9513323.1602

0037116 24

JUN 28 1994 (11)

Station # 12

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 606158

START

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Distribution	85900	N/A
5. Proj./Prog./Dept./Div.:	6. Cog. Engr.:	7. Purchase Order No.:
ER	G.J. Jackson	N/A
8. Originator Remarks: Supporting document for approval & release.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date:

JUL 1994 RECEIVED EPIC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-PMP-008		0	Project Management Plan, N Springs Expedited Response Action	N/A	1/2	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.
1/2	1	Cog. Eng. G.J. Jackson H6-04 George J Jackson 5/13/94	Central Files (2) L8-04	3	
1/2	1	Cog. Mgr. M.J. Lauterbach H6-01 M J Lauterbach 5/20/94	EPIC (2) (1) H6-08	3	
		QA	ERC H6-07	3	
		Safety	IRA (2) H4-17	3	
		Env.			

18. G.J. Jackson — Signature of EDT Originator — Date 5/19/94

19. _____ Authorized Representative for Receiving Organization — Date

20. M J Lauterbach — Cognizant/Project Engineer's Manager — Date 5/20/94

21. DOE APPROVAL (if required) Ltr. No.
- [ ] Approved
- [ ] Approved w/comments
- [ ] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

9513323.1603

Date Received: 5/24/94/DS

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- [ ] Speech or Presentation
  - [ ] Full Paper
  - [ ] Summary
  - [ ] Abstract
  - [ ] Visual Aid

  (Check only one suffix)
- [ ] Speakers Bureau
- [ ] Poster Session
- [ ] Videotape
- [ ] Reference
- [X] Technical Report
- [ ] Thesis or Dissertation
- [ ] Manual
- [ ] Brochure/Flier
- [ ] Software/Database
- [ ] Controlled Document
- [ ] Other

ID Number (include revision, volume, etc.): WHC-SD-EN-PMP-008, Rev. 0

List attachments: N Springs ERA Work Breakdown Structure

Date Release Required:

Title: Project Management Plan, N Springs Expedited Response Action

Unclassified Category: UC-N/A

Impact Level: N/A

New or novel (patentable) subject matter? [X] No [ ] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[ ] No [ ] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [ ] Yes (Identify)

Copyrights? [X] No [ ] Yes
If "Yes", has written permission been granted?
[ ] No [ ] Yes (Attach Permission)

Trademarks?
[X] No [ ] Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting

Group or Society Sponsoring

Date(s) of Conference or Meeting

City/State

Will proceedings be published? [ ] Yes [ ] No
Will material be handed out? [ ] Yes [ ] No

Title of Journal

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[ ]	[X]			
Patent - General Counsel	[ ]	[X]			
Legal - General Counsel	[ ]	[X]			
Applied Technology/Export Controlled Information or International Program	[ ]	[X]			
WHC Program/Project	[X]	[ ]	J.K. Patterson	J.K. Patterson	5/26/94
Communications	[ ]	[X]			
RL Program/Project	[X]	[ ]	B.L. Foley	B.L. Foley	6/23/94
Publication Services	[X]	[ ]	L.S. Hermann	L.S. Hermann	6/24/94
Other Program/Project	[ ]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[ ]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[X]	[ ]

Author/Requestor (Printed/Signature) Date: G.J. Jackson George J. Jackson 5/19/94

Intended Audience: [ ] Internal [ ] Sponsor [X] External

Responsible Manager (Printed/Signature) Date: M.J. Lauterbach /s/ M.J. Lauterbach 5/20/94

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE OFFICIAL DOCUMENT Z.B. Date 10/24/94

JUL 1994 RECEIVED EPIC

Date Cancelled | Date Disapproved

BD-7600-062 (08/91) WEF074

Part 1

9513523.1604

SUPPORTING DOCUMENT

1. Total Pages 2 23

2. Title	3. Number	4. Rev No.
Project Management Plan, N Springs ERA	WHC-SD-EN-PMP-008	0

5. Key Words

CERCLA, Remedial Action, 100-N Pilot Program

APPROVED FOR PUBLIC RELEASE
V. Birkland 6/24/94

6. Author

Name: George J. Jackson

George J Jackson
Signature

Organization/Charge Code 85900/PG22A

7. Abstract

G. J. Jackson, "Project Management Plan, N Springs Expedited Response Action," WHC-SD-EN-PMP-008, Rev. 0, Westinghouse Hanford Company, Richland, Washington, 1994

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.

DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

9. Impact Level N/A

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)
DATE JUN 28 1994
Station # 12

CONTENTS

FIGURES:

PROJECT MANAGEMENT PLAN, N SPRINGS EXPEDITED RESPONSE ACTION

1.0 INTRODUCTION

Since signing the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement, Ecology et al 1989), the parties to the agreement have recognized the need to modify the approach to conducting investigations, studies, and cleanup actions. The modification goals are to maximize efficiency, optimize use of limited resources, and achieve cleanup in the earliest possible time frame. To implement this approach, the parties have jointly developed the *Hanford Past-Practice Strategy* (DOE-RL 1991). The principles of the strategy are embodied in the *Hanford Federal Facility Agreement and Consent Order Change Package* (Ecology 1991).

