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Draft Interim Close-Out Report North Slope (Wahlake Slope) Expedited Response Action, Hanford, Washington

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North Slope (Wahluke Slope) Expedited Response Action
U.S. Department of Energy Hanford Site
Richland, Washington****I. SUMMARY OF SITE CONDITIONS AND ACTIVITIES****Site Description**

The North Slope, commonly known as the Wahluke Slope, represents about 140 square miles of the Hanford Site. The name "North Slope" comes from its geographical relationship with the rest of the site (Figure 1). The area is north and northeast of, and across the Columbia River from, Hanford's main facilities.

Historically tribal land, the area was homesteaded by pioneers before it was taken by the federal government in 1943 as a security buffer to protect Hanford's defense production facilities. Anti-aircraft artillery and missile sites were located on this land; plutonium production plants or storage facilities were never built there. A brief description of the site is presented here. A more complete account can be found in the *North Slope (Wahluke Slope) Expedited Response Action Cleanup Plan* (DOE/RL-93-47).

A total of seven (7) anti-aircraft gun emplacements and three (3) Nike-Ajax missile positions were located on the North Slope. As the defense requirements for Hanford changed, these positions were deactivated in 1960-1961 and were eventually razed in 1974. The U.S. Department of Energy (DOE) currently leases approximately 25-percent of the North Slope area to the U.S. Fish and Wildlife Service. The remaining 75-percent is leased to the Washington State Department of Wildlife, and is operated as a wildlife management unit open to the public during daylight hours.

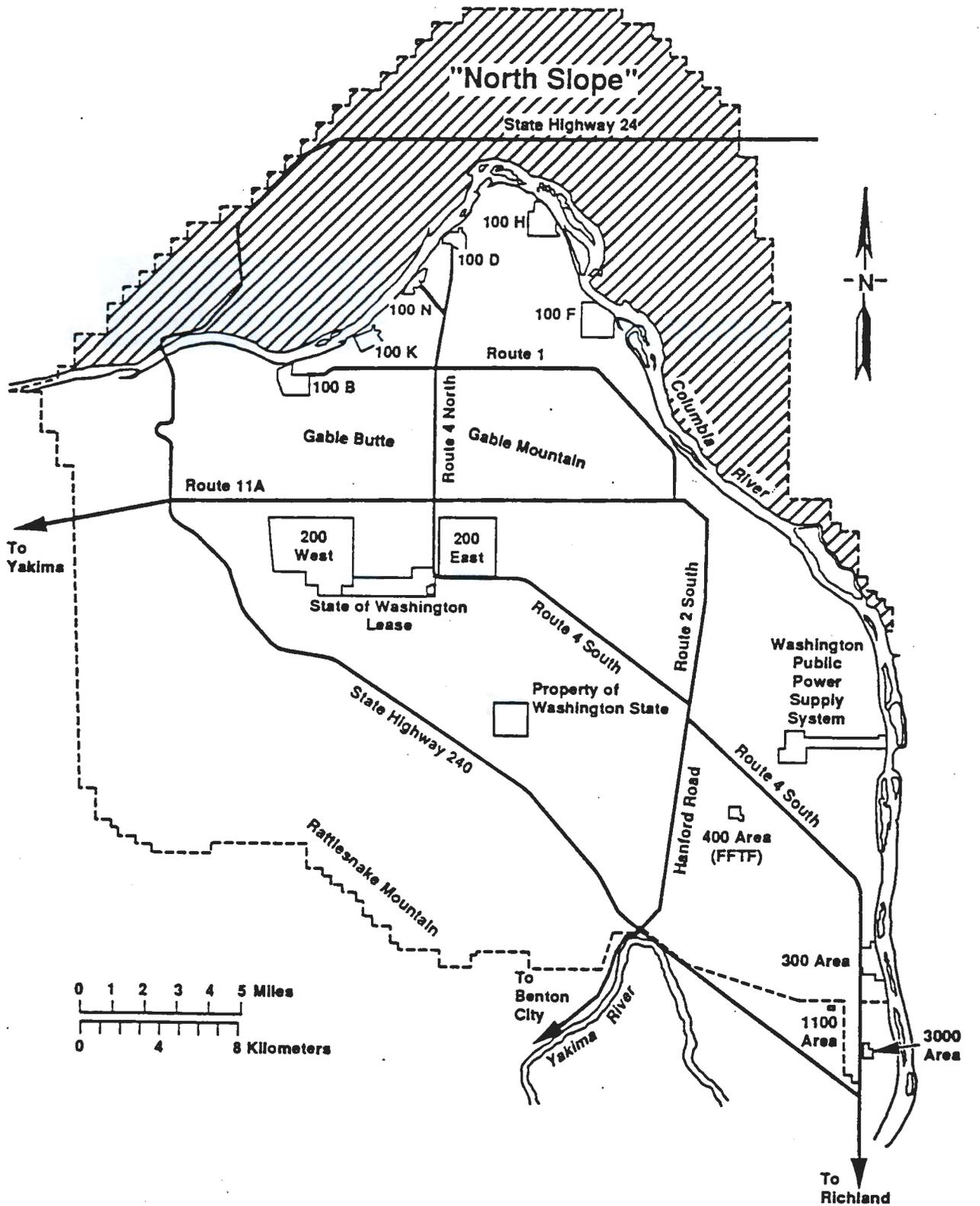
In 1989 and 1990, an investigation of the North Slope was performed by DOE to assess the potential health, safety, and environmental concerns raised by the Washington State Department of Ecology (Ecology) and the public. As a result of that survey, 39 sites (Figure 2) associated with military or homesteading activities were identified as having the potential for environmental contamination.

