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DOE/EA-0959

ENVIRONMENTAL ASSESSMENT

FOR THE RESITING, CONSTRUCTION, AND OPERATION OF THE ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY AT THE HANFORD SITE, RICHLAND, WASHINGTON

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SUMMARY

This environmental assessment (EA) presents estimated environmental impacts from the resiting, construction, and operation of the U.S. Department of Energy's (DOE's) Environmental and Molecular Sciences Laboratory (EMSL), which is proposed to be constructed and operated on land near the south boundary of the Hanford Site near Richland, Washington.

On September 17, 1992, DOE issued a finding of no significant impact (FONSI) for the construction and operation of the EMSL on a site overlooking the Columbia River at the south end of the 300 Area at DOE's Hanford Site. This FONSI was based on an EA published in September 1992 (DOE/EA-0429). On the second day of construction, April 12, 1994, construction crews uncovered remains thought to be those of Native Americans. DOE immediately halted construction and proposed, consistent with the wishes of local Indian tribes and with the spirit of the Native American Graves Protection and Repatriation Act and the American Indian Religious Freedom Act, to relocate the site of the facility. The Indian tribes, with the support of DOE, are now restoring the former site. This EA, then, presents the estimated environmental impacts of the construction and operation of the EMSL on a new site. The design of the facility itself has changed little since the original EA, and the impacts of operation of the facility are little changed. They are, however, presented again in this EA for completeness.

DOE's proposed action is to construct and operate the EMSL at Hanford. The purpose of and need for the DOE's proposed action is to provide in a single location the combined office and laboratory facilities necessary to conduct research directed toward environmental restoration programs carried out by DOE at the Hanford Site and other DOE sites. The proposed action, onsite alternatives, offsite alternatives, and no action are discussed in the EA.

The EMSL, if constructed, would be a modern research facility in which experimental, theoretical, and computational techniques can be focussed on environmental restoration problems, such as the chemical and transport behavior of complex mixtures of contaminants in the environment. The EMSL design includes approximately 18,500 square meters (200,000 square feet) of floor space on a 12-hectare (30-acre) site. The proposed new site is located within the city limits of Richland in north Richland, at the south end of DOE's 300 Area, on land to be deeded to the United States by the Battelle Memorial Institute. Approximately 200 persons are expected to be employed in the EMSL and approximately 60 visiting scientists may be working in the EMSL at any given time. State-of-the-art equipment is expected to be installed and used in the EMSL. Small amounts of hazardous substances (chemicals and radionuclides) are expected to be used in experimental work in the EMSL.

The proposed new site is located neither on wetlands nor in the Columbia River floodplain. No federal or Washington State listed threatened or endangered species are dependent upon the site. Based on a pedestrian survey and on subsurface testing, no human remains are expected to be encountered during construction or operation of the EMSL. Population within a radius of 80 kilometers (50 miles) of the proposed site is approximately 282,000 persons. Approximately 18,000 persons are employed on the Hanford Site.

Construction impacts are expected to be minor. Noise and gaseous emissions from construction equipment and dust from construction activities would be similar to that for any other construction job of similar size. Socioeconomic impacts from construction are expected to be minor. Routine operation of the EMSL may result in the generation of small quantities of gaseous, liquid, solid, radioactive, and hazardous wastes and in the emission of very small amounts of hazardous substances. The environmental impacts of these wastes and hazardous substances are expected to be minor. For example, over a 40-year projected lifetime of the EMSL, only 4×10^{-5} potential cancer deaths can be expected from the emission of radionuclides. Ecological and socioeconomic impacts are also expected to be minor.

If the EMSL is constructed, DOE will meet the requirements of applicable environmental laws, regulations, and permits in both construction and operation of the facility.

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1.0 PURPOSE OF AND NEED FOR THE AGENCY ACTION

The purpose of and need for the DOE's proposed action is to provide in a single location the combined office and laboratory facilities necessary to conduct research directed toward environmental restoration programs carried out by DOE at the Hanford Site and other DOE sites. This facility, if constructed, would respond to a need for both basic and applied research to develop information that would facilitate cleanup of the Hanford Site where as much as one-half of DOE's hazardous and radioactive wastes are stored or buried. A new facility is needed to provide vibration stability for very sensitive scientific apparatus and to allow appropriate access for visiting scientists.

2.0 BACKGROUND

On September 17, 1992, DOE issued a finding of no significant impact (FONSI) for the construction and operation of the EMSL on a site overlooking the Columbia River at the south end of the 300 Area at DOE's Hanford Site. This FONSI was based on an environmental assessment (EA) published in September 1992 (DOE 1992). On the second day of construction, April 12, 1994, construction crews uncovered remains thought to be those of Native Americans. DOE immediately halted construction and proposed, consistent with the wishes of local Indian tribes and with the spirit of the Native American Graves Protection and Repatriation Act and the American Indian Religious Freedom Act, to relocate the site of the facility. The Indian tribes, with the support of DOE are now restoring the former site. This EA, then, presents the estimated environmental impacts of the construction and operation of the EMSL on a new site. The design of the facility itself has changed little since the original EA, and the impacts of operation of the facility are little changed. They are, however, presented again here for completeness.

3.0 DESCRIPTION OF THE ALTERNATIVES INCLUDING THE PROPOSED ACTION

The proposed action and alternatives to the proposed action are discussed in this chapter.

3.1 THE PROPOSED ACTION

DOE's proposed action is to construct and operate the EMSL at Hanford (Figure 1). The proposed new location for the EMSL is within the city limits of Richland in north Richland, at the south end of DOE's 300 Area, west of George Washington Way, south of Horn Rapids Road, and east of Stevens Drive on land to be deeded to the United States by the Battelle Memorial Institute (Figures 2, 3, and 4).

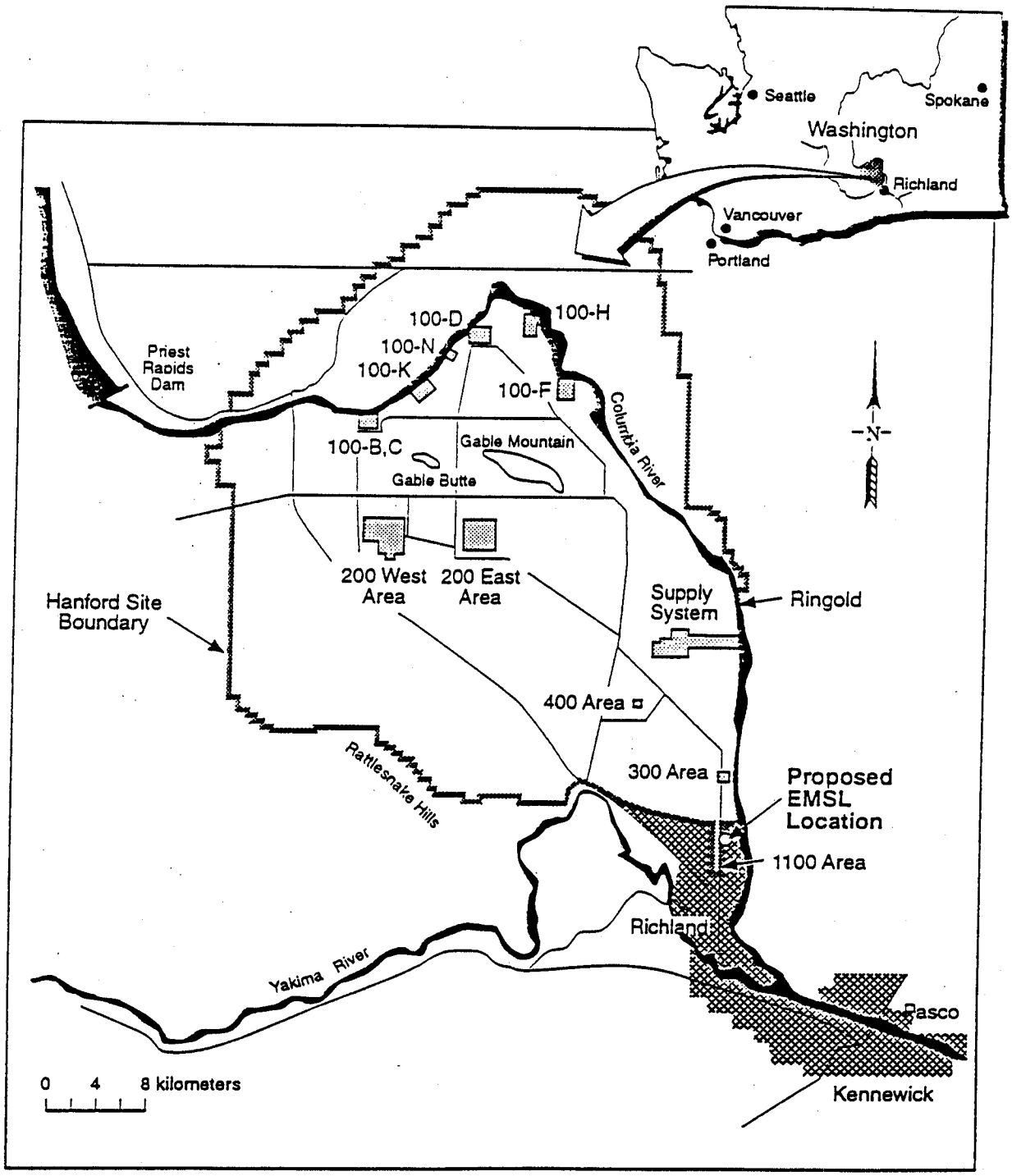

FIGURE 1. The Hanford Site

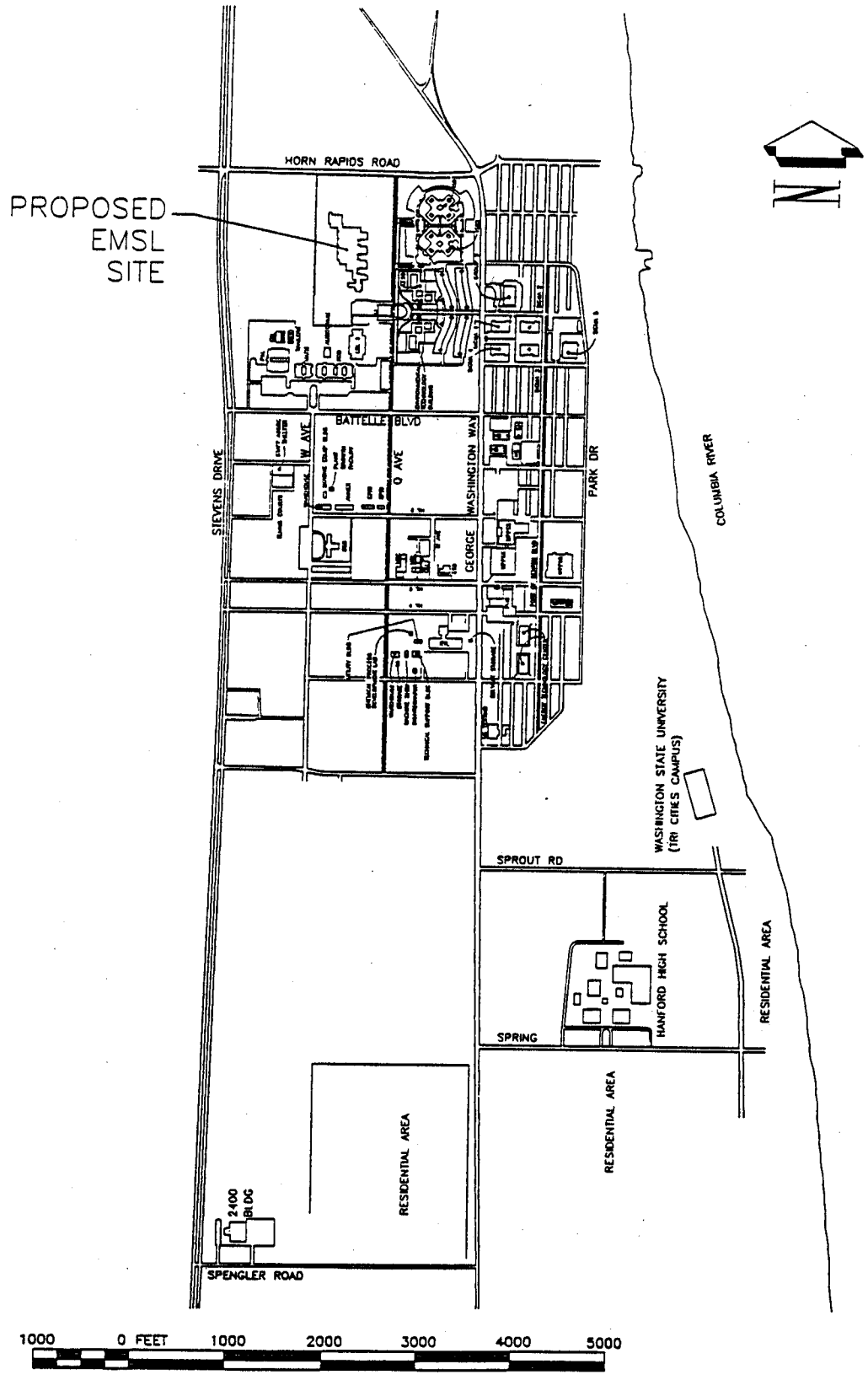

Figure 2. The proposed EMSL Site and North Richland.