The strategy defines a non-time-critical expedited response action (ERA) as a response action "needed to abate a threat to human health or welfare or the environment where sufficient time exists for formal planning prior to initiation of response. A non-time-critical ERA may also address a situation encompassing levels of contamination which do not pose an immediate danger or threat to human health or welfare or the environment, but which might justify a response action by the need to control the spread of contamination, to abate a threat, or provide for a greater overall cost effectiveness by more timely response" (Ecology 1991). In accordance with the past-practice strategy, the U.S. Department of Energy (DOE) is conducting an ERA at the N Springs, located in the Hanford 100 N Area.

This Project Management Plan (PMP) addresses the design and construction of a sheet pile barrier and the design, construction, and operation of an ion-exchange pump and treat system at N Springs. Project management activities for the testing, operation, and monitoring of the pump and treat system will be addressed in future documents. The design and construction of the sheet pile barrier is scheduled to be completed in FY 1995. The design and construction of the pump and treat system is scheduled to be completed in FY 1997. The operational life of both entities is 10 years.

DOE Order 4700.1, *Project Management System* (DOE 1991), as interpreted by the Westinghouse Hanford Company (WHC) Environmental Restoration (ER) Program Office, shall be imposed only at the ER Major Systems Acquisition (MSA) level. The N Springs ERA shall only generate project management documentation as required to provide project-specific management guidance. Key documents that will be prepared in parallel with the definitive design as directed by DOE Richland Operations Office (RL) in order to satisfy the requirements of DOE Order 4700.1 include the PMP, Quality Assurance Project Plan, Safety Analysis, and *National Environmental Policy Act of 1969* documentation.

2.0 PROJECT OBJECTIVES

2.1 TECHNICAL OBJECTIVES

There were three objectives set for the N Springs ERA, which are outlined in Item 6 in the Senior Executive Agreement Committee Agreement on the Resolution of Milestone M-14-00 Change Request Dispute (D.M. Wanek, DOE-RL, January 8, 1993).

The first N Springs ERA objective is to eliminate or substantially reduce the flux of strontium-90 to the N Springs, and ultimately to the Columbia River via groundwater migration.

A sheet pile barrier will be installed in the path of groundwater flow, forcing strontium-90 contaminated groundwater to flow around it in order to reach the river, substantially decreasing groundwater flow velocity. Since the strontium transport velocity is approximately 2 orders of magnitude less than that of the groundwater in the vicinity, the flux of strontium-90 to the river will be reduced.

The second N Springs ERA objective is to evaluate commercially available treatment options for strontium-90 contaminated groundwater.

The pump and treat system will draw contaminated groundwater from behind the barrier and strip the strontium-90 from it. This action also helps meet the first objective because it reduces the flux of strontium-90 to the river by removing the contaminant from the medium transporting it. The pump and treat system design will have surplus ports for the addition of auxiliary remediation systems. These systems will use a portion of the inlet stream in series or parallel to the ion-exchange apparatus.

The third N Spring ERA objective is to provide data necessary to set appropriate strontium-90 contaminated groundwater cleanup standards. This objective will be achieved by recording and publishing the results of each treatment option demonstrated, analyzing process efficiency data, estimating inventory removal percentage of strontium-90 from the groundwater, and determining the lowest possible strontium-90 concentrations in effluent streams.

2.2 SCHEDULE OBJECTIVES

The N Springs ERA has been designated as non-time-critical. Procurement, design, and construction of the barrier and pump and treat system will commence subsequent to completion of appropriate regulatory documentation and hydrologic/transport modeling. Construction of the barrier is expected to take 3 months, with completion scheduled for FY 1995. The design and construction of the pump and treat system is expected to begin in June 1995, with startup scheduled for March, 1997. Performance reports for each entity will be submitted every 3 months until March, 2007, which marks the end of the 10 year operation of the ERA.

2.3 COST OBJECTIVES

The N Springs ERA is funded by the WHC ER Program. The rough order-of-magnitude cost estimate for the ERA is $6 M for the sheet pile barrier and $22 M for the pump and treat system.

3.0 PROJECT DESCRIPTION

The N Springs ERA will consist of a sheet pile barrier and a pump and treat system, with the pump and treat system drawing its inlet from the stagnation pool formed upgradient of the barrier. Data generated as part of an analytical modeling effort will be used as the basis for the development of definitive design drawings and specifications.

The sheet pile barrier will be approximately 2500-3000 ft long and will be installed to a depth of about 50 ft. Vertical steel barriers will be installed at depth using a vibratory hammer. The joints between sections, as the barrier is linearly traversed along the surface, will be constructed such that they may be completely sealed using a grouting material. The grout seals between joints will decrease the permeability of the wall to groundwater by at least 2 or 3 orders of magnitude when compared to the industry standard, a slurry wall. Grouting material will be chosen such that at the termination of the ERA, the barrier will be able to be easily removed, if deemed necessary, by vibrating the sheets back out of the ground.