Expedited Response Action Cleanup Plan

The 100 Area of the Hanford Site was placed on the National Priorities List (NPL) in November of 1989, pursuant to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. 9601 *et seq.* Based on undocumented past practices, three North Slope sites, the H-06-L Nike missile launch site, the H-06-C Nike missile control site, and the 2,4-D disposal site, were identified as sub-units within the 100-IU-3 Operable Unit (OU) of the 100 Area NPL site.

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Figure 1. Location of the Hanford Site North Slope.

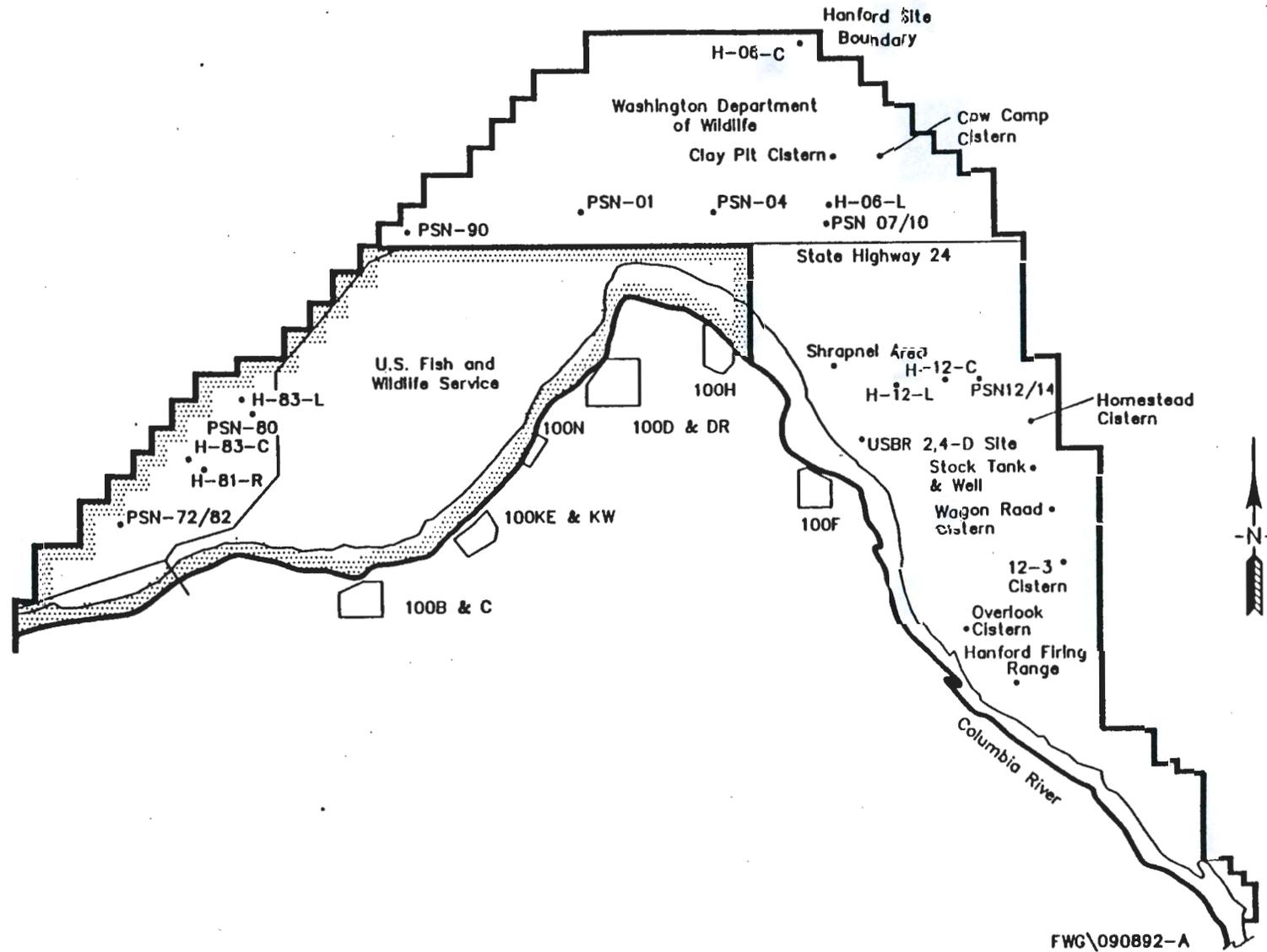


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Figure 2. Location of North Slope Waste Sites.



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In April of 1992, Ecology and the U.S. Environmental Protection Agency (EPA) recommended that North Slope sites be investigated and remediated using a non-time critical Expedited Response Action (ERA). A non-time critical ERA is utilized for releases requiring removal actions that can start later than 6-months after a determination that a response is necessary. In addition to the three sub-units comprising the 100-IU-3 OU, DOE agreed to evaluate the other 36 sites identified as having the potential for environmental contamination.

Field work for the ERA commenced in the summer of 1992. The 39 sites underwent limited characterization to determine if any significant environmental contamination existed. In October of 1993, the *Draft North Slope (Wahluké Slope) Expedited Response Action Cleanup Plan* (DOE/RL-93-47) was released for public comment. The document provided an in depth summary of the historical use of the North Slope and a discussion of the limited sampling activities conducted as part of the initial ERA process. No quantitative determination of risk to human health or the environment was made with respect to the levels of contaminants discovered. Although not extensively characterized, the military landfill sites were identified as having the highest probability of environmental contamination. Asbestos, asbestos-containing materials, organic solvents, petroleum products, and ordnance and explosive waste (OEW) were listed as potential constituents of landfilled waste. In addition to the landfill sites, two sites (PSN-90 and H-81-R drywell) were identified as having petroleum contaminated soil (PCS). Environmental hazards were not identified at any of the other sites. Several abandoned water wells, as well as numerous physical hazards were identified at the site.

