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Explanation of Significant Difference

From the

Final Record of Decision for the

Naval Reactors Facility - Operable Unit 8-08

Idaho National Engineering and Environmental Laboratory

Prepared for the
U.S. Department of Energy
Pittsburgh Naval Reactors Office
Idaho Brach Office
P.O. Box 2469
Idaho Falls, Idaho 83403-2469

JUN 2 8 2002

Environmental Cleanup Office

Kathy/Margie

A copy of the Explanation of Significant Difference From the Final Record of Decision for the Naval Reactors Facility – Operable Unit 8-08 Idaho National Engineering and Environmental Laboratory is enclosed with comments incorporated. This copy is ready for signature. A final copy with all signatures will be remitted when complete. Contact Tony Dull (208) 533-5755, Mark Hutchison (208) 533-5509 or me (208) 533-5513 if we can be of further assistance or if you have questions. Thanks.

Kelly D. Willie
Environmental Remediation
Naval Reactors Facility

RECEIVED

JUL 1 9 2002

Environmental Cleanup Office

Margie and Kathy

This is the most recent copy of the ESD with an original NRF sign-off sheet. Let us know if we can be of further assistance.

NRF Environmental Remediation.

Signature Sheet

Signature sheet for the Explanation of Significant Difference to the Record of Decision for Operable Unit 8-08, located in Waste Area Group 8, Naval Reactors Facility at the Idaho National Engineering and Environmental Laboratory, between the U.S. Department of Energy and the Environmental Protection Agency, with concurrence by the Idaho Department of Environmental Quality.

L. John Iani, Regional Administrator
Region 10
U.S. Environmental Protection Agency

11 July 2002
Date

Signature Sheet

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C. Stephen Allred, Director
Department of Environmental Quality

7/8/02
Date

Signature Sheet

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Stephen L. Dunn, Acting Manager
U.S. Department of Energy
Naval Reactors Idaho Branch Office

16 July 2002
Date

1.0 Introduction

This document presents an Explanation of Significant Difference (ESD) from the Final Record of Decision (ROD) for the Naval Reactors Facility (NRF), Operable Unit 8-08, signed in September 1998 by the United States Department of Energy, Naval Reactors, Idaho Branch Office (DOE-NR), the United States Environmental Protection Agency (EPA) Region 10, and the Idaho Department of Health and Welfare, Division of Environmental Quality (IDHW-DEQ), now identified as the Department of Environmental Quality (DEQ). The ROD was signed pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the December 1991 Federal Facility Agreement and Consent Order (FAA/CO) entered into by DOE-NR, EPA, and DEQ. This ESD discusses the modification of remedial actions at the Old Sewage Basin (NRF-21A), which is one of nine sites where remedial actions are being performed per the ROD.

Site name and location:

Naval Reactors Facility – Waste Area Group 8
Operable Unit 8-08, Site NRF-21A, Old Sewage Basin
Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho

The lead agency for the remedial action at NRF-21A is DOE-NR. The EPA and the DEQ both concur with, and agree with the need for, this modification to the selected remedy. These three agencies participated jointly in the review of new information and in the decision-making that led to the preparation of the ESD.

The ESD has been prepared in accordance with Section 117(c) of CERCLA and 40 CFR 300.435 (c) (2)(I) to explain the needed modifications to the selected remedy identified in the ROD.

This ESD and other relevant documents will become part of the Administrative Record file pursuant to Section 300.825 (a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Copies of this ESD and the Administrative Record are available to the public in the following regional INEEL Information Repositories.

DOE Public Reading Room
INEEL Technical Library
1176 Science Center Drive
Idaho Falls, Idaho

University of Idaho Library
U of I Campus
Moscow, Idaho

Shoshone-Bannock Library
HRDC Building
Bannock & Pima Streets
Fort Hall, Idaho

INEEL Boise Office
805 W. Idaho St.
Boise, Idaho

2.0 Summary of Site History, Contamination Problems, and Selected Remedy

The INEEL covers an area of approximately 890 square miles, and is located on the northern edge of the Eastern Snake River Plain. The Naval Reactors Facility is located on the north central portion of the INEEL approximately 55 miles west of Idaho Falls, Idaho. Figure 1 is a map showing the location of NRF in relation to the INEEL. NRF covers an area of approximately 90 acres inside a security fence. NRF controls an area several times this size outside the security fence (including NRF-21A). NRF was established in 1949 as a testing site for the Naval Nuclear Propulsion Program. Bechtel Bettis, Inc. operates NRF for DOE-NR.