A skid-mounted ion-exchange based pump and treat unit will be installed near the 100 N Area 1301-N and 1325-N Liquid Waste Disposal Facilities. Wells installed downgradient from the 1301-N Crib and upgradient from the sheet pile barrier will supply a 150 gpm inlet stream to the process unit. After proper pretreatment, the strontium-laden stream will be passed through an ion-exchange complex containing chabazite zeolite, which will strip the inlet solution of strontium, as well as other inherent ions such as calcium and magnesium. Resin changeouts will occur approximately every 6 weeks, with spent resin being sent to the Solid Waste Disposal Division. The liquid effluent from this process will be discharged into the head end of the 1325-N Crib.

Ion-exchange technology is not capable of stripping enough strontium-90 from the inlet stream to have the effluent meet Safe Drinking Water Act standards, which is 42 pCi/L. It may be feasible to add a biological polishing step to treat the liquid effluent from the ion-exchange unit in order to meet this requirement.

The pump and treat system will be constructed with surplus ports such that the inlet and outlet flows can be easily split. This will allow supplementary remedial technologies to be used in series or parallel to the ion-exchange unit. This helps meet the second and third objectives of the N Springs ERA.

4.0 PROJECT PARTICIPANT RESPONSIBILITIES

Project organization for implementing the design and construction of the N Springs ERA sheet pile barrier and pump and treat system is shown in Figure 1. The following sections describe the responsibilities of individual contributors.

4.1 PROJECT MANAGERS

The Environmental Protection Agency (EPA), DOE, and Washington State Department of Ecology (Ecology) have each designated one individual as project manager for remedial activities at Hanford. These managers will serve as the primary point of contact for all activities to be carried out under the Tri-Party Agreement. The responsibilities of the project managers are given in Section 4.1 of the Tri-Party Agreement (Ecology et al 1989).

4.2 UNIT MANAGERS

As shown in Figure 1, EPA, DOE, and Ecology will each designate an individual as a unit manager for the 100-NR-2 Operable Unit, which contains the N Springs site.

The unit manager from Ecology will serve as the lead unit manager and be responsible for regulator oversight of all activities required for the 100-NR-2 Operable Unit.

The unit manager from DOE will be responsible for maintaining and controlling the schedule and budget, and keeping the EPA and Ecology unit managers cognizant of the status of activities for the 100-NR-2 Operable Unit.