The ERA cleanup plan outlined four remedial action alternatives: (1) No action - no attempts to remediate identified hazards would be made; (2) Hazard mitigation - physical hazards would be removed and identified environmental contamination (PCS) would be removed; (3) Hazard removal - environmental hazards in landfills would be removed in addition to the work described in the hazard mitigation alternative; and (4) Characterization and hazard mitigation - hazard mitigation would be performed and one military landfill would be fully characterized and remediated. Limited characterization of the remaining landfills would be driven by the contamination discovered under the full characterization of the first landfill. The decommissioning of the remaining water wells at each military position was included as part of each remedial alternative other than the no action. Estimated cost for each of the respective alternatives was \$0, \$1,159,790, \$3,396,020 and \$21,870,220.

Public Comment

Public comments on the ERA cleanup plan were accepted until January 8, 1994. An open public meeting was held on December 14, 1994 in Mattawa, Washington. A number of public comments were received by Ecology. The majority of comments concerned future land use issues and the eventual transfer of the land. Ecology acknowledged that this was a major issue but stated that the goal of the ERA was the cleanup of the land; land transfer issues were not considered. Questions were also raised over the high cost of the remedial actions. It was recognized that more than 99.5% of the area could be returned to acceptable levels for unrestricted land use at a potentially very low cost. The cost to clean up the

remaining 0.5% or about 400 out of approximately 90,000 acres, was perceived to be too high.

Action Memorandum

Based on these comments Ecology issued an Action Memorandum on March 17, 1994 recommending that full scale hazard mitigation and the proper abandonment of water wells be performed. The recommendation also called for investigation and remediation of the North Slope military landfills. The H-06-L landfill, considered to be both the biggest and suspected to contain the most hazardous waste, would be fully characterized (*i.e.*, anomalous areas identified within the landfill boundaries would be fully excavated to undisturbed or natural horizons; excavated materials would be field screened, sampled and analyzed off site if necessary). Materials identified as hazardous or regulated would be stockpiled for eventual treatment or disposal off site. The observational approach was recognized as having the potential to reduce costs by allowing characterization, and remediation if necessary, to take place concurrently.