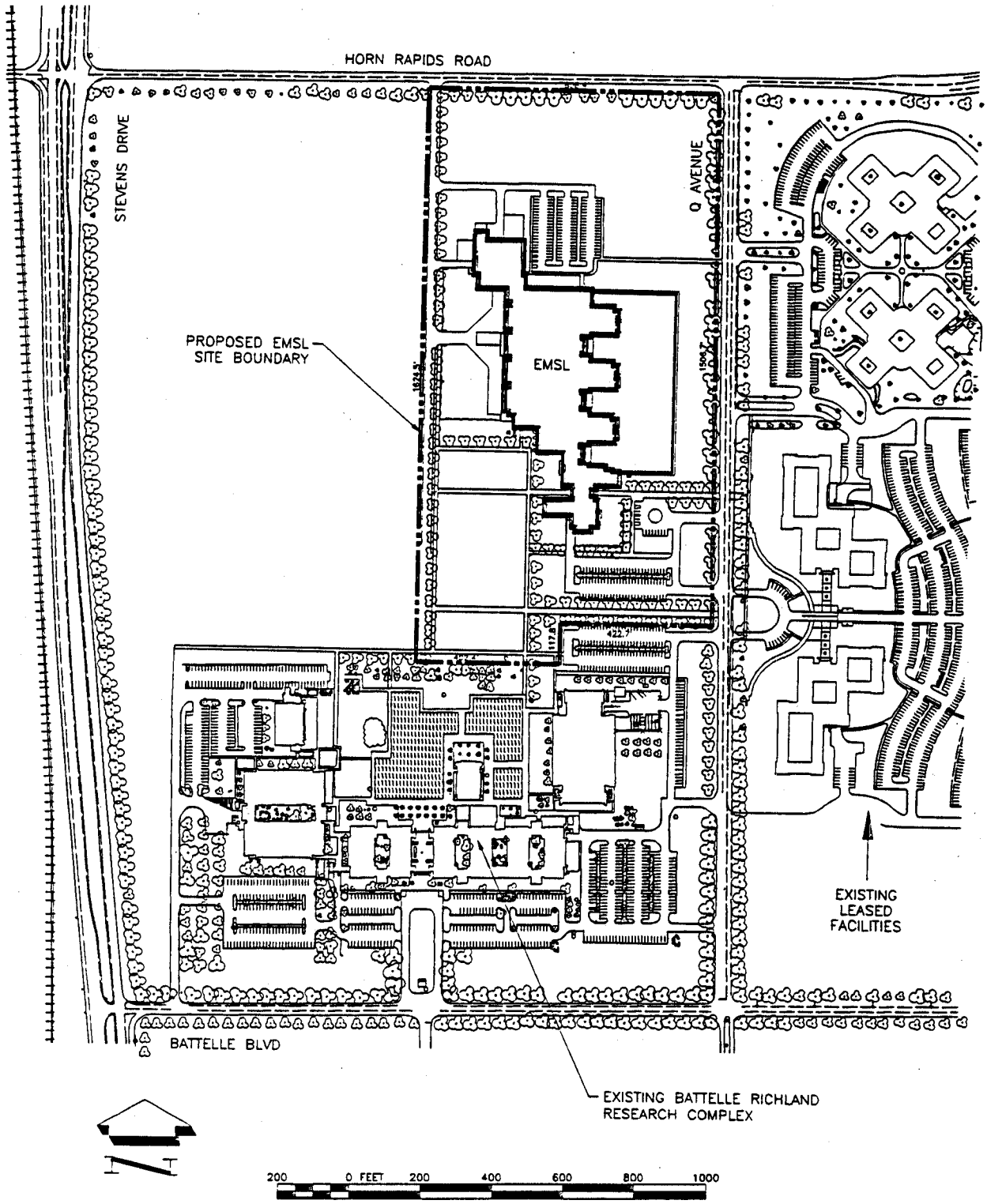

FIGURE 3. The proposed EMSL Site (SW 1/4 of Sec 14, T10N, R28E, WM). Facilities other than the EMSL are existing facilities. Land to be transferred to the United States is enclosed in the heavy broken line.

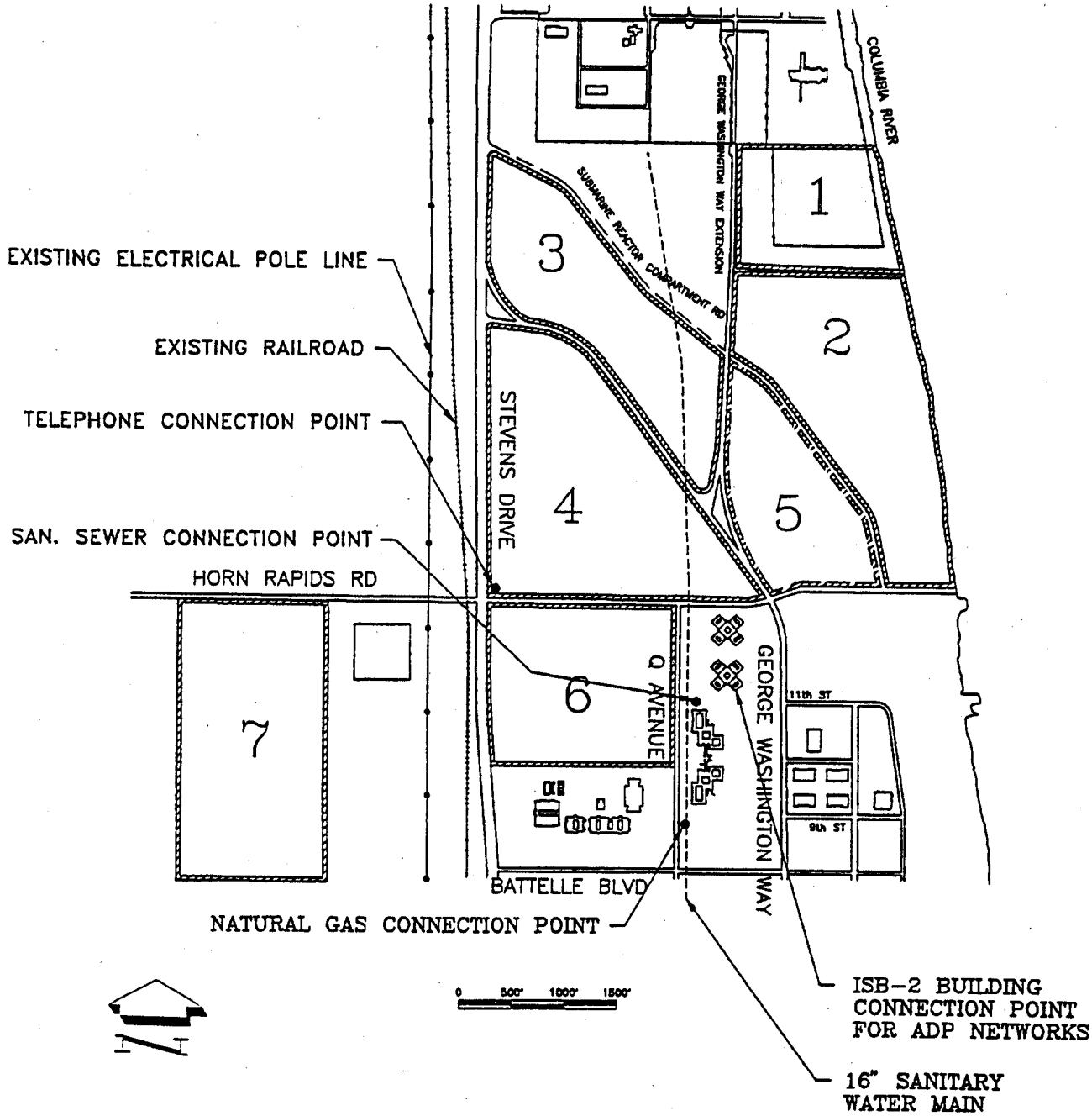

Figure 4. Originally proposed North Richland Sites. Site 2 was originally selected for the EMSL. Site 6 is the presently proposed site.

The EMSL, if constructed, would be a modern research facility in which experimental, theoretical, and computational techniques can be focused on molecular-level phenomena. Research would be directed toward applying molecular research to environmental restoration problems, such as the chemical and transport behavior of complex mixtures of contaminants in the natural environment. The facility would accommodate state-of-the-art molecular research equipment and high-speed computer and communications equipment and would enhance collaborative research among environmental, chemical, materials, biological, and computer scientists. Planned EMSL research programs and operations are more fully described in Piatt (1993).

The EMSL design includes approximately 18,580 square meters (200,000 square feet) of floor space for laboratories, offices, research support shops, computer and graphics rooms, storage areas, conference rooms, a library, kitchen, lunchroom, and a 100-person lecture hall. The design permits integration of the EMSL laboratory and support activities with those of the existing Pacific Northwest Laboratory and 300 Area facilities. Equipment currently planned for the laboratory includes computers, excimer and dye lasers, molecular beam apparatus, mass spectrometers, optical spectrometers, electron spectrometers, nuclear magnetic resonance spectrometers, scanning and analytical electron microscopes, scanning tunneling microscopes, an atomic force microscope, material synthesis apparatus, a 3-MV tandem accelerator, a 500-kV ion implanter, an intense cluster source, and dedicated rooms and gloveboxes for handling hazardous and radioactive tracer laboratory materials.

Site development would include construction of utility extensions, driveways, parking lots, and landscaped areas on approximately 12 hectares (30 acres). Roads and underground utilities, including water, sewer, electricity, telephone, and natural gas, are located at or near the edge of the site (Figures 3 and 4). Two paved parking lots, covering about 2 hectares (5 acres), would be constructed. Landscaping would include lawn, ground cover, and an automatic sprinkler system. A storm water system would be provided to control water runoff from building roofs and parking lots. Final design of the storm water system includes consultation with the City of Richland. No direct drainage to the Columbia River is proposed. Construction activities are expected to take 27 months.

The EMSL design includes state-of-the-art controls and monitoring systems to prevent release of hazardous substances to the environment. The nature of molecular research is such that only small quantities of sample materials and associated chemicals are needed. Therefore, no potential for large releases of hazardous substances exists. Chemicals planned for use and storage in the EMSL are typical of those used in a university chemistry laboratory. It is intended that chemicals, that are also hazardous substances as defined in 40 CFR 302 pursuant to Section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, not be present in the EMSL in amounts greater than reportable quantities. [A "reportable quantity" is an amount that, if released, requires notification of the U.S. Environmental Protection Agency (EPA). Reportable quantities are based on chemical toxicity (40 CFR 302.5).] A list of selected hazardous substances expected to be used in the EMSL is presented in Appendix A.

Small quantities of radioactive materials such as carbon-14, chlorine-36, chromium-51, cobalt-60, iodine-125, iodine-131, nickel-63, phosphorus-32, potassium-42, sodium-22, strontium-90, sulfur-35, technetium-99, and tritium are expected to be present in the proposed EMSL for radioactive isotope labeling of samples to perform radioactive tracer experiments. The total activity of any isotope stored in the EMSL is intended to be in the range of 1 to 10 millicuries, except for phosphorus-32, which may be stored in the amount of 20 millicuries (0.06 grams or less in each case). Radioactive materials in experimental use at any one time are intended to have activity levels in the microcurie range. In addition, natural or depleted uranium may be used as a salt in 200- to 250-gram (7.1 to 8.8 oz; 74 to 93 microcuries) quantities annually for subsurface contamination transport studies within the laboratory.

Approximately 200 scientists, technicians, and support staff are expected to work in the EMSL. In addition, approximately 60 visiting scientists may be working in the proposed EMSL at any given time. Visiting scientists are expected to stay for periods of 1 month to 1 year.

Design of the EMSL contains provisions for routine maintenance of both office and laboratory areas. Because of the small amounts of hazardous substances (chemicals and radionuclides) to be used (and stored) in the EMSL, decommissioning is expected to be no more complicated than demolition of an office building. Extensive decontamination is not expected to be required.

3.2 ONSITE ALTERNATIVES

Existing laboratories and offices at Hanford were considered for housing the proposed EMSL, but were not considered viable alternatives because 1) suitable facilities were in use; 2) none of the otherwise available facilities meets the stringent vibration isolation requirements for the planned research instruments, such as analytical electron microscopes, laser spectrometers, and ultra-high resolution mass spectrometers; 3) some of the otherwise available facilities are in isolated areas, which does not allow appropriate access for resident and visiting scientists; and 4) some of the otherwise available facilities are still in personnel-restricted entry areas, which does not allow appropriate access for visiting scientists, including foreign nationals.

Since suitable existing facilities were not found, alternatives sites for a new facility were considered. A site selection study was conducted by Stone and Webster Engineering Corporation (SW 1991), in accordance with DOE-RL Order 4320.2C, in which seven alternative building sites at Hanford were considered (Figure 4). Considerations in this study for site selection included environment and safety, functional requirements, facility interaction, planning compatibility, access, vibration, size and expansion capability, utilities, scenic and aesthetic concerns, site physical attributes, existing use, biological resources, and cultural resources. Sites 2, 4, and 6 were found to be essentially equal. With the recent discovery of human remains on Site 2, the two remaining sites (4 and 6) were reconsidered. Site 6 was selected over Site 4 because Site 6 has already been disturbed with temporary housing and cultivation, has roads to the site boundary, has utilities at or near the site boundary, is on land set aside for laboratory and office

purposes, presently has buildings on two sides of the site, and is more centrally located to other PNL research activities than Site 4. In addition, Site 4 contains an extension of the dune formation from Site 2 in which the human remains were found. Also, ground penetrating radar studies of Site 6 indicated with a high degree of confidence that construction of the EMSL on Site 6 would not impact human remains.