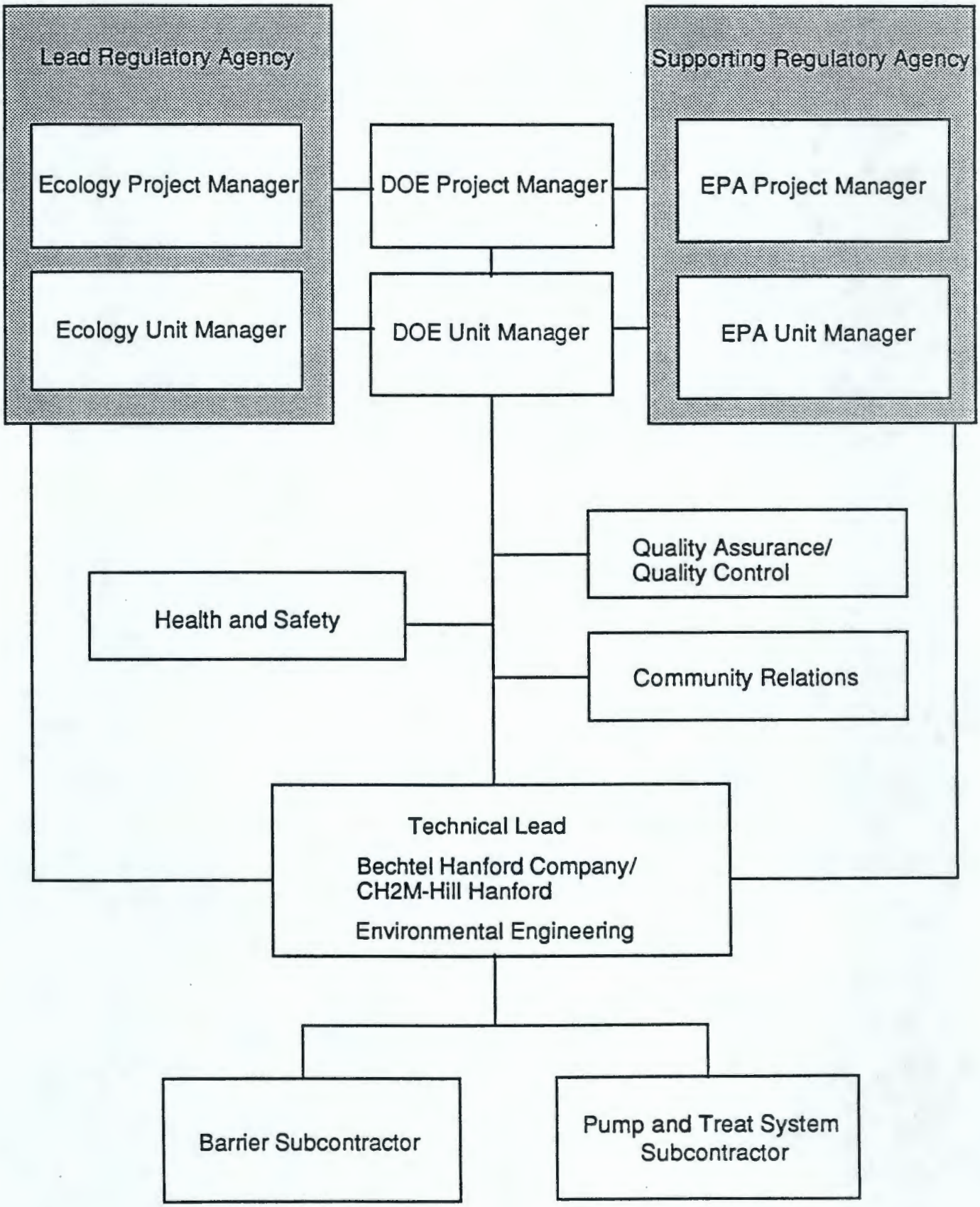
4.3 WESTINGHOUSE HANFORD COMPANY

The overall WHC cognizant responsibility is assigned to 100 Area Projects, 100 B/C Remediation, which organizationally reports up to Restoration and Remediation. Cognizant responsibilities include programmatic direction to other participants, compliance with applicable regulatory requirements, and assurance that program objectives are met.

Other WHC organizations, including the departments of Safety, Quality, and Projects, shall provide project support, as required, to the cognizant function during the design, construction, and operation of the facilities associated with the N Springs ERA.

WHC will provide radiation worker training for all subcontractor personnel obtained for any onsite construction activities where this training is mandatory.

Figure 1. Project Organization.



4.4 DESIGN AND CONSTRUCTION SUBCONTRACTOR

Design and construction of the sheet pile wall and pump and treat system will be conducted by subcontractors. Specifications for the sheet pile wall and pump and treat system will be determined by WHC, released for competitive bids, and awarded per federal procurement protocols. Subcontractors will be responsible for providing their own health and safety, quality assurance, and health physics plans and support.

5.0 WORK BREAKDOWN STRUCTURE

The N Springs ERA is identified as a CERCLA action within the 100-NR-2 Operable Unit. The WHC ER Program Work Breakdown Structure (WBS) locates the N Springs ERA as follows:

Installation Level	N Springs ERA
Summary Subproject Level	100-N Pilot Program
Subproject Level	100-N
End Function Level	100-NR-2 Operable Unit N Springs ERA Implementation

The project-specific WBS for the N Springs ERA is attached to this document as Appendix A.

6.0 SCHEDULE

The sheet pile barrier is scheduled for construction and completion in mid-1995. The pump and treat system is scheduled to commence operations in July, 1996.

Milestones have not been set for the N Springs ERA, but may be set at a later date.

7.0 PROJECT EXECUTION

7.1 PROJECT MANAGEMENT ORGANIZATION

In accordance with the DOE "Initial Baseline Guidance for the Office of Environmental Restoration", special provisions are made for ER projects that qualify under certain requirements as specified in the DOE Orders. Excerpts from the DOE guidance are provided as follows:

> "All Environmental Restoration activities will be managed by defining and controlling scopes, schedules, and costs using a project management structure that is based upon DOE Order 4700.1 requirements. (DOE 1991)
>
> "Recognizing the uncertainty surrounding many ER-planned activities, EM-40 baselines will have two components, a performance baseline and a forecast baseline. The performance baseline represents the set of criteria (scope, schedule, and cost) that will be the basis for measuring progress or performance through the life of the (project).
>
> "The forecast baseline represents that portion of the (project) baseline that is defined mostly by assumptions, but must be represented to provide a basis for ... planning. The forecast baseline will be based on a set of assumptions that will be updated and improved as the (project) progresses. Eventually, the forecast baseline will become defined in such detail that warrants transition to the performance baseline. Revisions proposed for the forecast baselines are not subject to formal changes control, but will be tracked and subjected to prudent project management practices.
>
> "... remediation subprojects are generally composed of two phases: assessment and cleanup. If the assessment phase is a precursor to establishing the technical requirements for the cleanup phase, these two phases may be baselined in a sequential, time-phased fashion."

In accordance with the EM-40 Baseline Guidance, the N Springs ERA is most clearly defined as an "assessment phase" project with a "forecast baseline." This project is in the "assessment phase" of evaluating the performance of the sheet pile barrier and pump and treat system in order to demonstrate technologies and establish cleanup standards for strontium-90 contamination in groundwater, utilizing a "forecast baseline" due to the analytical model and assumptions made in specifying the design parameters for each entity.