This ESD modifies the selected remedy for site NRF-21A, which was formally investigated as part of the NRF Comprehensive Remedial Investigation/Feasibility Study (RI/FS) completed in October 1997. The remedy selection for this site was discussed in the Final Record of Decision completed September 1998.

NRF-21A, the Old Sewage Basin, was constructed in 1956 and was enlarged in 1957. It is located outside and southeast of the security fence. Figure 2 shows the relationship between the original basin and the expanded basin. NRF-21A was operated as an open pond until 1960 and was subsequently filled in and abandoned. In 1956, the basin was cross-contaminated from the radiological discharge system. During an investigation of the site in 1991, and again in 1996 during the Remedial Investigation, samples were collected from the basin area. Results from the investigations indicated the presence of nine contaminants of potential concern (COPCs). The list of COPCs included antimony, arsenic, cadmium, chromium, mercury, silver, N-nitrosodi-n-propylamine, cobalt-60, and cesium-137. Only Cesium-137 was detected at concentrations that would pose an unacceptable risk via direct exposure to potential receptors at this site. On the basis of sampling results, the RI/FS concluded that the extent of contamination requiring remediation was limited to a two-foot thick layer located near the discharge pipe at the bottom of the original basin. The RI/FS estimated the volume of contaminated soil for this site at 10,400 cubic feet, based on a 72 X 72 square foot area with a two-foot thickness.

The decision to remediate site NRF-21A and other Operable Unit 8-08 sites at NRF was presented to the public in the January 1998 Proposed Plan. Following review and response to public comments, the preferred alternative was selected in the ROD, which was signed in September 1998. The selected remedy was identified as Alternative 3: "Limited Excavation, Disposal and Containment." The ROD and the Phase I Remedial Design/Remedial Action (RD/RA-I) Work Plan established that site NRF-21A would be remediated as follows:

- Excavate underground piping and contaminated soil;
- Characterize the concrete piping debris;
- Package the piping debris for off-site (away from NRF) disposal;
- Excavate contaminated soil in the sewage basin;
- Package contaminated soil in soft-sided containers, and consolidate these in the S1W Leaching Beds (site NRF-14), along with contaminated soils from other contaminated Operable Unit 8-08 sites;
- Perform confirmatory sampling;
- Return excavation site to pre-existing conditions.