3.3 OFFSITE ALTERNATIVES

Under offsite alternatives, the proposed EMSL would be constructed as a single facility at a location away from Hanford or the needed research would be conducted at a number of different locations. In either case, the facilities could be DOE-owned or non-DOE-owned facilities. These alternatives were considered, but eliminated from detailed study because neither alternative meets the need for the facility discussed in Section 1 or the considerations for siting listed in Section 3.2.

The environmental impacts of conducting the needed research at a single facility away from Hanford would be similar to the impacts of conducting the research at Hanford, but would include impacts from the transportation of both staff and equipment to and from Hanford. The environmental impacts of conducting the needed research in multiple existing facilities away from Hanford would be greater than the impacts of conducting the work in a single new facility at Hanford, both because of the fragmentation of the work and because older, less well environmentally-designed facilities might be used. In both cases, interaction with Hanford engineering staff would be hindered and moving the existing research to other sites would add additional expense.

3.4 NO ACTION ALTERNATIVE

"No action" means that the proposed EMSL would not be built. If the EMSL were not built, DOE would be deprived of a critical facility that would assemble both the scientists and equipment required to conduct basic and applied research in the environmental and molecular sciences needed to support DOE's environmental restoration programs. No action does not meet the need for agency action. No action would mean continued fragmentation of existing environmental restoration research activities and conduct of those activities in less efficient and non state-of-the-art facilities. While there would be no construction impacts from no action, environmental impacts of no action could be significant in terms of lost knowledge relating to environmental restoration.

4.0 AFFECTED ENVIRONMENT

The environment at the Hanford Site is described in detail in Cushing et al. (1992). Therefore, only a very brief summary, relevant to the EMSL, is presented here.

The Hanford Site occupies an area of approximately 1450 square kilometers (560 square miles) within the semiarid Pasco Basin of the Columbia Plateau in southeastern Washington State (Figure 1). Only about 6 percent of the land area has been disturbed and is actively being used, or has been used, for the production of nuclear materials, for research, or for waste management activities. A sitewide transportation network connects widely separated facilities. The Columbia River flows eastward through the northern part of the Hanford Site and southward to form part of the eastern border of the Site. The Yakima River flows along part of the Site's southern boundary and joins the Columbia River below the City of Richland, which is adjacent to the Site on the southeast. The cities of Richland, Kennewick, and Pasco (commonly referred to as the Tri-Cities) comprise the nearest population center and are southeast of the Site. Population within 80 kilometers of the proposed EMSL site is approximately 282,000. Approximately 18,000 people are employed on the Hanford Site.

Average monthly temperatures range from -1.5 °C (29 °F) in January to 24.7 °C (76.5 °F) in July. Average annual rainfall is 16 centimeters (6.3 inches). Air quality is considered good. Washington State classifies the water quality of the Columbia River near Hanford as Class A or excellent (suitable for domestic use).

Plant and animal species suited to the semiarid climate and the Columbia River and its banks can be found on the Hanford Site. An endangered species survey conducted in April 1994 concluded that no plants or animals on the federal or Washington State list of threatened or endangered species occur on the proposed site for the EMSL (see Appendix B). This site has been under cultivation for alfalfa for over 20 years and was the site of temporary housing before that. Bald eagles and peregrine falcons, which are federally listed species, visit other areas of the Hanford Site but not the proposed EMSL site. Specifically, peregrine falcons are only casual visitors to the Hanford Site and bald eagles are found along the Columbia River in the winter. Long-billed curlews, a state monitor species, have been observed nesting to the northwest of the proposed EMSL site, and were observed on the site during the surveys. Frequent cutting of the alfalfa does not make the proposed EMSL site a suitable nesting area.

Cultural resource reviews of the proposed EMSL site and surrounding area were conducted in April and May 1994 (see Appendix C). These reviews consisted of a literature review, consultation with affected tribes, an archeological pedestrian survey, subsurface testing at geophysical borehole locations, soil conductivity and ground penetrating radar tests for subsurface anomalies, and excavation of anomalies to determine their identity. The extensive testing program provides a high degree of confidence that construction of the EMSL on the proposed site would not impact human remains or cultural materials that are eligible or potentially eligible for listing on the National Register of Historic Places. During excavation, including excavation of utility corridors, an archaeologist from the Hanford Cultural Resources Laboratory would be present to ensure that any newly discovered artifacts are properly protected. Indian nation cultural resource monitors would also be invited to be present during excavation.

The proposed EMSL site is located immediately south of the Hanford Site within the limits of the City of Richland, is currently zoned as a "medium use industrial district," which would not require rezoning to accommodate the EMSL, and is adjacent to existing office and laboratory buildings on the east and south sides.

The proposed EMSL site is not located in either a floodplain or a wetland as defined by 10 CFR 1022 ("Compliance with Floodplain/Wetlands Environmental Review Requirements"). The unregulated probable maximum Columbia River flood has a flow volume of 1,600,000 cubic feet per second at Hanford and would reach an elevation of approximately 385 feet at the EMSL site. This is below the elevation of the ground floor of the EMSL which is 390 feet. The probable maximum flood is a greater flood than either the 100-year flood or the 500-year flood, for which the regulations in 10 CFR 1022 require consideration. The proposed EMSL site is not located on any operable unit selected for potential remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The proposed EMSL site is also not located in the path of a ground water plume that extends west of Site 7 to the northeast toward the Columbia River. This plume was identified during the investigation of the 100-EM-1 Operable Unit as part of the CERCLA cleanup of the Hanford Site. The plume contains trichloroethylene, nitrates, and technetium-99.

5.0 ENVIRONMENTAL IMPACTS

If the EMSL were to be constructed, minor impacts would occur during both construction and operation. The projected impacts are presented here. The environmental impacts from the construction and operation of the proposed EMSL are expected to be similar to the impacts from the construction and operation of a large university chemistry building.

5.1 CONSTRUCTION IMPACTS

Potential construction impacts include effects on the atmospheric environment, effects on the terrestrial environment, and construction accidents. EMSL construction activities are expected to last 27 months.

5.1.1 Atmospheric Impacts

Minor air emissions would occur from diesel-powered equipment used during construction of the proposed EMSL, typical of any construction project. These emissions are not expected to cause any air quality standards to be exceeded. Dust generated from earth-moving activities and vehicle movement during the construction phase would be minimized by frequent watering. Ambient noise levels may be temporarily increased. The estimated equipment noise during earth moving is in the range of 85 to 100 dBA at the nearest road, although there are no residences nearby. During general construction, any increased noise levels are expected to be intermittent and in the estimated range of 85

to 95 dBA at the nearest road. No adverse noise impact on nearby indoor office workers is expected.

5.1.2 Terrestrial Impacts

The proposed construction site contains no critical habitat for federally listed endangered or threatened species. Removal of the field from cultivation removes some foraging area but does not remove nesting area for long-billed curlews (a state monitor species).

The proposed construction site is not likely to contain significant cultural resources, based on the surveys that have taken place.

Roads and underground utilities, including water, sewer, electricity, telephone, and natural gas, are located at or near the edge of the site. Only short utility extensions would be required. Minimal clearing of the site would be required since the proposed site is a flat field currently being farmed for alfalfa. Any necessary rerouting of existing irrigation supply lines would be done in established utility corridors prior to disturbing existing locations. Private property owned by the Battelle Memorial Institute immediately to the west of the proposed site is expected to be used as a temporary laydown area and location for construction trailers. After construction is completed the area is expected to be restored to alfalfa farming.

5.1.3 Impacts on CERCLA Remedial Actions

CERCLA remedial actions are not expected to impact, or be impacted by, construction or operation of the EMSL because the new proposed site is not within any CERCLA operable unit.

5.1.4 Construction Accidents

Based on National Safety Council (NSC 1986) statistics for 1985 and on a total of 150 workers employed in construction of the EMSL over 27 months, approximately 13 lost-workday accidents involving construction workers are expected.

5.1.5 Socioeconomic Impacts

The 150 construction workers would be, for the most part, recruited locally. Even if all were recruited from other areas, the 0.8 percent increase in the Hanford workforce of 18,000 workers would not create a significant socioeconomic impact. Increases of less than 5 percent of the present labor force have been determined to have little effect on an existing community (DHUD 1976).

5.2 OPERATIONAL IMPACTS

During operation of the EMSL, atmospheric emissions, liquid discharges, and solid waste generation can be expected to occur. Appropriate controls, as discussed below, would minimize any impacts. Neither noise levels nor socioeconomic resources are expected to be affected by routine operations.

5.2.1 Atmospheric Emissions

The EMSL design includes best available radionuclide control technology for each room and/or hood dedicated to experiments with radionuclides. This technology includes establishing controlled radiation zones with high-efficiency particulate air (HEPA) filtered exhaust from all hoods and gloveboxes. HEPA filters would be tested on an annual basis and would be replaced when required, due to dust loading (static pressure drop), testing, age, or flow reduction. HEPA filters would be removed in accordance with the appropriate manufacturer's written instructions for the filter housing type and, if contaminated, would be disposed of as low-level radioactive waste in existing waste disposal facilities onsite. The EMSL design also includes provision for installing additional best available radionuclide control technology should new radionuclides with different control requirements be needed for experimental work. Stack exhaust designs include monitoring for radioactive emissions. DOE maintains an Effluent Monitoring Program for all stacks on the Hanford Site. Maintenance and calibration of the monitors are conducted on a regular basis. All emissions are controlled to meet applicable state and federal regulations. During routine operations very small emissions of radionuclides may occur. For the purposes of calculating an effective dose equivalent to a maximally exposed member of the public, it was assumed that over the period of a year one microcurie of U-238 and 50 microcuries of each of the other radionuclides listed in Section 3.1 would be released (the amount expected to be involved in one experiment with each radionuclide). With this scenario, the effective dose equivalent to the maximally exposed offsite individual is approximately 1×10^{-4} millirem per year. This dose is less than the 0.02-millirem dose received by the maximally exposed offsite individual from Hanford operations in 1992 (Woodruff and Hanf 1993) and much less than the limit in 40 CFR 61 ("National Emission Standards for Hazardous Air Pollutants") of 10 millirem per year for emissions of radionuclides to the atmosphere from DOE facilities.

Annual population doses were also calculated for routine operation of the EMSL based on the same source terms. This population dose is 8×10^{-4} person-rem per year for members of the public living within 80 kilometers (50 miles) of the proposed EMSL site, is 6×10^{-4} person-rem for workers in the buildings surrounding the EMSL, and is 5×10^{-4} person-rem for workers within the EMSL. Based on a conversion factor of 500 fatal cancers per one millon person-rems, the potential annual number of cancer deaths calculated from routine operation of the EMSL for all of these persons is 1×10^{-6}.

Small quantities of nonradioactive but toxic or otherwise hazardous materials are expected to be used in experiments in the EMSL. Administrative procedures call for these materials to be present in the EMSL only in less

than reportable quantities (40 CFR 302) and to be used only in dedicated chemical hoods or rooms. The EMSL design includes best available technology to treat off-gases from these experiments prior to discharge to the laboratory exhaust system.* An estimate of emissions of toxic air pollutants was made based on the inventory in Appendix A. The estimates showed that there would be no impact to air quality in excess of acceptable small quantity emission rates as defined in WAC 173-460 by the Washington Department of Ecology. A notice of construction application was submitted to the Washington Department of Ecology on June 24, 1994 pursuant to WAC 173-460.

In addition, the EMSL design includes a chemical storeroom for hazardous chemicals. The purpose of this storeroom is to minimize the storage of these chemicals in laboratory modules. A chemical custodian is planned for the EMSL who would be the single point-of-contact for ordering these chemicals and for controlling the inventory. The chemical custodian would maintain the inventory in such a manner as to ensure that the amount of any chemical stored in the chemical storeroom and in use in various EMSL laboratories is less than the reportable quantity.

Three hot-water boilers are planned for space heating purposes. These boilers would be fired by gas, with oil as a backup fuel. Two gas-fired steam boilers are planned to provide humidification. All boilers are planned to employ state-of-the-art, clean-burning combustion technology and are, therefore, not expected to require supplemental emission control technology. An above-ground, 4,000-gallon, double-walled diesel fuel tank with leak-detection instrumentation is planned for the three hot-water boilers. This tank is also planned to provide fuel for a standby electricity generator. All boilers are designed to meet appropriate ASME and ANSI heater and boiler codes.

5.2.2 Liquid Effluents

Construction of the EMSL would require a 12-inch sanitary sewer line to be connected to the City of Richland sewer system. Since the materials discharged to the sanitary sewer would be limited to those compatible with the City of Richland's sewer treatment plant, no adverse impacts are expected from this discharge. The quantity of this discharge is well within the excess capacity of the city's sewage plant.