7.2 PROJECT MANAGEMENT DOCUMENTATION

The DOE baseline guidance states that ER activities will be controlled using a management structure based upon DOE Order 4700.1 (DOE 1991) and, consequently, the RL Implementing Procedure 4700.1A, "Project Management System" (DOE-RL 1991). As determined by the WHC ER Program Office, the DOE Order 4700.1 and the RLIP 4700.1A are directly applicable to the ER Program only at the MSA level. Project Management System documentation shall only be required at the top project level, and individual subprojects shall not be required to generate specific subproject documentation. RL has given WHC direction to proceed with this strategy as previously stated in the introduction.

In lieu of the specified Project Management System documents (as defined by RL 4700.1A), the N Springs ERA shall provide other project-specific documents to provide project guidance. The following table provides a cross reference reflecting where specified document topics are addressed for the N Spring ERA, with an asterisk denoting separate documents for the barrier and pump and treat systems:

DOE-RL 4700.1A SPECIFIED DOCUMENTS	REFERENCE DOCUMENT
a. Functional Design Criteria*	(Modeling results)
b. Conceptual Design Report*	(Procurement specifications)
c. Project Management Plan	(This document)
d. Site Evaluation Report	
e. Quality Assurance Plan*	
f. Permits*	

7.3 OTHER PROJECT DOCUMENTS

7.3.1 Construction Quality Assurance Plan

A Construction Quality Assurance Plan for the barrier and pump and treat system will be generated in parallel with the definitive design activities and be available prior to the commencement of construction. Specific Quality Assurance requirements for construction activities shall be imposed on the design/construction contractor as defined in the approved construction specifications.

7.3.2 Site-Specific Construction Permits

Site-specific construction permits required for the sheet pile barrier and the pump and treat system (i.e. excavations, etc.) will be processed and approved by WHC and provided to the design/construction contractor.

7.4 PROJECT REPORTS AND MEETINGS

Throughout the construction phase of the barrier and pump and treat system, construction progress reports will be generated monthly and shall address, as a minimum, costs/schedule performance, significant accomplishments, planned activities, construction problems, and potential changes.

The cognizant WHC function shall compile the construction progress report and other programmatic issues into a monthly project progress report that shall be issued to responsible project/program management organizations. The regularity and content of the project reports shall be established to accommodate project needs. Periodic meetings may be scheduled as necessary to provide appropriate management overview.

8.0 PROJECT CONTROL

8.1 BASELINE MANAGEMENT

As described in Section 7.0, *Project Execution*, the N Springs ERA is an "assessment phase" project with a "forecast baseline." A report summarizing the results from analytical hydrologic and transport modeling will serve as the baseline design guidance for this project. Upon completion of construction, any modification to the baseline design guidance assumptions will be documented by either revision to the modeling results report or creation of a new document.

A change control process will be implemented to record revisions to project baselines, although less formally than may be implemented for a "performance baseline" project. Existing WHC change control procedures will be utilized to the greatest extent possible; however, certain aspects including responsibilities, classification of changes, and approval authorities will be modified to accommodate the N Springs ERA (See Section 8.5, *Change Approval*).

8.2 COST AND SCHEDULE CHANGE CONTROL

Schedule and cost objectives for the design, construction, and operations associated with the N Springs ERA, as defined in Section 2.3, *Schedule Objectives*, and 2.4, *Cost Objectives*, will be reviewed upon completion of the definitive design, and necessary revisions will be made to the project cost estimate and schedule. Upon approval from the ER Program Office, the project cost estimate and schedule will constitute the administrative baseline for design, construction, and operations activities.

Close coordination will be maintained with the respective program offices to ensure compliance with common goals. In the event that additional budgeted resources are required beyond the annual approved budget, a project change request will be processed in accordance with Sections 8.4, *Funds Management* and 8.5, *Change Approval*.

8.3 TECHNICAL CHANGE CONTROL

Approved definitive design media (drawings, specifications, vendor data, etc.) will serve as the project technical baseline. A design media change control system will be implemented per the specifications of the design/construction subcontractor. As a minimum, the subcontractor will maintain traceability for all changes to the approved design media, maintain a set of master drawings reflecting authorized changes, and issue project as-built design media upon completion of construction. Changes will be authorized in accordance with Section 8.5, *Change Approval*.

8.4 FUNDS MANAGEMENT

Project authorization funding for the N Springs ERA activities is currently expense-funded annually to WHC through the DOE ER program. An annual budget will be provided for performance of work as defined in the current Five-Year Plan, Fiscal Year Program Plans, Financial Plans, Activity Data Sheets, and Technical Task Plans. Necessary modification to the approved administrative baselines (annual budgets, cost estimates, schedules, etc.) will be handled on a case-by-case basis with the ER Program Office.

8.5 CHANGE APPROVAL

Approval authority for changes to the project baselines will be in accordance with the Change Authority Matrix (Figure 2). Definition of various change classifications is as follows:

CLASS 1 Changes to any project baseline documentation requiring additional Program Office budget to implement.

CLASS 2 Changes to project baseline design guidance documentation or project administrative baselines, not requiring additional Program Office budget to implement.

CLASS 3 Changes to project technical baselines requiring additional budget to implement, utilizing pre-authorized construction contingency budget.

CLASS 4 Changes to technical baseline documentation not requiring additional budget to implement.