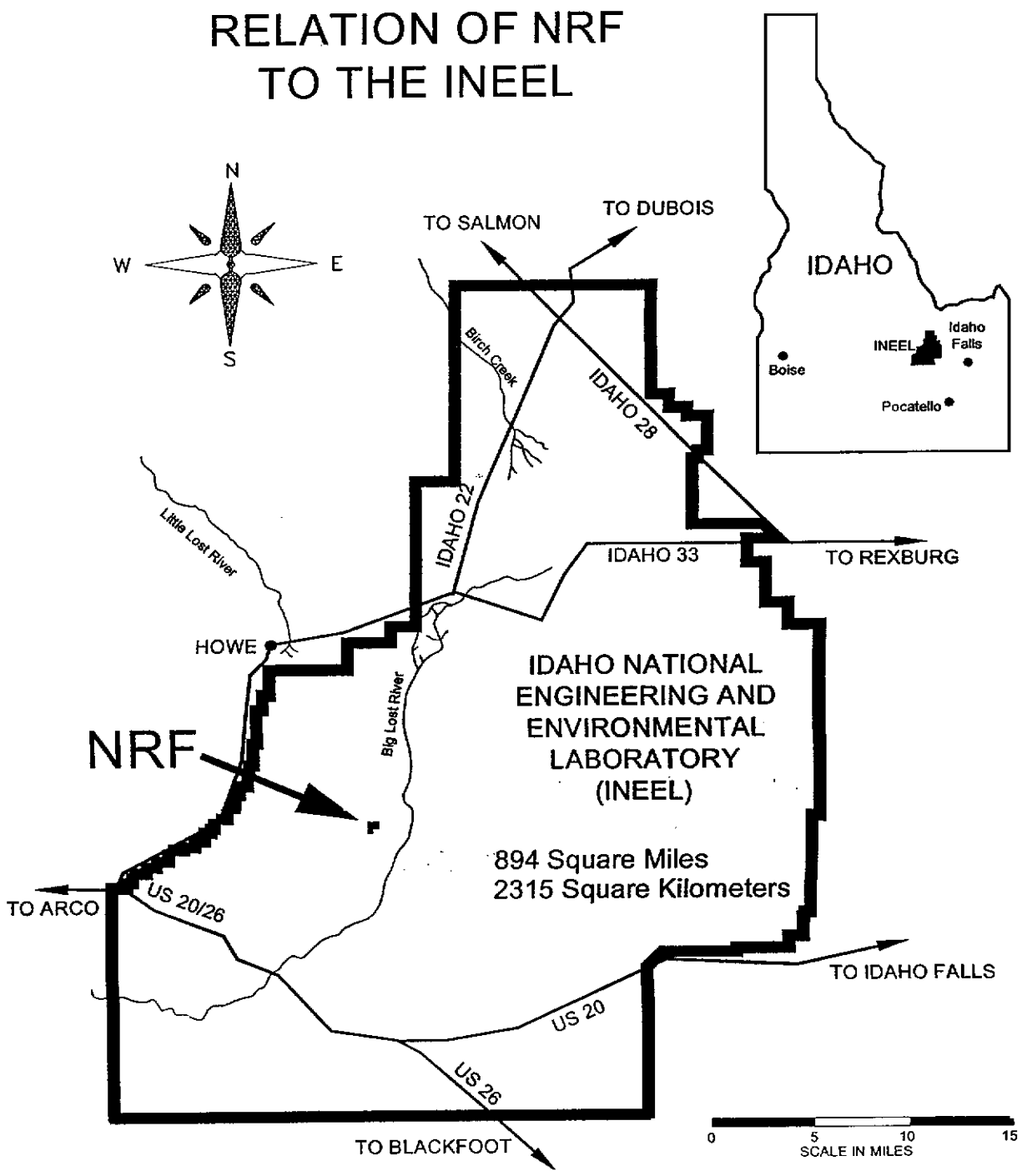

Figure 1 Location of NRF in Relation to the INEEL

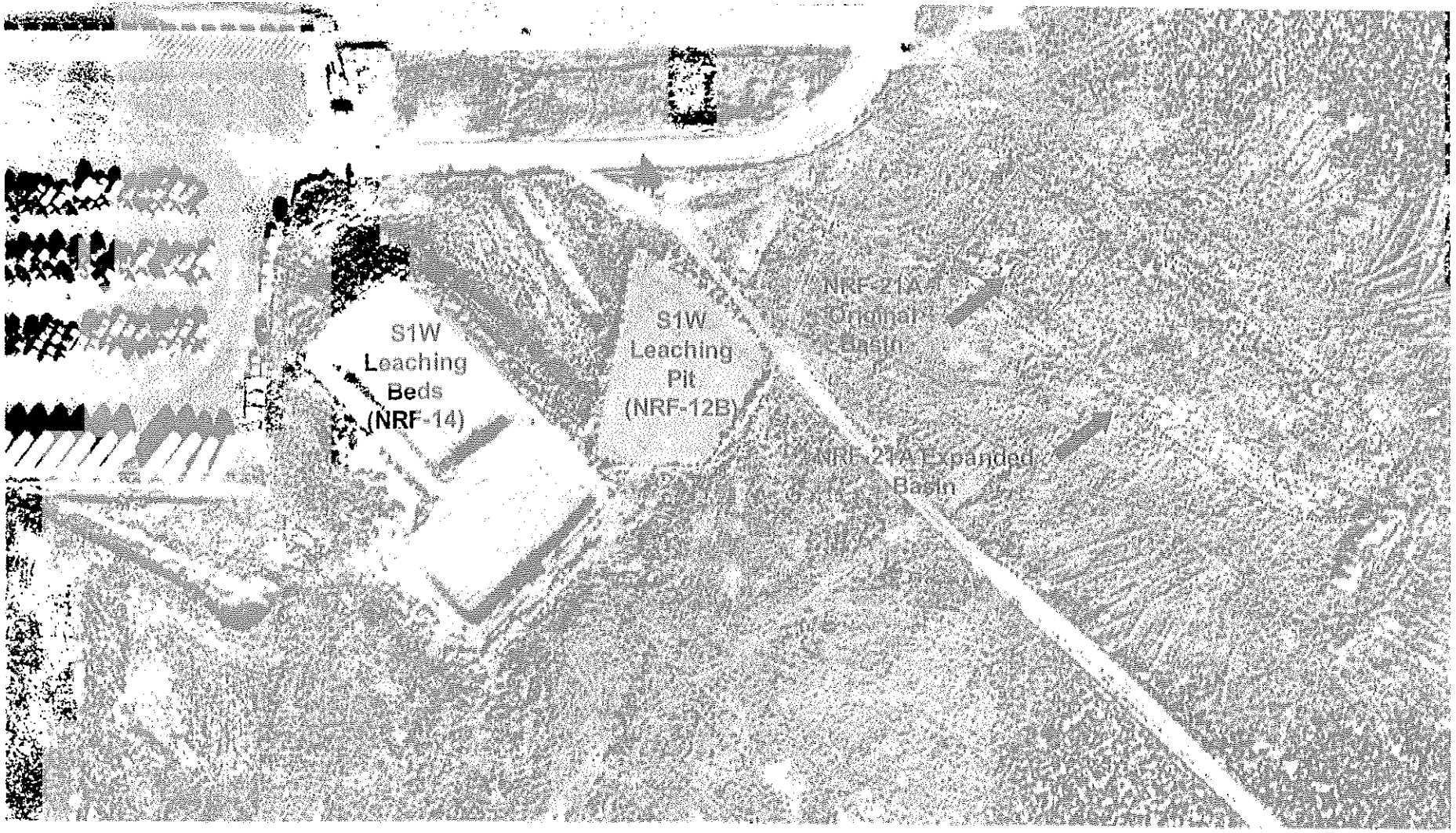

Figure 2 The Relation of Original Basin to the Expanded Basin

Following consolidation of contaminated soils from NRF-21A, NRF-12A, NRF-19, NRF-80, and NRF-17 in the S1W Leaching beds, the ROD specified that the NRF-14 site, the S1W Leaching Pit (site NRF-12B), and the A1W Leaching Bed (site NRF-19) will be capped with engineered covers of earthen materials. Contaminated soils from NRF-12B, NRF-14, and NRF-19 will be covered in place and not removed because these three sites are expected to have the greatest volumes and highest concentrations of contaminated soils. The Agencies determined that capping these three sites is the most cost-effective, implementable remedial alternative that best mitigates short term risks to workers by limiting exposure to the most contaminated soils. The selected remedy includes soil and groundwater sampling to monitor any potential releases from the covered areas and periodic inspection and maintenance of the covers to ensure their integrity.

3.0 Basis for this Document and Description of Significant Differences

3.1 New Information

Remedial Action excavations conducted at site NRF-21A in 2000 and 2001 revealed that contamination at this site is significantly more extensive than originally estimated based on the RI sampling. The RI/FS estimated the volume of contaminated soil for this site at 10,400 cubic feet. Approximately 23,300 cubic feet of contaminated soil was removed from NRF-21A during the 2000-01 field seasons. Exploratory test trenches excavated in 2001 indicate that the site length is approximately 4.7 times the ROD estimate. The ROD estimated the original contaminated basin length to be 72 feet, but the new information revises this estimate to 340 feet. The revised estimate of contaminated soils that would require excavation under the existing remedy is 93,800 cubic feet, which is approximately nine times the estimate in the finalized RD/RA-I Work Plan.

3.2 Impacts to the Selected Remedy

The new information results in significant impacts to the cost, schedule, and implementability of the selected remedy. These impacts are discussed below, and form the basis for the remedy modifications presented in this ESD.

On the basis of the increased basin dimensions described above, the estimated amount of soil that remains to be remediated is approximately 70,500 ft^3. This corresponds to 353 additional soft-sided containers of contaminated soil that would need to be transported to the NRF-14 consolidation and disposal location. This increased scope would result in an increased cost of approximately $2,400,000 to complete remediation activities at site NRF-21A (i.e., the excavation, transportation to NRF-14, confirmatory sampling, and site restoration). This amount is considerably higher than the original estimate of approximately $700,000 for NRF-21A.