A separate process sewer system is designed to collect waste liquids from laboratory sinks, hood sinks, and floor drains, and to route them to four holding tanks. These tanks are planned to be located above ground in a concrete pit with a sump to allow pumping back to the tanks. The concrete is planned to be coated with a liquid urethane elastomer coating. The tanks are planned to be filled in succession (approximately one per week), continuously monitored for pH, and routinely sampled for hazardous materials. If the waste in a filled tank is found to be in compliance with the City of Richland sanitary discharge requirements, or if the tank waste is treated to meet the requirements, then the liquids would be pumped to the sanitary sewer system. Wastes unsuitable for sanitary sewer disposal are planned to be packaged and disposed of in accordance with Resource Conservation and Recovery Act

requirements and with Washington State Dangerous Waste Regulations. Other controls include DOE orders which apply to the annual training of personnel on hazardous waste disposal and to the labeling of all sinks and drains having restrictions for drain use.

A storm water system is planned to control water runoff from building roofs and parking lots. The design for the storm water drainage system is in accordance with state and local codes and storm water discharge is not expected to impact groundwater.

5.2.3 Liquid and Solid Hazardous and Radioactive Waste

About 2,000 liters of liquid hazardous, radioactive, and mixed wastes are expected to be generated in the EMSL each year. Minimization of the use of hazardous and/or toxic materials is planned in accordance with the Pollution Prevention Act of 1990, with Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements," and with the Hanford Site pollution prevention policy. Included in these directives are requirements for setting goals for reduced releases to the environment and for controls on the acquisition of toxic chemicals and extremely hazardous materials.

Liquid radioactive wastes are planned to be collected separately, packaged, and disposed of in compliance with applicable federal and state requirements and DOE orders. Liquid hazardous wastes and mixed wastes are planned to be collected separately and managed in compliance with applicable federal and state requirements and DOE orders.

The quantity of solid radioactive, hazardous, and mixed wastes to be generated during research activities in the EMSL is not expected to exceed 20 55-gallon drums per year. All solid waste generated is planned to be managed and disposed of in accordance with applicable federal, state, and local requirements and DOE orders.

Hazardous wastes are planned to be disposed of offsite at a permitted hazardous waste facility, radioactive wastes are planned to be disposed of in the Hanford 200 Area, and mixed wastes are planned to be stored at an existing Hanford 200-Area facility for future disposal.

5.2.4 Noise Levels

Noise levels are not expected to increase over current ambient external background levels during EMSL operation.

5.2.5 Socioeconomic Impacts

The proposed EMSL would add not more than 260 people to the 18,000 Hanford Site workforce. If every worker came from outside the Tri-Cities area (maximum case), this would represent about a 1.4 percent increase in the total

Site workforce. Increases of less than 5 percent of the present labor force have been determined to have little effect on an existing community (DHUD 1976). In any event, approximately 90 members of the 260-person EMSL staff are already onsite.

Transportation is expected to be provided by automobiles, bicycles, and the municipal bus system. Adequate parking is planned for the 260 building occupants and visitors plus 100 seminar attendees. Parking lots are planned to be located at the north and south ends of the facility for convenient access.

5.2.6 Occupational Hazards

Workers in the EMSL are expected to be confronted with the same occupational hazards as those found in most chemical research laboratories. Because the facility is intended to be used by visiting scientists, full-time EMSL staff members are expected to oversee visitor activities and to be responsible for ensuring that all visitors receive appropriate training. Training on instrument operation, safety procedures, and administrative procedures for handling and disposing of chemicals and radionuclides is planned before staff and visitors are allowed to work independently in the facility.

All personnel are expected to wear appropriate radiation dosimeters and eye protection. The occupational radiation dose to an EMSL staff member during normal operations is estimated to be 50 millirem per year or lower. This estimate is the measured value for general laboratory workers at Hanford during 1990 (DOE 1993). The estimate is substantially lower than the DOE occupational limit of 5 rem per year total effective dose equivalent in 10 CFR 835. Based on a conversion factor of 400 fatal cancers per one million person-rems (for workers) and on an occupancy of 260 persons in the EMSL, 0.005 potential fatal cancers are expected among workers from each year of operation of the EMSL.

The EMSL is being designed in accordance with the requirements of the Washington Industrial Safety and Health Act and the Occupational Safety and Health Act. Experimental areas are also being designed in accordance with protocols established by the National Institutes of Health, DOE, and other appropriate guidance bodies. Equipment to be used in the EMSL has been examined in a Preliminary Safety Evaluation (Piatt 1993) with respect to public and worker safety. A conclusion has been reached "that the design of the EMSL facility and equipment constitutes an acceptable risk..." For example, laser systems are to be designed in accordance with ANSI Standard Z136.1 requirements (ANSI 1986); the 3 MV tandem accelerator is planned to meet the requirements of DOE Order 5480.25, "Safety of Accelerator Facilities," and requirements of the Occupational Safety and Health Act in 29 CFR 1910 are planned to be met.

Expected EMSL programs and selected internal and external events, such as power failures, earthquakes, wind damage, etc., were also examined for their potential impacts on workers and members of the public and the same conclusion

was reached (Piatt 1993), i.e., that the design of the EMSL facility and equipment constitutes an acceptable risk.

5.2.7 Potential Accidents

The EMSL design incorporates protection from earthquake, wind, flood, and fire. DOE orders require personnel training in safety reviews and safe laboratory practices. Nevertheless, accidents are still possible.

Planned EMSL operations have been evaluated, and the following accident scenario was developed to give a reasonable estimate for a radioactive release to the atmosphere and the potential impact. It was assumed that one container each of iodine-125 and iodine-131 was dropped and broken simultaneously inside the building, but outside a radiation control area. Of the 10 millicuries in each container, 10 percent was assumed to be released to the atmosphere. From this accident, the maximally exposed offsite individual would receive an effective dose equivalent of 0.3 millirem. The population dose from this accident was calculated to be 1.3 person-rem for offsite members of the public and 0.007 person-rem for workers in the buildings surrounding the EMSL. Based on a conversion factor of 500 fatal cancers per one million person-rems, the number of potential cancer deaths calculated from this accident is 0.001. In a separate calculation, the dose to the worker involved in the above accident was estimated to be approximately 100 millirem. The Hanford Environmental Dosimetry System (Generation II or GENII) was used to estimate radiation doses to members of the public from the routine release scenario and the accident scenario and to the worker in the accident scenario (Napier et al. 1988).

Accidents involving other hazardous substances, i.e., chemicals, were evaluated (Piatt 1993) and determined to result in only transient effects at worst because of the small quantities of these substances that would be present in the EMSL, i.e., less than reportable amounts under 40 CFR 302 and less than the amounts necessary to qualify for small quantity emission rates under WAC 173-460.

Based on National Safety Council (NSC 1986) statistics for 1985 and on a total of 260 workers employed in the EMSL, approximately 2 lost-workday accidents per year are expected.

5.3 ADVERSE IMPACTS THAT CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

Adverse impacts that cannot be avoided include the loss of alfalfa production and the loss of long-billed curlew foraging area on about 12 hectares (30 acres) of land as a result of construction and operation of the EMSL. This land is currently planted in alfalfa pending other development of the land.

5.4 CUMULATIVE IMPACTS

The annual chronic offsite effective dose equivalent to the maximally exposed offsite individual from planned EMSL operations (1 microcurie of uranium-238 and 50 microcuries of each other radionuclide listed in Section 3.1 assumed to be released to the atmosphere over 1 year) is estimated to be about 1×10^{-4} millirem, which is much less than the 0.02 millirem received by the maximally exposed offsite individual from Hanford operations in 1992 (Woodruff and Hanf 1993). The annual population dose is estimated to be 8×10^{-4} person-rem per year, which is estimated to result in 6×10^{-7} potential cancer deaths per year. Over a projected 40-year lifetime of the EMSL, 2×10^{-5} potential cancer deaths might be expected to result from EMSL operation. Approximately 19,000 total cancer deaths can be expected to occur in the same population (282,000 in an 80 kilometer radius) over 40 years. The cumulative radiation impacts from operation of the EMSL are expected to be minor.

Because the proposed EMSL would add not more than 260 persons (90 EMSL staff members and visitors are already present) to the 18,000-person Hanford workforce, cumulative socioeconomic impacts are expected to be minor.

While the 12-hectare (30-acre) proposed site provides some foraging area for long-billed curlews, it does not provide suitable nesting area because of the frequent cutting of alfalfa. Cumulative ecological impacts are expected to be minor.

6.0 APPLICABLE ENVIRONMENTAL REGULATIONS AND PERMIT REQUIREMENTS

It is DOE's policy to "conduct [its] operations in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards" (DOE Order 5400.1). If the EMSL is constructed, DOE will meet the requirements of applicable environmental laws, regulations, and permits in both construction and operation of the facility.

Approvals may be required pursuant to the Clean Air Act. These approvals may be issued by the Washington State Department of Health (WAC 246-247) or by the Washington Department of Ecology (WAC 173-460). Approval by the EPA under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) is not likely to be required because of the small amount of hazardous substances to be used within the EMSL. Registration of the boilers with the Benton-Franklin Counties Clean Air Authority or with the Washington Department of Ecology will not be required because the boilers are not power boilers.

The City of Richland sanitary sewer permit requirements will be met. No direct discharges to the Columbia River are expected and no National Pollutant Discharge Elimination System permit will be required.

The proposed EMSL will meet all applicable federal, state, and local regulations pertaining to the generation and handling of hazardous and radioactive wastes.

The proposed site of the EMSL does not occupy a wetland and is not within the Columbia River 500-year floodplain. Therefore, no floodplain/wetland environmental review is required under 10 CFR 1022. The site of the proposed EMSL is not within the Columbia River comprehensive conservation study area (Public Law 100-605), so no special steps are necessary to meet the requirements of that law.

Federal regulations with respect to historic preservation and species protection will be met although no permits are required. If listed or candidate species are found onsite during construction, activities impacting the species will be halted until a biological assessment can carried out and any adverse impacts mitigated. If any previously unknown paleontological, prehistoric, or historic artifacts or human remains are discovered during construction, activities potentially impacting the artifacts or remains will be halted and the area protected until the find is properly assessed and discussed with the state historic preservation officer and appropriate Indian nations. During excavation, including excavation of utility corridors, an archaeologist from the Hanford Cultural Resources Laboratory will be present to ensure that any newly discovered artifacts are properly protected. Indian nation cultural resource monitors will also be invited to be present during excavation.

The proposed EMSL is being designed in accordance with the requirements of the Washington Industrial Safety and Health Act and the Occupational Safety and Health Act. Experiments will meet protocols established by the National Institutes of Health, DOE, and other appropriate guidance bodies.

7.0 PERSONS AND AGENCIES CONSULTED

Affected Indian tribes (see Chapter 8.0), the U.S. Fish and Wildlife Service (see Appendix B), and the City of Richland were consulted in the preparation of this environmental assessment.

Consultation with the Washington State Office of Archaeology and Historic Preservation was begun immediately upon the discovery of human remains on the original EMSL site. This consultation continued through completion of subsurface testing on the proposed new site. Copies of correspondence with the state historic preservation officer appear in Appendix C.

8.0 CONSULTATION WITH AFFECTED INDIAN NATIONS

Consultation with representatives of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Yakama Indian Nation (YIN), Nez Perce, and the Wanapum people began on April 12, 1994, the day the human remains were discovered. Tribal representatives attending a meeting at Richland were notified and taken to the discovery site. Initial meetings were held to discuss the issues with tribal elders. In subsequent meetings, tribal representatives made it clear that they were strongly opposed to any relocation of the burials, that they considered the entire area of the EMSL location to be an Indian cemetery, and that they expected protection of the

cemetery and a full restoration of the disturbed area. DOE elected to seek a new location for the EMSL because of the tribal concerns and following the guidance provided by the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act.

Consultation continued regarding the restoration of the original EMSL location and the selection of a new location. A team of twenty Indian people representing all four tribes and directed by a tribal elder, began stabilization work on the original location. The restoration will include revegetation efforts in direct consultation with the tribes and with participation by the tribes.

The tribes were critical of the original decision to locate the EMSL where there was an acknowledged potential to find human remains. In analyzing any new location they wanted a much greater degree of assurance that cultural deposits and, in particular, that human remains would not be uncovered during construction activities. In consultation with the tribes, historical aerial photos were reviewed, and extensive subsurface testing was conducted, including the use of ground penetrating radar, to minimize the potential for any cultural deposits being present in the new location.

The consultation with the tribes also highlighted the importance of reviewing and rewriting portions of the Hanford Cultural Resources Management Plan published in 1989. The reviews, which were begun prior to the construction activity for EMSL, will continue with the tribes concerning the policies and procedures for cultural resources reviews, including greater involvement of tribes and adequate notification time. Copies of official correspondence with the tribes appear in Appendix E.

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APPENDIX A

HAZARDOUS SUBSTANCES

This appendix contains a list of hazardous substances expected to be present in the Environmental and Molecular Sciences Laboratory. The quantities in parentheses are reportable quantities in kilograms from Table 302.4 in 40 CFR 302. Reportable quantities are derived by EPA based on chemical toxicity. One pound is equivalent to 0.454 kilograms. Therefore, to convert kilograms to pounds, divide the quantity in kilograms by 0.454. Quantities present in the EMSL are intended to be much less than the reportable quantities.