9.0 MANAGEMENT ASSUMPTIONS

The following assumptions are inherent to each entity of the N Springs ERA:

9.1 SHEET PILE BARRIER ASSUMPTION LIST

1. All Regulatory and Permit requirements will not be waived.
2. The wall will be installed between the high water mark and shoreline road.
3. Wall location stratigraphy shall not hinder wall installation activities.
4. The shoreline road will require widening and covering with clean uncontaminated fill for wall construction use.

Figure 2. Change Authority Matrix.

PROJECT PARTICIPANT	CLASS			
	1	2	3	4
ER Program Office, Activity Manager	X[1]			
Project Manager	X	X		
Project Engineer			X	
Field Team Leader				X

**[1] Program Office approval required only for respective Programs.

5. The wall design shall be for a minimum 10 year wall life.

6. Modeling shall confirm the wall to be 914 m (3000 ft) long, 15 m (50 ft) deep, and be a grout sealed sheet piling design.

7. There will be a maximum 90 calendar day construction activity period.

8. Two weeks contingency will be scheduled for critical path items, and four weeks for non-critical path items.

9. Cultural resources shall not impact the project schedule.

10. Wall decontamination and decommissioning cost estimates shall be included in the projects cost estimates.

9.2 PUMP AND TREAT SYSTEM ASSUMPTION LIST

1. All regulatory and Permit requirements will not be waived except for the wastewater discharge to the 1325-N Crib.

2. The 1325-N Crib will be used for liquid effluent disposal. EPA and State of Washington waivers for discharge of wastewater not meeting drinking water standards will be available.

3. Well pump tests conducted in May/June 1994 will characterize the inlet stream to the pump and treat system. Reasonable characterization of the effluent streams will be calculated from simulated process data.

4. Water Resources Engineering will provide geohydrologic support to the project. Their duties include the following:

   - Determine how to effectively deliver 150 gpm of groundwater to the pump and treat system, including an evaluation of existing wells, and design of new wells and configuration as warranted.

   - Saturated flow groundwater modeling impacts from groundwater withdrawal associated with a 150 gpm pump and treat system.

   - Model impacts of groundwater discharge to the 1325-N Crib. For contingency, if the 1325-N Crib cannot be used, evaluate the feasibility of the following effluent systems:

     - Reverse wells--quantity, design, and configuration
     - Pump to 200 Area--distance, # of lift stations, equipment
     - Ground transport to 200 Area--# of trucks per day
     - Discharge directly to Columbia River
     - Evaporation Pond - Liquid Effluent Retention Facility

5. The pump and treat system will have an operational lifetime of 10 years, as specified by the Engineering Evaluation/Cost Analysis, and run 90% of the time.

6. Due to new DOE rulings, the pump and treat facility will be designated a Category 3 Nonreactor Nuclear Facility. Under this classification, accumulated amounts of strontium-90 cannot exceed 16 Ci.

7. Two weeks contingency will be scheduled for critical path items, and four weeks for non-critical path items.

8. Cultural Resource Review activities will be conducted by appropriate personnel and will not impact the project schedule.

9. Decontamination and decommissioning of the pump and treat system will be included in all schedules, budgets, and plans.

10.0 REFERENCES

Buckmaster, M.A., 1993, *Project Management Plan, 200-BP-1 Crib 216-B-57 Surface Barrier*, WHC-SD-EN-PMP-005, Rev. 0, Westinghouse Hanford Company, Richland, WA

DOE, 1991, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy, Washington, DC

DOE-RL, 1991, *Project Management System*, DOE Order 4700.1A, U.S. Department of Energy, Richland Operations Office, Richland, WA

Ecology, EPA, and DOE, *Hanford Federal Facility Agreement and Consent Order*, Richland, WA, 1989.

Ecology, EPA, and DOE, *Hanford Federal Facility Agreement and Consent Order Change Package*, Richland, WA, 1991.

Freeberg, R.D., 1993, "Environmental Restoration Program Direction: Response to Settlement of Hanford Federal Facility Agreement and Consent Order Milestone M-14 Dispute", (Letter 9302454 to WHC President)