Additional characterization and remediation of the other landfills would be dependent on the amounts and types of wastes found at the H-06-L landfill. It was reasoned that because the military sites were under the same command, similar operating practices would be in place for each. Therefore, using an analogous approach, environmental waste found at the H-06-L site would be expected to be present at the other sites. Similarly, if no environmental waste was discovered at the H-06-L site, the expectation was that the other landfills would also be free of contamination.

The Action Memorandum also required that DOE investigate the possible presence of ordnance burial pits on the North Slope. Ordnance, if found was to be handled and disposed of in accordance with current U.S. Army regulations.

Remedial Activities

In advance of the Action Memorandum, DOE proceeded with the mitigation of physical hazards from the North Slope as a landlord maintenance activity. Phase I of the physical hazards mitigation began in November 1993 and concluded in December 1993. Phase II activities began in June of 1994 and concluded in September of 1994. The objective of these actions was to eliminate tripping hazards, and remove trash and debris remaining at the old military sites. Numerous underground bunkers, septic tanks, and homestead cisterns were backfilled to eliminate the possibility of humans or wildlife from falling into them. Physical hazards such as exposed rebar at former military sites were removed to eliminate impaling and tripping hazards. Surface trash and demolition debris in the vicinity of the former military sites were removed. During the two phases more than 500 cubic yards (CY) of non-regulated trash and debris were removed and landfilled off site, and 100 CY of concrete were removed and sent to DOE's concrete recycling facility. Suspect material discovered during these activities (cans containing old paint, oil, and grease, and old batteries) were segregated and sent off site to the 163 N Pad for characterization and ultimate disposal.

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An ordnance and explosive waste record search was initiated in November of 1993. The search consisted of a records review and site visit, ordnance and explosive waste contamination analysis, and an archives search. The search concluded that there is a very small potential for the presence of OEW. Given the expanse of the North Slope, the likelihood of finding any ordnance through a field search would be minimal, and the costs would be great. Therefore, no further action was recommended.

Water well decommissioning began in June 1994 and was concluded in October 1994. In all, 9 water supply wells and one monitoring well were decommissioned in accordance with requirements set forth by Ecology. Localized contamination was discovered in three North Slope water supply wells. The contamination appeared to have been a result of vandals dumping oil and other debris down the well casing. In each case the contamination was contained within the casing. The oil and contaminated water were successfully purged from each well and the casings were steamed cleaned. Follow up water sampling and testing was conducted to confirm cleanup.

Full characterization and remediation at the H-06-L landfill began on April 19, 1994, approximately one month after the issuance of the Action Memorandum. Activities conducted consisted of geophysical investigations, excavation and field screening of buried wastes, sampling and analysis of suspect wastes, and segregation of confirmed hazardous or contaminated materials. Geophysical investigations employed electromagnetic profiling and magnetic techniques to locate buried metallic and non-metallic waste materials. Areas exhibiting anomalous geophysical response were marked in the field for subsequent excavation.

A bulldozer and trackhoe were used to uncover and excavate landfill cells and other buried wastes. Wastes were field screened using several criteria including visual observation, direct-reading instruments, and analyte-specific field analytical kits. Suspect wastes were sampled for characterization by an off site laboratory under a quick turn-around schedule. Materials confirmed as hazardous or contaminated by non-regulated substances (*i.e.*, petroleum hydrocarbons) were segregated pending determination of proper waste designation and disposition. Excavations were backfilled and compacted using non-hazardous materials and clean fill and graded to original conditions.

Approximately 600 CY of soil contaminated with the pesticide DDT, and its associated breakdown products were discovered at the H-06-L east landfill. This material was eventually disposed of at the Chemical Waste Management Hazardous waste landfill in Arlington, Oregon. At the H-06-L west landfill, more than 200 CY of PCS were found and disposed of at the New Waste Inc., PCS disposal facility in Pasco, Washington. Small amounts (six 55-gallon drums total) of soil contaminated with metals from paint, tar-like waste, and soil from beneath several pesticide cans were designated and sent to DOE's 616 waste facility. No ordnance or explosive waste was discovered.

Based on these discoveries, Ecology and EPA asked that the remaining North Slope disposal areas receive limited characterization and remediation. This would require excavation at each identified geophysical anomaly, however, full excavation of the anomaly

was not required. Instead, a 5-10 foot trench would be excavated through the length of the anomaly. Full excavations would only be required when field screening indicated the possible presence of contaminants.

North Slope landfill characterization and remediation concluded on August 11, 1994. A total of 17,900 CY of suspected waste materials were excavated and evaluated from 13 suspected former disposal sites. Besides a few dried paint chips, no other regulated materials were found. Approximately two cubic yards of PCS was discovered at the H-83-L disposal site.