Acenaphthylene (2270)
Acetic acid (2270)
Acetic acid, 2,4-dichlorophenoxy- (45.4)
Acetic acid, fluoro- (4.54)
Acetic anhydride (2270)
Acetone (2270)
Acetonitrile (2270)
Acetophenone (2270)
Acetyl chloride (2270)
Acrylic acid (2270)
Allyl alcohol (45.4)
Aluminum sulfate (2270)
Ammonia (45.4)
Ammonium acetate (2270)
Ammonium benzoate (2270)
Ammonium bifluoride (45.4)
Ammonium carbonate (2270)
Ammonium chloride (2270)
Ammonium citrate, dibasic (2270)
Ammonium dichromate (4.54)
Ammonium fluoride (45.4)
Ammonium hydroxide (454)
Ammonium oxalate (2270)
Ammonium sulfide (45.4)
Ammonium thiocyanate (2270)
Ammonium vanadate (454)
Amyl acetate (2270)
Aniline (2270)
Anthracene (2270)
Antimony (2270)
Antimony trioxide (454)
Arsenic trioxide (0.454)
Benzene (4.54)
Benzidine (0.454)
Benzonitrile (2270)
Benzyl chloride (45.4)
Butanol, 1- (2270)
Butanone, 2- (2270)
Butyric acid (2270)

Cadmium (4.54)
Cadmium acetate (4.54)
Cadmium chloride (4.54)
Calcium carbide (4.54)
Carbon disulfide (45.4)
Carbon tetrachloride (4.54)
Chlorine (4.54)
Chlorobenzene (45.4)
Chloroform (4.54)
Chloromethyl methyl ether (4.54)
Chromic acid (4.54)
Chromium (2270)
Chrysene (454)
Copper (2270)
m-Cresol (454)
Cumene (2270)
Cyclohexane (454)
Cyclohexanone (2270)
Dibutyl phthalate (4.54)
Diethylamine (45.4)
Dimethylamine (454)
Dioctyl phthlate (2270)
Dioxane (45.4)
Ethyl acetate (2270)
Ethane, 1,1,1-trichloro- (454)
Ethane, 1,1,2-trichloro- (45.4)
Ethane, 1,2-dichloro- (45.4)
Ethyl acetate (2270)
Ethyl acrylate (454)
Ethyl ether anhydrous (45.4)
Ethyl methacrylate (454)
Ethylenediamine (2270)
Ethylenediaminetetraacetic acid (2270)
Ethylene glycol monomethyl ether (454)
Ferric sulfate (454)
Fluorine (4.54)
Formaldehyde (45.4)
Formic acid (2270)
Fumaric acid (2270)
Furan, tetrahydro-, anhydrous (454)
Furfural (2270)
Hexachlorobenzene (4.54)
Hydrazine (0.454)
Hydrochloric acid (2270)
Hydrofluoric acid (45.4)
Hydrogen sulfide (45.4)
Iodomethane (45.4)
Lead (4.54)
Lead acetate (4.54)
Lead chloride (4.54)
Lead nitrate (4.54)
Lead sulfate (4.54)
Maleic anhydride (2270)
Maleic acid (2270)

Mercury (0.454)
Methanol (2270)
Methylene bromide (454)
Methylene chloride (454)
Methylethylketone (2270)
Methyl iodide (45.4)
Methylisobutylketone (2270)
Methylene chloride (454)
Naphthalene (45.4)
Nickel (45.4)
Nickel chloride (45.4)
Nickel nitrate (45.4)
Nickel sulfate (45.4)
Nitric acid (454)
Nitric oxide (4.54)
Nitrobenzene (454)
Nitrogen dioxide (4.54)
Paraformaldehyde (454)
Paraldehyde (454)
Pentachlorobenzene (4.54)
Phenanthrene (2270)
Phenol (454)
Phosphine (45.4)
Phosphorus trichloride (454)
Phosphoric acid ((2270)
Phthalic anhydride (2270)
Potassium chromate (4.54)
Potassium cyanide (4.54)
Potassium dichromate (4.54)
Potassium hydroxide (454)
Potassium permanganate (45.4)
Propane (4.54)
Propanol, 2-methyl- (2270)
Propargyl alcohol (454)
Propionic acid (2270)
Propylamine (2270)
Pyridine (454)
Quinoline (2270)
Selenium (45.4)
Selenium dioxide (4.54)
Silver (454)
Silver cyanide (0.454)
Silver nitrate (0.454)
Sodium (4.54)
Sodium bifluoride (45.4)
Sodium bisulfite (2270)
Sodium azide (454)
Sodium cyanide (4.54)
Sodium dichromate (4.54)
Sodium fluoride (454)
Sodium hydrosulfide (2270)
Sodium hydroxide (454)
Sodium hypochlorite (45.4)
Sodium nitrite (454)

Sodium phosphate, dibasic (2270)
Sodium phosphate, tribasic (2270)
Sulfuric acid (454)
Tert. butyl acetate (2270)
Tetrahydrofuran (454)
Thiourea (4.54)
Thioacetamide (4.54)
Toluene (454)
Triethylamine (2270)
Vanadium pentoxide (454)
Mixed-xylenes (454)
Zinc (454)
Zinc acetate (454)
Zinc carbonate (454)
Zinc chloride (454)
Zinc formate (454)
Zinc nitrate (454)
Zirconium sulfate (2270)
Zirconium tetrachloride (2270)

APPENDIX B

BIOLOGICAL SURVEYS

This appendix contains biological survey reports and a letter from the U.S. Fish and Wildlife Service concerning the potential existence of threatened or endangered species at the Hanford Site.

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Telephone (509) 376-5345
FAX 372-3515

April 28, 1994

Mr. D. Flowers, K6-05
Pacific Northwest Laboratory
Sigma 1 Building
Richland, WA 99352

Dear Mr. Flowers:

BIOLOGICAL REVIEW OF THE SITES PROPOSED FOR THE ENVIRONMENTAL MOLECULAR SCIENCE LABORATORY (EMSL), 94-PNL-017

This report summarizes the results of the biological review for the above-referenced project. The objectives of this biological review were:

- to obtain an inventory of plants and animals present on or using the sites proposed for the Environmental Molecular Science Laboratory (EMSL)
- to describe habitats on the sites
- to identify species potentially using the site, based on known habitat associations, that were otherwise undetected during the survey
- to identify plant and animal species protected under the Endangered Species Act, candidates for such protection, and species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington
- to evaluate the potential impacts of development of the sites proposed for the EMSL on the protected species and sensitive habitats noted above
- and to evaluate the relative importance of the sites as wildlife habitat and recommend one of the proposed sites for the new location of the EMSL.

A field assessment of the north site proposed for the EMSL was conducted by C. A. Brandt, W. H. Rickard, R. K. Zufelt, J. L. Downs, and G. L. Fortner on April 22, 1994. A field assessment of the south site proposed for the EMSL was conducted by R. K. Zufelt on April 21, 1994. The field assessments consisted of walking transects at 20 m intervals and recording all plant and animal species or their sign that were observed.

RESULTS FOR THE NORTH SITE

The north site proposed for the EMSL is located north of the Horn Rapids Road between George Washington Way and Stevens Way. The southeast corner of this site lies at the junction of Horn Rapids Road and Q Avenue. Topography and substrate on the site consist of stabilized and partially active dunes oriented northeast to southwest.

This site is relatively undisturbed and is dominated by big sagebrush (*Artemisia tridentata*), Sandberg's bluegrass (*Poa sandbergii*), and cheatgrass (*Bromus tectorum*). The most frequently observed birds on the site were white-crowned sparrows (*Zonotrichia leucophrys*) and western meadowlarks (*Sturnella neglecta*). A mourning dove (*Zenaida macroura*) nest containing one egg was observed on the south end of the site. The most frequently encountered mammalian species was the Great Basin pocket mouse (*Perognathus parvus*).

This site contains no known raptor nests and is devoid of potential nest sites (trees and utility poles) for raptors that nest above ground, such as ferruginous hawks (*Buteo regalis* - federal candidate 2 and state threatened), Swainson's hawks (*Buteo swainsoni* - state candidate), and red-tailed hawks (*Buteo jamaicensis* - state sensitive). These species do not nest in the subject area. The closest known ferruginous and Swainson's hawk nests lie approximately 6.5 km (4 mi) and 2 km (1.25 mi), respectively, west of the site. The subject area lies outside the normal expected home range of these birds. The site does provide suitable nesting habitat for ground-nesting raptors, such as northern harriers (*Circus cyaneus*), great horned owls (*Bubo virginianus*), short-eared owls (*Asio flammeus*), and long-eared owls (*A. otus*).

Sagebrush habitat is considered priority habitat by the State of Washington, due to its relative scarcity in the State and its significant value to many wildlife species (Washington Department of Wildlife 1993). Sagebrush habitat is required for nesting and foraging by loggerhead shrikes (*Lanius ludovicianus* - federal candidate 2 and state candidate), sage sparrows (*Amphispiza belli* - state candidate), burrowing owls (*Athene cunicularia* - state candidate), sage thrashers (*Oreoscoptes montanus* - state candidate), Washington ground squirrels (*Spermophilus washingtoni* - state monitor), and sagebrush voles (*Lagurus curtatus* - state monitor). Although no loggerhead shrike nests were observed during this survey, nests have been observed in the vicinity of the subject area (unpublished data from loggerhead shrike surveys conducted by Pacific Northwest Laboratory between 1988 - 1989). Ground squirrels and sagebrush voles were not observed during this survey. Without a trapping study, the presence of the Washington ground squirrel and sagebrush vole cannot be determined. Although none of the above species were observed during this survey, the area should be considered suitable for their use.

Long-billed curlews (*Numenius americanus* – federal candidate 3c and State monitor) nest west of Stevens Drive just north of the subject area (Allen 1980) and were heard calling during this field assessment. The open habitat (snow buckwheat (*Eriogonum niveum*)/cheatgrass) portions of the subject area provide potential nesting and foraging habitat for this species.

No other plant or animal species protected under the Endangered Species Act, candidates for such protection, and species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington were observed on the north EMSL site.

Potential Impacts on Species of Concern of EMSL Construction at the North Site

Loggerhead shrikes, sage sparrows, and sage thrashers are species that depend on mature sagebrush habitat. Shrikes select tall big sagebrush as nest sites (Poole 1992). Sage sparrows and thrashers also nest in big sagebrush. EMSL construction would remove sagebrush habitat, precluding these species from nesting there. Construction would also reduce the value of the area as foraging habitat for individuals of these species nesting in adjacent areas.

Burrowing owls nest in burrows abandoned by other ground-dwelling animals. Development of the EMSL site would remove habitat for prey and displace ground-dwelling animals, thereby reducing the suitability of the area for nesting by burrowing owls.

Sagebrush voles are generally found in mature sagebrush habitat, although few have been captured outside the Fitzner/Eberhardt Arid Lands Ecology Reserve. They select burrow sites near sagebrush, which also comprise a portion of their diet. Development of the EMSL site would remove sagebrush habitat, precluding voles from utilizing the area.

Long-billed curlews typically nest in open habitat such as that interspersed within the otherwise contiguous big sagebrush habitat on this site. EMSL site development would preclude this species from nesting in this habitat.

Raptor populations may be negatively impacted if disturbed during nesting. The north EMSL alternative is greater than 6.5 km from any known nest locations of ferruginous hawks and 2.0 km from Swainson's hawks. These distances are well beyond those prescribed for minimizing disturbance to these hawk species (Swainson's hawk - 0.25 km and ferruginous hawk - 1.0 km [Fitzner et al. 1993]); consequently, direct impacts on nesting Swainson's or ferruginous hawks are highly unlikely. Nest sites of the red-tailed hawk are protected only in urban areas (WDW 1993).

The subject area is, however, a potentially important portion of the foraging range of many raptors, especially for northern harriers. Raptor populations may be negatively impacted by altering foraging habitat. Site development would kill or displace numerous small mammals, which are an important component of the prey base of shrikes and most raptors.

Development of the EMSL site may negatively impact <u>individuals</u> of the above species. Yet <u>populations</u> of these species, considered on a Hanford Site basis, would probably not be substantially affected because similar sagebrush habitat is still relatively common on Hanford. However, development of this site will eliminate a substantial portion of sagebrush habitat directly, and will contribute to fragmentation of the remaining habitat. Fragmentation not only reduces the overall area of habitat available for use, but also alters the size and shape of habitat patches. The response of these species to fragmentation cannot currently be predicted in any detail and their level of resiliency is unknown. It is reasonable to expect that the **cumulative** effects of this and further

fragmentation would decrease the long-term viability of these species on Hanford. Therefore, it is essential to develop methods for predicting effects and plans for mitigating the cumulative losses and fragmentation of sagebrush habitat on the Hanford Site.

RESULTS FOR THE SOUTH SITE

The south site proposed for the EMSL is located south of the Horn Rapids Road between Stevens Way and the existing Battelle complex. Topography on the site is level. This site is relatively disturbed and is an alfalfa (*Medicago* sp.) field. The perimeter of the field is dominated by herbaceous weedy species such as Russian thistle (*Salsola kali*), cheatgrass (*Bromus tectorum*), and prickly lettuce (*Lactuca serriola*), all alien annuals, and ornamental trees such as sycamore (*Platanus occidentalis*) and black locust (*Robinia pseudo-acacia*). The most common birds on the site are gulls (*Larus* sp.), starlings (*Sturnus vulgaris*), house sparrows (*Passer domesticus*), and the common raven (*Corvus corax*).