APPENDIX A

N Springs ERA Work Breakdown Structure

SHEET PILE BARRIER WBS

1. Site Assessment
   - a. Generate stratigraphy report based on wells along river bank
     - a1. Need to install 10 auger holes to further define stratigraphy
     - a2. Issue revised stratigraphy report showing new data
   - b. Generate required permits and regulatory documents
     - b1. National Environmental Policy Act of 1969 (NEPA) (Environmental Assessment [EA] and Finding of No Significant Impact [FONSI]) documents
       - Cultural Resources review
       - Department of Energy - Richland (DOE-RL) Approves EA
         - Indian Tribe Approval Required
         - Washington State Ecology Approval Required
     - b2. Wetlands review
       - Biological survey support (Pacific Northwest Laboratories [PNL])
       - Public Notice published in Federal Register
       - Assessment approved by DOE-Headquarters (HQ) Office of Environment, Safety, and Health (EH), part of EA
       - Floodplain Statement of Findings published in Federal Register, part of FONSI
     - b3. Hanford Reach Wild & Scenic River Act
       - National Park Service review
     - b4. Water Well Construction Act
       - Washington State Ecology approval
     - b5. Shoreline Development Permit
       - Benton County Planning Commission Approval
     - b6. National Pollution Discharge Elimination System (NPDES)
       - Notice of Intent to comply with NPDES Permit no. WA-R-10-000F "Construction NPDES Storm Water Permit"
       - Environmental Protection Agency (EPA) approval
     - b7. Clean Air Act
       - Construction activity notification
       - Washington State Ecology approval
     - b8. Department of Energy (DOE) Order 5400.5
       - Radiological Work Permit
   - c. Generate Point Of Contact checklist by Regulatory Program Integration
   - d. Rad survey riverbank access road for wall construction equipment to use
     - if only spot contamination, then decontaminate
   - e. Modeling
     - wall location, length, and depth
     - monitoring well locations, depth, construction type
   - f. Plant Forces Work review

2. Design & Construct Procurement Specification
   - a. Department of Labor Wage determination (minimum 90 days)
   - b. Commerce Business Daily Notice
     - Identify companies interested in bidding
   - c. Write Design & Construct Spec
     - Wall shall be Grouted Hinge Design Sheet Piling Vibratory Driven

- Wall length is 914 m (3000 ft), and depth is 15 m (50 ft) (Need modeling to verify)
- Wall shall be located between the high water mark and shoreline road (Need modeling to verify)
- Install a monitoring well at each wall end and at the midpoint on the river side of the wall
- Incorporate stratigraphy report and topographic maps
- Contractor shall provide Health Physics Technician (HPT) required coverage
- Contractor shall restrict all construction activities to existing river bank road system. Off road activities are forbidden due to potential surface radiation contamination.
- Contractor personnel shall be rad worked qualified. Training shall be performed by Westinghouse Hanford Company (WHC) Training.
- Provide Quality Assurance Plan
- Provide Safety Plan
- Construction duration shall not exceed 90 calendar days
- As Low As Reasonably Achievable (ALARA) Plan

d. Review spec
e. Release spec for bid
f. Bidder site tour and clarification meeting
g. Issue addendum(s)
h. Review Bids
i. Best and Final Bid
j. Negotiations
k. Equal Opportunity Review (30 days)
l. Award Contract

3. Construction Activities
   a. Perform 80% and 100% design review
   b. Obtain necessary permits and approvals
   c. Rad worker train construction forces
   d. Mobilize construction equipment and material
   e. Install monitoring wells and collect samples for baseline data
   f. Mobilize
   g. Readiness Review, Safety Plan Review
   h. Field construction
   i. Demobilize
   j. Acceptance testing
   k. AS built drawings (Program Engineer [PE] stamped)

4. Monitor wall effectiveness
   a. Produce monthly effectiveness reports to regulators

5. Decommissioning
   a. Remove wall

PUMP AND TREAT SYSTEM WBS

1. Site Assessment
   a. Generate regulatory documentation
      - Regulatory support will address and cover air/water emissions, and hazardous/mixed/radioactive waste disposal
      - Intent of all Applicable Relevant and Appropriate Requirements (ARAR's) must be satisfied
        a1. NEPA-DOE
            - Categorical Exclusion (CX) for 100-NR-2 Groundwater remediation
            - Cultural Resources Review
            - National Park Service Review
        a2. Clean Air Act-Ecology
            - National Ambient Air Quality Standards (NAAQS) for ambient and emitted hazardous and radioactive contaminants
        a3. Clean Water Act-EPA
            - Shoreline Permit under WAC 173-18.040
            - Regulates storm water runoff
        a4. Safe Drinking Water Act-EPA
            - Maximum Contaminant Level/Goals (MCL/MCLG's) for hazardous and radioactive contaminants. For strontium-90, MCL = 42 pCi/L, for Tritium, MCL = 69040 pCi/L
            - Regulates use of injection wells for effluent disposal
        a5. Model Toxics Control Act
            - Provides post-action groundwater purity standards
        a6. DOE Orders
        a7. Resource Conservation and Recovery Act (RCRA)
            - Regulate use of the 1325 Crib as a Treatment, Storage and Disposal (TSD)
            - Designate solid and liquid hazardous waste (Metals/organics)
        a8. Water Pollution Control Act
            - 216 Permit--controls effluent discharge to waters
        a9. Water Well Construction Act
        a10. Nuclear Regulatory Commission
   b. Generate Point of Contact checklist through Regulatory Program Integration
   c. Submit Plant Forces Work Review package to determine extent of applicability of the Davis-Bacon law to the construction of the pump and treat system
      - Kaiser will conduct any site preparation activities and drill new wells
   d. Develop and run simulations using analytic models
      d1. Identify usable groundwater extraction near the 1325 Crib
      d2. Determine groundwater flow pattern for discharges to the 1325 Crib
          - The wells around 1325 will be insufficient to produce the necessary inlet flowrate of 150 gpm. Approximately 8-10 new extraction wells will need to be constructed
          - If the liquid effluent cannot be discharged to the 1325 Crib, it must be directly discharged to the river, pumped to the 200 Area for treatment/disposal,

trucked to the 200 Area for disposal, or evaporated. Should the water be pumped to the 200 Areas, approximately 40,000 feet of pipe and at least one lift station would be necessary. Should the water be trucked to the 200 Area, one truck every 18 minutes would be needed.