The RD/RA-I Work Plan completion goal for NRF-21A was November 30, 2001. The additional work required to remove 70,500 ft^3 of soil would delay completion of the project at least 1 year. This delay in completion could, in turn, delay the planned completion of the construction of the engineered cover over the S1W Leaching Beds, since this is the location where the soil was to be consolidated. Finally, the increased volume of contaminated soil that site NRF-21A would generate would make the overall OU 8-08 Limited Excavation, Disposal, and Containment remedy much more difficult to implement. The S1W Leaching Beds are currently expected to hold approximately 980 containers. The addition of 353 containers to the projected number of total containers produced at NRF would exceed the capacity of the S1W Leaching Beds. The additional cost to send 353 containers to an off-site location is estimated to be between

$260,000 and $1,046,000 ($100 to $400 per cubic yard). If sending the containers off-site is not attainable, additional costs to expand the S1W Leaching Beds would be incurred with further potential ramifications being delays in the construction of the engineered cover over the Leaching Beds, and additional costs associated with increasing its size.

3.3 Description of Significant Differences

On the basis of the new information and potential impacts described above, the Agencies have determined that the following changes to the selected remedy will be implemented for the NRF-21A portion of the OU 8-08 selected remedy. The remedy, with these changes, remains equally protective of human health and the environment to the original remedy in the ROD. In fact, the changes to the selected remedy for NRF-21A are consistent with the ROD-selected remedy for the NRF-19, NRF-14, and NRF-12B where engineered covers were chosen rather than excavation of a large volume of contaminated soil.

Removal of the NRF-21A buried piping to the basin area, with its associated contaminated soil, will proceed as described in the Final ROD. Instead of removing the contaminated soil at the basin, the present excavation will be secured and filled. The 3 foot mounded area presently over the basin will be removed, and an engineered cover will be designed and constructed over the basin. The area to be covered is approximately 340 feet by 80 feet as shown in Figure 3. An initial assessment shows that a minimal soil cap can cover the majority of the area since contamination is not present until the 8 foot depth in the elongated portion of the basin. Contamination above cleanup levels, as close as 4 feet from the surface, has been detected in the original part of the basin and a slightly thicker cover may be required in this area. It is estimated that a 2 ½ to 3 foot thick cover (above natural grade) over the entire basin will be constructed. The design phase of the cover will consider factors such as subsidence, erosion, runoff, infiltration, and biotic intrusion, and will be documented in the Phase II RD/RA Work Plan. The modified remedial action option (an engineered cover) can be planned and constructed in conjunction with the cover planned at the S1W Leaching Beds (see Figure 3 above). Construction can proceed at both locations simultaneously.

The modified remedy will include periodic inspections and maintenance of the new NRF-21A engineered cover, soil and groundwater sampling of the area to monitor for potential releases, and establishing fencing or other barriers and land use restrictions for NRF-21A. In addition, because this modification will result in radiological substances above risk-based levels remaining at NRF-21A, this site will be added to the five year review cycle for other OU 8-08 sites where contaminated soils remain in place, to ensure that the remedy continues to provide adequate protection for human health and the environment.

The cost for construction of the engineered cover is estimated to be between $250,000 and $300,000. This represents a cost savings of approximately $2,100,000 compared to the cost of the existing remedy for NRF-21A. The institutional controls and monitoring requirements for the cover at NRF-21A would be similar to those required at the NRF-14 area, which is adjacent to NRF-21A, and would minimize any additional costs associated with these post-remedial action tasks.

