim remedial measure (IRM) performance.

[h]Upgrades include design, procurement of a resin/GAC slurry changeout system. Assumes double-contained pipeline with leak detection is not required.

[i]Well installation costs include design, procurement, installation, tie-in, and surveying costs for one extraction well.

[j]Data interpretation/reporting includes preparation of quarterly IRM performance reports summarizing process and groundwater data.