e. Perform well pump tests on existing wells to determine flowrates and average steady-state strontium-90 concentrations
   - With the present wells, it has been documented that only two are capable of producing an effective flowrate. The concentration of strontium-90 in these wells is small, however. These tests will be repeated for selected existing wells.
   - If the wells are pumped hard, the concentration of strontium-90 will be large at the start and taper exponentially over time. Therefore, it is important that the steady-state concentrations for each well be determined.

f. Perform utility surveys to identify closest electrical, sanitary water, sewer, and telephone service tie-ins
   - All of these items are essential to site operations, and extensions from existing systems at 100-N will have to be constructed

g. Rad Engineering identify radiological control requirements by generating a Hazard Analysis per DOE-STD-1027-92 and RL-STD-01-94. Skyshine must be included in this analysis.

2. Turn Key Design and Construct Procurement Specifications

a. Department of Labor Wage Determination
   - Will take at least 3 months

b. Commerce Business Daily Notice
   - Identifies potential design/construction companies

c. Generate design and construction specifications
   - Contractor must specify their Operations & Maintenance requirements in their bid package

   c1. Provide contractor with equipment operational requirements
      - Complete an effective process control system, complete with interlocks, alarms, and data recorders for automated operation
      - Ion-exchange treatment used as the first treatment stage
      - System availability must be at least 90%
      - Facility must incorporate extra ports to allow for series and parallel apparatus associated with additional treatment processes and pilot testing of new technologies
      - Facility must include a remotely-operated waste compactor and storage area
      - Liquid effluent to be discharged to the 1325 Crib
      - System must be operational year-round (Climate-controlled)
      - Maximum inlet concentrations of strontium-90 = _____

   c2. Provide contractor with other operational requirements
      - Contractor must provide a health and safety plan
      - Contractor must provide all required HPT coverage

- All construction personnel must be certified as Radiation Workers by Hanford training
- All applicable Quality Assurance requirements must be met
- Contractor must provide one year's supply of spare parts and exchange elements

c3. Provide contractor with facility requirements
- Location and size of site will be provided to the contractor
- Facility must be designed and constructed as a Category 3 Nonreactor Nuclear Facility--accumulated strontium-90 must not exceed 16 Ci at any time (DOE-STD-1027-92)
- Safety requirements must be determined and met
- Site will be serviced by a new all-weather road and required utilities

c4. Provide review cycle for design and construction bids
- Category 3 Nonreactor Nuclear Facility design requirements
- 50% and 80% design review requirements

d. Procurement cycle
- d1. Review specifications
- d2. Release specifications for competitive bids
- d3. Bidder site tour and clarification meeting
- d4. Issue Addendum(s)
- d5. Review bids
- d6. Accept Best and Final Bids
- d7. Hold negotiations
- d8. Perform Equal Opportunity Review (1 month)
- d9. Award contract

3. System Construction

a. Construction Activities
- a1. Perform 50%, 80%, and 100% design reviews
- a2. Certify construction personnel as Radiation Workers through Hanford training
- a3. Mobilize construction equipment and material
- a4. Install required utilities and telephone system
- a5. Install winterized supply and discharge pipes
- a6. Construct all-weather road
- a7. Construct facility
- a8. Generate Acceptance Test Plan
- a9. Perform Acceptance Test
- a10. Complete As Built PE stamped drawings of facility

4. Operations Requirements

a. Generate operational documentation as required by regulations
- a1. Conduct of Operations Review
  - Readiness Review
- a2. Generate waste management plan
  - Maintain strontium-90 inventory below 16 Ci
  - Identify waste disposal locations and procedures
- a3. Generate Safety Analysis Report (SAR) per 10 CFR Part 830 and DOE-STD-1027-92
- a4. Write Plant Operating Procedures (POP)

- Daily operations
- Emergency response plans

a5. Write Maintenance procedures
a6. Create Deactivation Plan
a7. Define operational goals
- 90% stripping efficiency of strontium-90
- Support pilot testing of new and alternative technologies
- Follow ALARA principles
- No personnel injuries

a8. Submit Plant Forces Work Review application to determine applicability of Davis-Bacon laws
a9. Plant operators will be adequately trained

5. Plant Start-up and Operations
   a. Plant Start-up
   b. Produce monthly effectiveness reports to regulators
   c. After 3 months of operations, assess performance
      c1. Report quantity of strontium-90 stripped
      c2. Report quantity of other contaminants stripped, if possible
      c3. Cost effectiveness report
      c4. Revised 10-year budget using cost effectiveness data

6. Decommissioning
   a. Generate decommissioning plan
      - Budget for decommissioning should be included