Approximately six cubic yards of PCS, which were not associated with any disposal areas, were discovered at sites PSN-01 and PSN-80 in the vicinity of the well structures. Approximately 35 CY of soil from the vehicle rack at PSN-90, were found to be contaminated with denitrotoluene, a dangerous waste, in addition to petroleum hydrocarbons. These wastes were disposed of at the Chemical Waste hazardous waste landfill facility.

In July of 1994, four exploratory holes were drilled under the buried tanks at the 2,4-D site. The tanks were first located using a magnetometer. The holes were drilled at an incline in order that samples could be obtained from directly beneath the tanks. Eighteen samples were taken. No samples detected 2,4-D and/or its breakdown products.

Detailed field reports on specific activities conducted on the North Slope are contained in *A Compendium of Field Reports for the North Slope (Wahluke Slope) Expedited Response Action* (DOE/RL-94-139).

II. DEMONSTRATION OF QA/OC FROM CLEANUP ACTIVITIES

Workplans for remedial actions were carefully reviewed by Ecology, EPA, DOE and U.S. Army Corps of Engineers (USACE) for compliance with all EPA, DOE and USACE quality assurance/quality control procedures and protocol. Field procedures followed standard operating procedures and were thoroughly documented. Samples were collected, shipped, and analyzed under strict chain-of-custody requirements and according to approved EPA analytical methods. A portion of all samples was provided to the USACE quality assurance laboratory for independent analytical verification. At the conclusion of the field efforts, quality control data were compared to pre-established data quality objectives. This evaluation verified the usability of the data for the intended purpose of assuring the satisfactory execution of the remedial actions consistent with the Action Memorandum.

III. MONITORING RESULTS

The protocol for sampling and analyses was detailed in the work plans. For personnel safety, random and instantaneous on site and perimeter air sampling for total particulates was conducted as well as random radiation screening of soils and debris. For the H-06-L landfill, a radiation survey of the total landfill site was also conducted for personnel safety prior to initiating field work. No elevated radioactive levels were identified.

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Field screening for hazardous constituents involved use of a photo- or flame ionization detector for volatile organic compounds, and field test kits for chlorinated compounds, DDT, and petroleum hydrocarbons. Materials which tested positive using these methods were segregated, sampled and analyzed off site. In order to expedite field activities, excavation was largely based on the results of field screening tests. Soil was excavated until the established Model Toxics Control Act (MTCA) cleanup criteria was met as determined by the field screening.

In all cases of contaminated soil removal, analyses by an off site laboratory was used to confirm that contaminants were removed to below the MTCA cleanup levels. Also, all backfill material brought in from offsite sources was tested for all EPA priority pollutants. Documentation of the confirmatory sampling program for the various field activities is provided in *A Compendium of Field Reports for the North Slope (Wahluke Slope) Expedited Response Action* (DOE/RL-94-139).

IV. FUTURE ACTIONS

Final completion of this remedial action is dependent on the revegetation of areas disturbed by cleanup activities. DOE has prepared a draft revegetation plan that describes a strategy or an array of strategies that will be used to restore native vegetation to the limited areas that were disturbed during cleanup activities by the various contractors on the North Slope. The primary goal of the plan is to establish vegetative cover to prevent soil erosion and invasion of noxious weeds. The secondary goal is to provide habitat for wildlife species indigenous to shrub-steppe habitat of the Hanford area such as sage sparrow and loggerhead shrike. The plan provides for establishing native grasses, forbs, and shrubs by either seeding, planting seedlings, or a combination of both with initial planting to be done in late Fall 1994. A total of about 20 acres will be planted. The plan includes a 5-year monitoring program to evaluate the success of the revegetation effort and provides for additional planting if the initial effort is not successful.

This draft plan has been prepared following discussions with personnel from U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Battelle's Pacific Northwest Laboratory, the Bureau of Land Management, the Umatilla tribe, the Yakima tribe, and The Nature Conservancy. The plan will be finalized following review by the above agencies and groups.

V. PROTECTIVENESS

Consistent with the Action Memorandum, 39 sites on the North Slope have been investigated, characterized, and remediated where necessary to comply with MTCA cleanup levels. No hazardous substances discovered remain on site. This is supported by the confirmatory sampling results. Consequently, the North Slope (100-IU-3 OU) will not be subject to a five year review.

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The only remaining activity is the revegetation of areas disturbed during cleanup activities. These actions are considered to be protective of human health and the environment and fulfill the requirements identified in the Action Memorandum and Tri-Party Agreement Milestone M-16-82. Reports and workplans containing relevant information and detailed descriptions and analytical results for the North Slope ERA cleanup are available in the administrative record.