Long-billed curlews were observed on the site during this field assessment and are frequently observed there on an annual basis by PNL staff. The open habitat of this alfalfa field provides nesting and foraging habitat for this species. EMSL site development would preclude this species from nesting and foraging in this habitat.

No other plant or animal species protected under the Endangered Species Act, candidates for such protection, and species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington were observed on the south site proposed for the EMSL.

RELATIVE TRADEOFFS BETWEEN THE NORTH AND SOUTH SITES

The south EMSL alternate site is agricultural land significantly altered from the native condition. As such, vegetation on the south site is floristically depauperate relative to the north alternative. Consequently, the south site provides limited use for shrubsteppe wildlife compared to the north site. In addition, the south site is cut regularly for hay, destroys any bird nests and young that may be present in the field. In contrast, the north site is relatively undisturbed and consists largely of structurally and floristically diverse native vegetation that currently supports and could potentially support a more diverse array of wildlife species. This is particularly true for species of concern on Hanford, many of which depend on sagebrush habitat for breeding/nesting/foraging.

Due to its lesser current and potential value as wildlife habitat, we recommend that the south site be given first consideration as the new location for the EMSL.

Sincerely,

C. A. Brandt, Ph.D.
Senior Research Scientist
Environmental Sciences Department

CAB: jmb

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cc: LL Cadwell
PF Dunigan
RD Hildebrand
EB Moore
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File
LB

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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June 17, 1994

Charles A. Brandt, Ph.D
Technical Group Leader
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Battelle Boulevard
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FWS Reference: 1-3-94-SP-528

Dear Mr. Brandt:

This is in response to your letter dated April 25, 1994, and received in this office on May 2. Enclosed is a list of listed threatened and endangered species, and candidate species (Attachment A), that may be present within the area of the proposed Hanford Site Research Facility Construction project near Richland in Benton County, Washington. The list fulfills the requirements of the Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act of 1973, as amended (Act). We have also enclosed a copy of the requirements for Department of Energy (DOE) compliance under the Act (Attachment B).

Should the biological assessment determine that a listed species is likely to be affected (adversely or beneficially) by the project, the DOE should request Section 7 consultation through this office. If the biological assessment determines that the proposed action is "not likely to adversely affect" a listed species, the DOE should request Service concurrence with that determination through the informal consultation process. Even if the biological assessment shows a "no effect" situation, we would appreciate receiving a copy for our information.

Candidate species are included simply as advance notice to federal agencies of species which may be proposed and listed in the future. However, protection provided to candidate species now may preclude possible listing in the future. If early evaluation of your project indicates that it is likely to adversely impact a candidate species, the DOE may wish to request technical assistance from this office.

In addition, please be advised that federal and state regulations may require permits in areas where wetlands are identified. You should contact the Seattle District of the U.S. Army Corps of Engineers for federal permit requirements and the Washington State Department of Ecology for state permit requirements.

Your interest in endangered species is appreciated. If you have additional questions regarding your responsibilities under the Act, please contact Jim Michaels or Jodi Bush of this office at the letterhead phone/address.

Sincerely,

David C. Frederick
State Supervisor

jb/ac
SE/DOE/1-3-94-SP-528/Benton
Enclosures

c: WDFW, Yakima
WNHP, Olympia
Liz Block, Moses Lake

ATTACHMENT A

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES WHICH MAY OCCUR WITHIN THE VICINITY OF THE PROPOSED HANFORD SITE RESEARCH FACILITY NEAR RICHLAND IN BENTON COUNTY, WASHINGTON (T10N R28E S14)

FWS REFERENCE: 1-3-94-SP-528

LISTED

Bald eagle *(Haliaeetus leucocephalus)* - wintering bald eagles may occur in the vicinity of the project from about October 31 through March 31.

Peregrine falcon *(Falco peregrinus)* - spring and fall migrant falcons may occur in the vicinity of the project.

Major concerns that should be addressed in your biological assessment of project impacts to bald eagles and peregrine falcons are:

1. Level of use of the project area by eagles and falcons.

2. Effect of the project on eagles' and falcons' primary food stocks, prey species, and foraging areas in all areas influenced by the project.

3. Impacts from project construction and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) which may result in disturbance to eagles and falcons and/or their avoidance of the project area.

PROPOSED

None

CANDIDATE

The following candidate species may occur in the vicinity of the project:

Black tern *(Chlidonias niger)*
Bull trout *(Salvelinus confluentus)*
California floater (mussel) *(Anodonta californiensis* (Lea, 1852*))*
Loggerhead shrike *(Lanius ludovicianus)*
Mountain quail *(Oreortyx pictus)*
Western sage grouse *(Centrocercus urophasianus phaios)*

ATTACHMENT B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) AND 7(c) OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED

SECTION 7(a) - Consultation/Conference

Requires:

1. Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;

2. Consultation with FWS when a federal action may affect a listed endangered or threatened species to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the federal agency after it has determined if its action may affect (adversely or beneficially) a listed species; and

3. Conference with FWS when a federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or an adverse modification of proposed critical habitat.

SECTION 7(c) - Biological Assessment for Construction Projects *

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for construction projects only. The purpose of the BA is to identify any proposed and/or listed species which is/are likely to be affected by a construction project. The process is initiated by a federal agency in requesting a list of proposed and listed threatened and endangered species (list attached). The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the species list, please verify the accuracy of the list with our Service. No irreversible commitment of resources is to be made during the BA process which would result in violation of the requirements under Section 7(a) of the Act. Planning, design, and administrative actions may be taken; however, no construction may begin.

To complete the BA, your agency or its designee should: (1) conduct an on-site inspection of the area to be affected by the proposal, which may include a detailed survey of the area to determine if the species is present and whether suitable habitat exists for either expanding the existing population or potential reintroduction of the species; (2) review literature and scientific data to determine species distribution, habitat needs, and other biological requirements; (3) interview experts including those within the FWS, National Marine Fisheries Service, state conservation department, universities, and others who may have data not yet published in scientific literature; (4) review and analyze the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; (5) analyze alternative actions that may provide conservation measures; and (6) prepare a report documenting the results, including a discussion of study methods used, any problems encountered, and other relevant information. Upon completion, the report should be forwarded to our Endangered Species Division, 3704 Griffin Lane SE, Suite 102, Olympia, WA 98501-2192.

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* "Construction project" means any major federal action which significantly affects the quality of the human environment (requiring an EIS), designed primarily to result in the building or erection of human-made structures such as dams, buildings, roads, pipelines, channels, and the like. This includes federal action such as permits, grants, licenses, or other forms of federal authorization or approval which may result in construction.

APPENDIX C

CULTURAL RESOURCE SURVEYS

This appendix contains the cultural resource survey reports concerning the potential existence of historical or cultural resource areas at the proposed EMSL site.

Battelle
Pacific Northwest Laboratories
Battelle Boulevard
P.O. Box 999
Richland, Washington 99352
Telephone (509) 373-2894

May 5, 1994

Mr. Charles Pasternak
U. S. Department of Energy
Richland Operations Office
P. O. Box 550/A7-27
Richland, WA 99352

Dear Mr. Pasternak:

ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL) SURVEY REPORT

The Hanford Cultural Resources Laboratory (HCRL) has prepared a survey narrative for the EMSL project. Enclosed are three copies of the report. One copy of the report is for your submittal to the State Historic Preservation Officer, another copy is for your records, and the third copy is for your submittal to the appropriate Native American tribes. The HCRL is preparing a subsurface testing plan that will be submitted to you in the near future.

Thank you for your continuing interest in and support of the Cultural Resources Management Program on the Hanford Site.

Very truly yours,

Paul R. Nickens

P. R. Nickens
Project Manager
Cultural Resources Project

mec

Enclosures

cc: R. E. Jaquish
M. K. Wright
G. McClure
LB

Battelle Pacific Northwest Laboratories
CULTURAL RESOURCE REPORT NARRATIVE
Hanford Cultural Resources Laboratory

94-3000-002: Environmental Molecular Sciences Laboratory - Site 6
Project Number Project Name

A. NAME AND FULL DESCRIPTION OF THE PROPOSED UNDERTAKING:

Environmental Molecular Sciences Laboratory - Site 6
The U. S. Department of Energy (DOE) has established a new mission for the Hanford Site that includes the management and handling of stored waste, environmental restoration of inactive waste sites and excess facilities, research and development, and the development of new technologies. This mission includes bringing federal facilities into compliance with local, state, and federal laws and proposes site-wide cleanup by 2018 (Woodruff et al., 1993).

The construction of a new Environmental Molecular Sciences Laboratory (EMSL) is part of the DOE mission at the Hanford Site (Figure 1). Ground breaking ceremonies for this new facility were held on April 8, 1994. The initial phases of earthwork for a laydown yard began on April 11, 1994. On April 12, 1994, human remains were encountered during grading activities. This discovery led to a shut down of all construction activities while officials from DOE-RL, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce, Yakama Indian Nation, Wanapum, and Pacific Northwest Laboratories worked to resolve issues associated with the discovery. Included in the issue resolution was the selection of a new construction site for the EMSL facility. Two previously considered locations, EMSL Site 4 and EMSL Site 6, were re-evaluated as possible candidates for placement of the EMSL facility. After consideration, EMSL Site 4 was discarded and EMSL Site 6 became the new selected site for the proposed Environmental Molecular Sciences Laboratory.

Project activities for the Environmental Molecular Sciences Laboratory will include construction of the Environmental Molecular Sciences Laboratory, construction of access roads and parking lots, the placement of underground service utilities, and landscaping. Facilities construction may require the use of land west of the building as a "laydown yard" for building component storage that will accommodate assemblage and staging activities (Figure 2).

B. LOCATION AND GENERAL ENVIRONMENTAL SETTING

The Hanford Site includes approximately 1450 km^2 (~ 560 mi^2) and lies in the semiarid Pasco Basin of the Columbia Plateau in southeastern Washington State (Cushing 1992). Approximately 6 to 10 % of the site has been impacted for a variety of uses including waste storage and disposal.

EMSL Site 6 is located approximately 4 km (2.5 miles) north of Richland, Washington and 0.8 km (0.5 mile) west of the Columbia River. This location is currently in use as a cultivated field and is planted in alfalfa. The field is bordered to the north by the Horn Rapids Road, to the east by George Washington Way, to the south by Battelle's Regional Office Building complex and to the west by Stevens Boulevard. The perimeter of the field, except along the southern border, is lined with planted sycamore trees.

The eolian morphology in this portion of the Hanford Site has been characterized as stabilized dunes. These stabilized dunes likely post-date Mazama ash (ca. 6700 to 6800 yr B. P.) (Gaylord et al., 1991:31). The EMSL Site 6 is part of a "southern concentration of stabilized

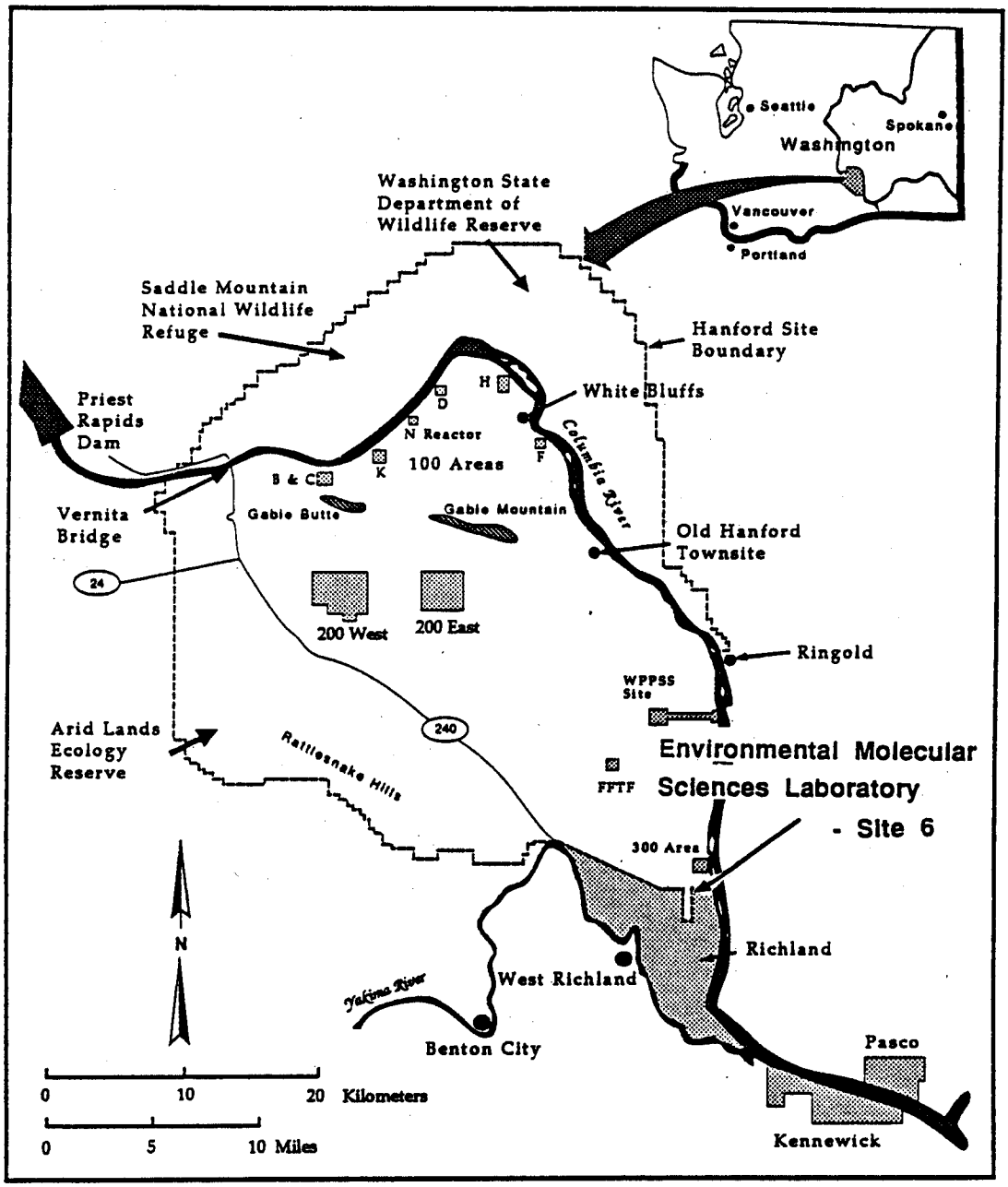

Figure 1. The Environmental Molecular Sciences Laboratory proposed project location.