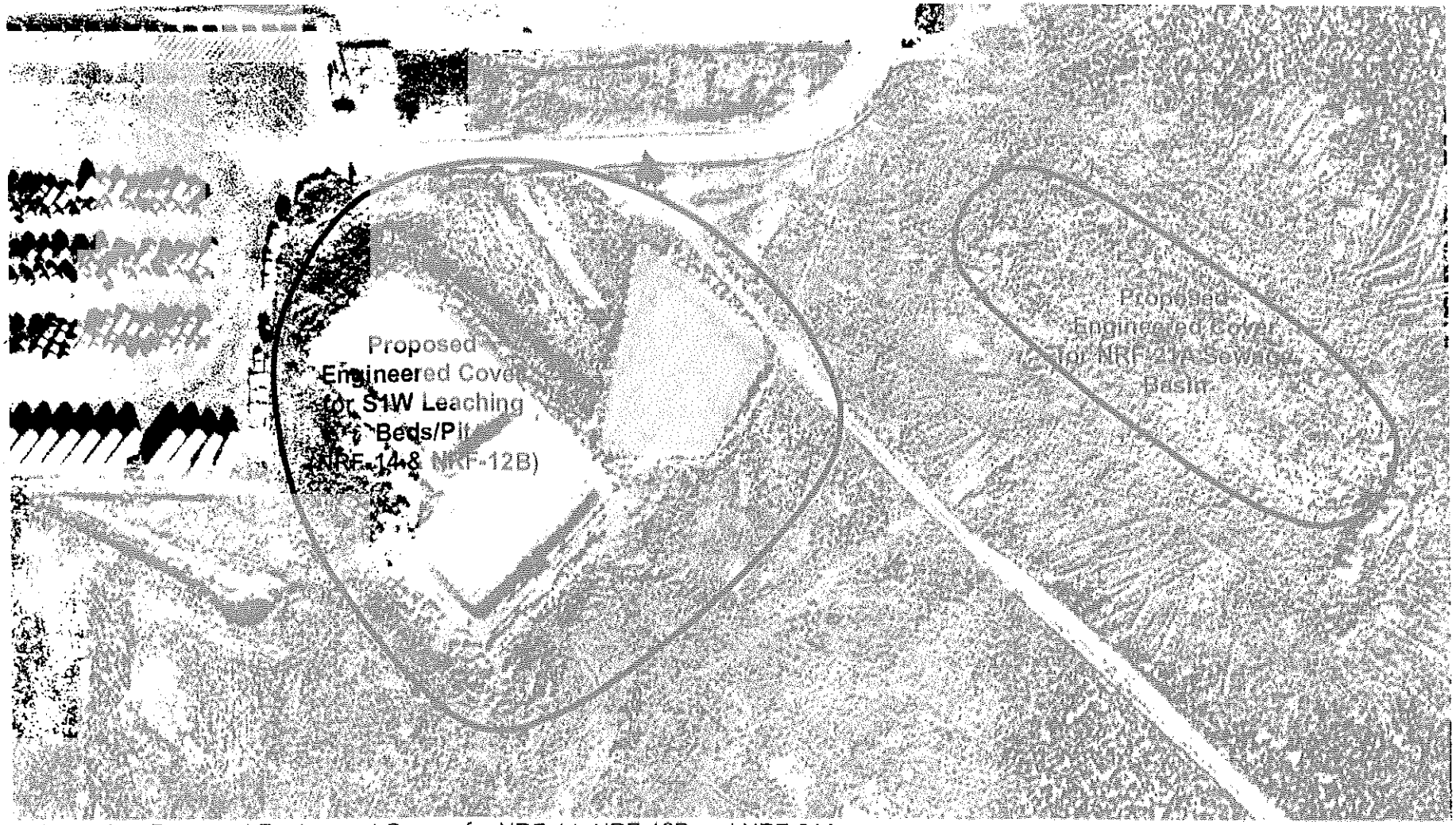

Figure 3 Proposed Engineered Covers for NRF-14, NRF-12B and NRF-21A

4.0 Affirmation of the Statutory Determination

Considering the new information that has been developed and the changes that have been made to the selected remedy, the modified remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

5.0 Public Participation Activities

This ESD has been published and a notice placed in the Post Register (Idaho Falls), the Idaho State Journal (Pocatello), the Sho-Ban News (Fort Hall), Times News (Twin Falls), Idaho Statesman (Boise), and the Daily News (Moscow). This ESD and the contents of the Administrative Record are available for public review, consistent with the NCP Section 300.435(c)(2)(I). As modified from the original ROD, this action does not represent a fundamental change in scope or purpose; therefore, a formal comment period will not be conducted.

The public is encouraged to review this ESD and other relevant documentation in the Administrative Record and provide comments to any of the Agencies involved. Additional information may be requested within 14 days of the notice of issuance for this ESD by contacting:

Erik Simpson
INEEL Community Relations Plan Office
P.O. Box 2047
Idaho Falls, ID 83403-2047
(208) 526-4700