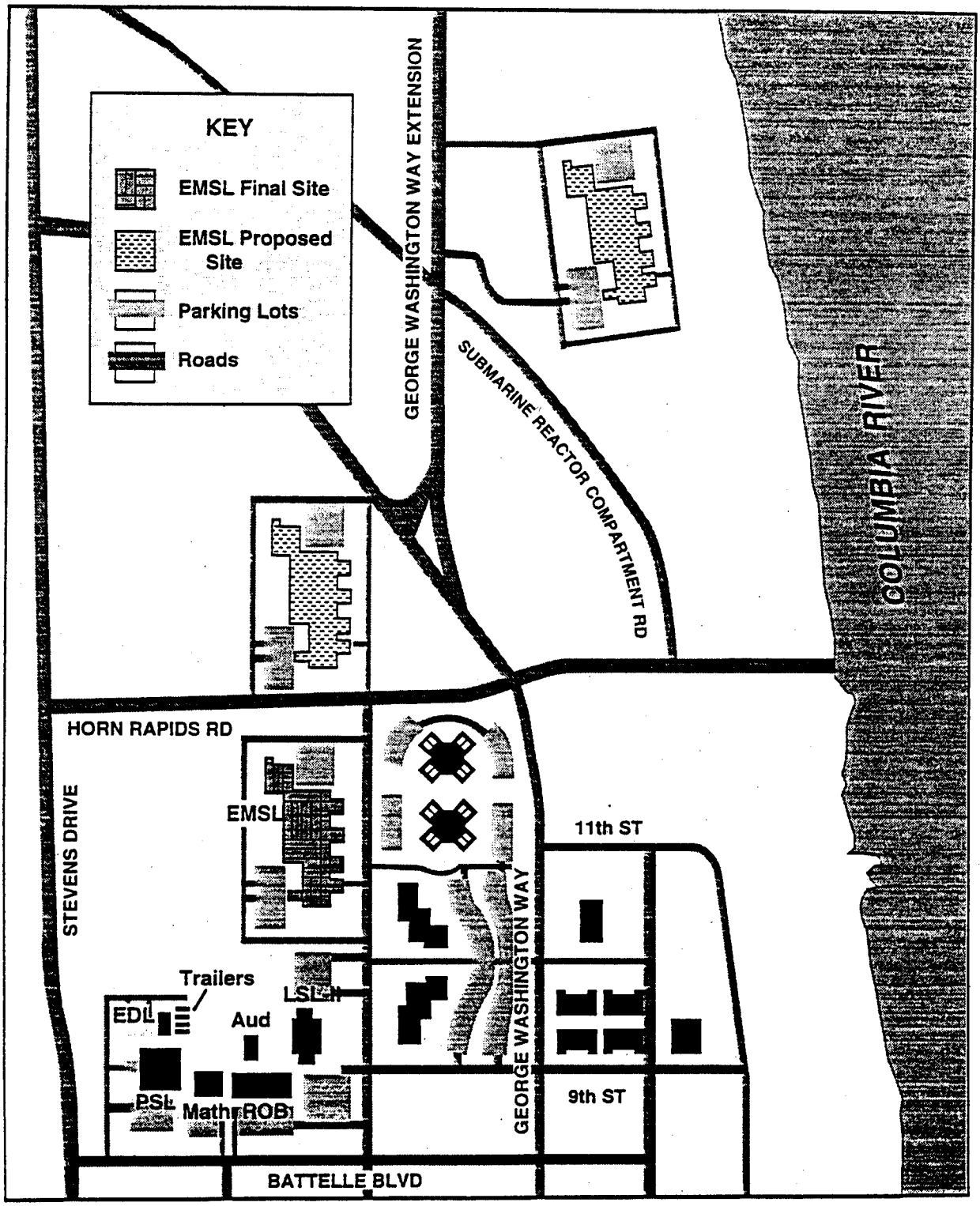

Figure 2. Final Environmental Molecular Sciences Laboratory project location.

dunes occurs along an irregular northeast-trending, 4 to 12 km wide tract centered on the Yakima River 'horn' and extending to the Columbia River from south of WPPS to approximately the 3000 Area "(Gaylord et al., 1991:15).

Long-billed curlews (*Numenius americanus*) are known to nest in the immediate area of EMSL Site 6. Recent ecological surveys have recorded the presence of white-crowned sparrows (*Zonotrichia leucophrys*) and western meadowlarks (*Sturnella neglecta*) (Brandt 1994). During this survey, Canada geese, a crow, curlews, gulls, a horned swallow, chukkars, and English sparrows were observed. Wildlife known to inhabit the general area include deer (*Odoceoileus hemionus)*, coyote (*Canis latrans*), and rabbits but no evidence of their presence was observed in the alfalfa field at the time of the survey.

In general, the field is surrounded to the east and south by office buildings, landscaped lawn, and parking areas. To the north and northwest, expanses of primarily undisturbed land provide an opportunity to hypothesize what the field may have looked like prior to farming activities and impacts from Camp Hanford. It is likely that prior to historic impacts, the field would have had greater geomorphologic relief, e.g., stabilized dunes and a big sagebrush/Sandberg's bluegrass (*Artemisia tridentata / Poa sandbergii*) plant community.

USGS topographic map(s): Richland, Washington, 7.5 Minute (1978)

Legal description: T. 10 N., R. 28 E., NW 1/4 of the SW 1/4 of Section 14
T. 10 N., R. 28 E., N 1/2 of the SW 1/4 of Section 14

UTM Coordinates for Surveyed Area (See Figure 4).

Point A: Zone 11, 5135360 mN., 324390 mE.
Point B: Zone 11, 5135330 mN., 324910 mE.
Point C: Zone 11, 5134920 mN., 324910 mE.
Point D: Zone 11, 5134930 mN., 324840 mE.
Point E: Zone 11, 5134850 mN., 324820 mE.
Point F: Zone 11, 5134850 mN., 324390 mE.

C. PRE-FIELD RESEARCH

1. Sources of information checked: [X] Survey and Site Maps [X] GLO Plats
[X] Other - Project Files

Previous archaeological survey efforts have been completed in the area of EMSL Site 6. The results of these efforts indicate that the general area surrounding the field has been in use prehistorically (Thoms 1983, Rice 1980) and ethnographically (Relander 1986, Trafzer and Scheuerman 1986, Krieger 1928). Relander (1986) states that "From the foot of Priest Rapids, downstream to the mouth of the Snake River...that ... [the] Wanapums had fifteen villages, the largest being Towmowtowee (Richland)".

Historic use of the area includes homesteading and farming activities (Cadoret 1994 in progress).

One recent archaeological survey effort (Gard 1990) included placement of approximately 90 shovel probes in the alfalfa field immediately north of Battelle's Regional Office Building. The depths of these probes to Pleistocene gravels ranged from 10 cm in the eastern portion of the surveyed area to 50 cm in the western portion of the surveyed area. There were no buried cultural deposits encountered in any of the shovel probes.

The G. L. O. Plat for T. 10 N., R. 28 E., surveyed on September 15, 1864, shows a trail along both banks of the Columbia River (Figure 3). There are no other features shown on this township. Trails recorded in the course of Government Land Office surveys were often "Indian Trails" or pedestrian highways connecting important aboriginal fishing/hunting and meeting locations.

Evidence of Camp Hanford (ca. 1950 to 1960's) is visible in aerial photographs. This large trailer camp was built to house families of General Electric and Atomic Commission employees during the early days of the Hanford Site. Most of the physical evidence of Camp Hanford has been removed but street locations and perhaps trailer spaces are still apparent in the alfalfa field.

2. Summary of previous studies in this general area, similar terrain:

Previous studies conducted in this general area have resulted in a predominantly historic record of use and habitation.

Report No./Title	Distance/Direction	Results
88-1100-002/1100 Fence Installations	1.0 km/NW	HT88-030
89-300-026/Horn Rapids Pipeline	0.5 km/W	45BN104
89-300-023/Molecular Science Research Center	Adjacent/N	HT89-016 HT89-017
89-300-027/HEHF Facility	Adjacent/N	Negative
90-300-025/New Site Molecular Research Science Lab	Same Area	Negative
90-600-012/Fiber Optics Line	Adjacent/W	Negative
91-300-024/DOE Preferred Site #2	1.0 km/NE	HT91-071 HT91-072

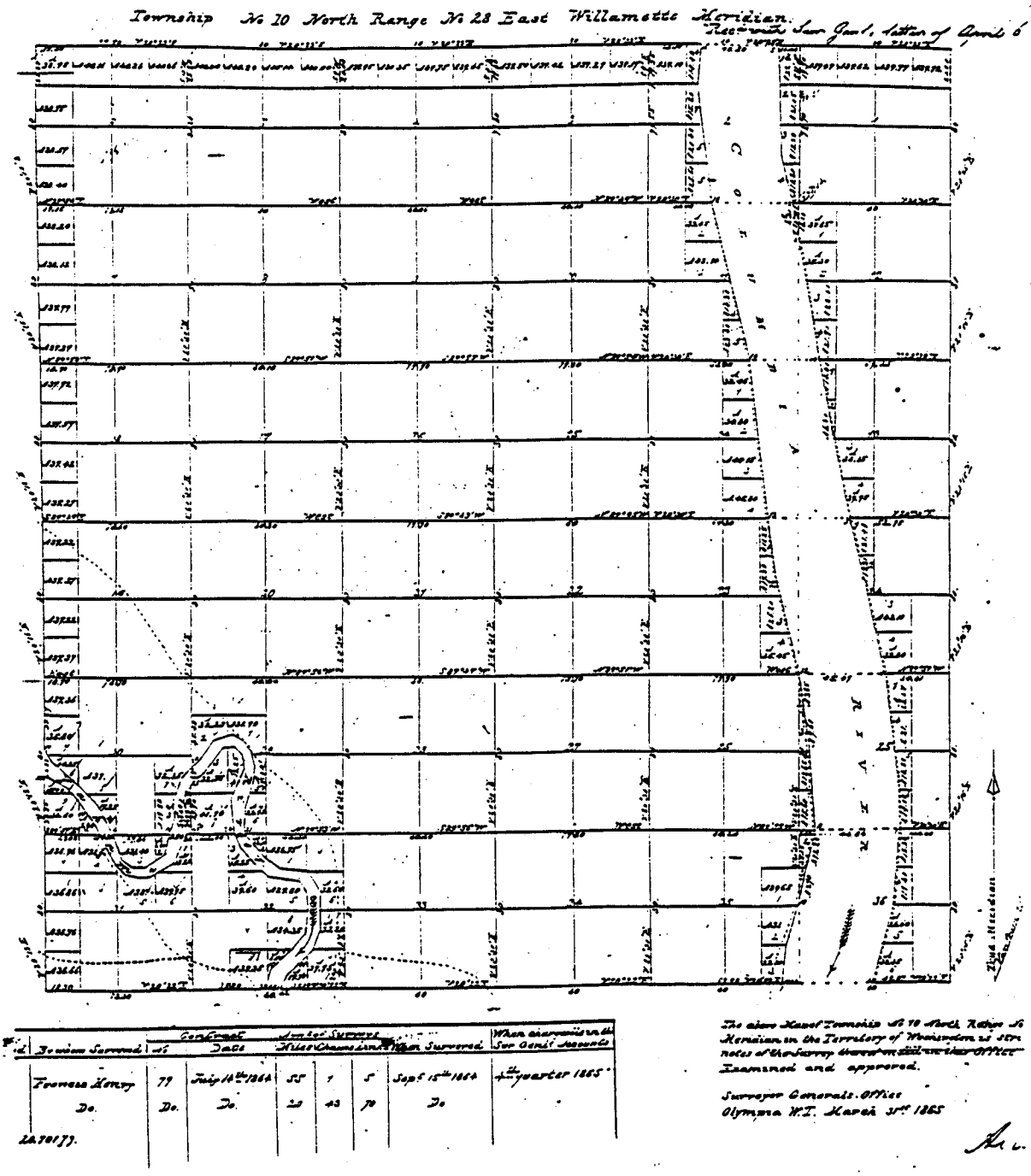

Figure 3. G. L. O. Plat for T. 10 N., R. 28 E. showing early trail systems.

Battelle Pacific Northwest Laboratories
CULTURAL RESOURCE REPORT NARRATIVE
Hanford Cultural Resources Laboratory

94-3000-002: Environmental Molecular Sciences Laboratory - Site 6
Project Number Project Name

92-1100-001/North Richland Substation	Adjacent/W	Negative
93-300-063/L-186, Hanford Site Entry Control Center	Adjacent/N	HT94-001 HT94-002 HT94-003
94-300-008/300 Area South Office Building	Adjacent/N	HI94-015 HT94-004 HT94-018 HT94-017

D. EXPECTED HISTORIC AND PREHISTORIC LAND USE AND SITE SENSITIVITY

1. Are there known sites in the general area? [X] Yes [ ] No
2. Are sites expected? [X] Yes (Where?) [ ] No (Why?) Explain below:

Twelve known historic and prehistoric sites and one prehistoric isolate are located within 2 km of EMSL Site 6; ten are historic sites, HT88-030, HT89-016, HT89-017, H3-26, HT94-001, HT94-002, HT94-003, HT-94-004, HT94-017, HT94-018, two are prehistoric sites, 45BN104 and HT91-072, and one is a prehistoric isolate, HI94-015. Nine of these sites are located north of EMSL Site 6 (Figure 4).

Historic and prehistoric sites impacted by farming activities and field leveling were expected to be encountered on EMSL Site 6.

E. FIELD METHODS

1. Areas examined and type of coverage :
   The EMSL Site 6 was surveyed by N. Cadoret, M. Dawson and M. Wright on April 25, 1994. Surveyors walked in 20 meter parallel intervals across the alfalfa field in an east/west direction, following field furrows (Figure 5).

2. Areas not examined and reasons why:
   All of the alfalfa field (EMSL Site 6) was surveyed during this field effort.

3. Personnel conducting and assisting in this survey: N. Cadoret, M. Dawson and M. Wright

4. Date(s) of survey: April 25, 1993

5. Visibility on surface (%): Surface visibility ranged from zero visibility where plant growth was dense to 95 percent visibility in the dune area in the northwest corner of the field (Figure 3). Approximately 18 percent of the field fell into the low surface visibility range, i.e., 0 to 30 percent surface visibility, approximately 26 percent of the field fell into the 30 to 70 percent surface visibility range, with the remaining 56 percent of the field falling into the 70 to 95 percent surface visibility range.

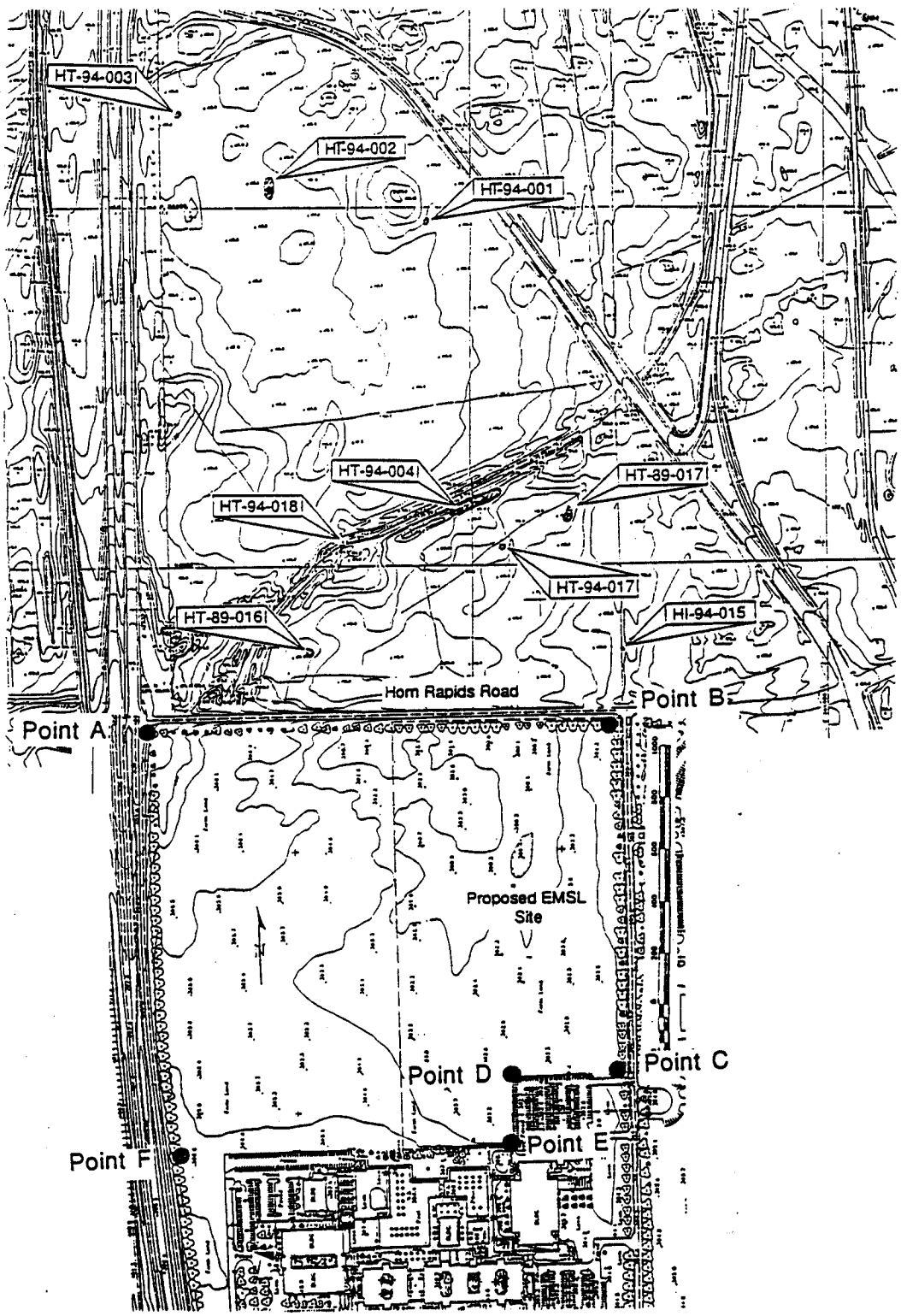

Figure 4. Known historic and prehistoric sites and isolates north of Environmental Molecular Sciences Laboratory Site 6.

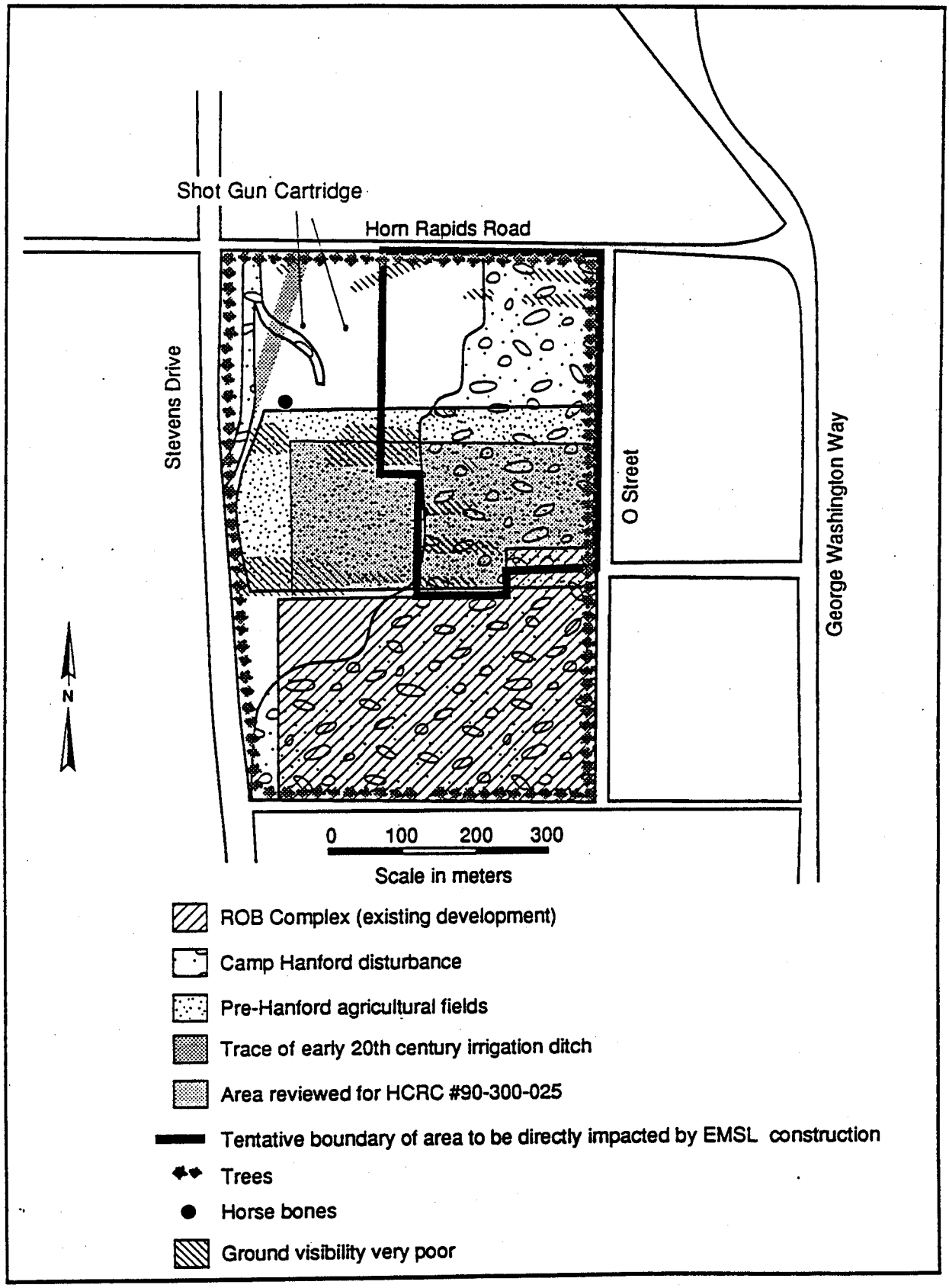

Figure 5. Known features and their association with Environmental Molecular Sciences Laboratory Site 6.

94-3000-002: Environmental Molecular Sciences Laboratory - Site 6
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Visibility of subsurface (%): Estimate:<10% Afforded by plowing, disking, and previous ground disturbing activities.

6. Problems encountered: There were no problems encountered during this survey other than variation in ground surface visibility due to alfalfa growth. A light rainstorm developed during the last 1.5 hours of the survey.

F. RESULTS

Although surface visibility was variable throughout the field, surveyors noted an intermittent fragment scatter of concrete, asphalt, brick, red ceramic (irrigation/sewer pipe?), and an occasional piece of brown bottle glass. These fragments were consistently found in the east half and northwest quarter or dune area of the field. Asphalt, concrete and brick fragments found in the east half of the field were often in association with expanses of stunted plant growth that likely represent extinct streets, sidewalks, and trailer spaces from Camp Hanford. Concrete fragments found in the northwest quarter (dune area) of the field are likely to represent that segment of an irrigation canal that once passed through this portion of the field.

Nine bone fragments were encountered during the survey. One 4mm long bone with an articular surface (wall approximately 1 mm thick) was noted at the edge of the field in the northeast corner of the field. Two similar bone fragments (both shaft fragments), with thin walls (1 mm), were noted in the dune area (northwest quarter) of the field. A small concentration (diameter of 2 meters) of bone from a larger mammal was also encountered in the dune area. The bone fragments are likely horse (*Equus,* spp.). The measurable fragments are fairly consistent in size; 4.0 mm x 4.0 mm, 6 mm x 3 mm, and 3.5 mm x 3.5 mm. One fragment in the concentration is that of a tooth; 2.7 mm x 5.5 mm.

1. All cultural resources recorded for this area (key to map): [X]None
There were no historic properties encountered or recorded during the course of this survey.

2. Cultural resources noted but not formally recorded (key to map):
In addition to the faunal remains discussed above, two shotgun shell cartridges were noted in the northwest corner or dune area of the field.

Repository (for all original survey records, photos, maps, and artifacts):
All original records, maps, etc. are stored at the Hanford Cultural Resources Laboratory located in Sigma IV, Richland, Washington.

G. CONCLUSIONS AND RECOMMENDATIONS:

The construction of a new Environmental Molecular Sciences Building at Site 6 will not affect any known historic properties encountered during the course of field survey. Although

of the new Environmental Molecular Sciences Building, these remnants have no integrity and are not yet 50 years of age.

Several unresolved questions remain for proposed activities in the northwest quarter of the field where remnants of a dune and exposed "horse" bone fragments are located. Dunes are also known to have been selected as human burial sites on the Hanford Site. The presence of "horse" bones in the dune area of the field has heightened the concern of some Native Americans that the segment of the dune included in Site 6 may contain human remains. Given these indications, it is recommended that the northwest portion of the alfalfa field be avoided by all construction activities including the laydown yard and any utility corridors. If avoidance of this area is not possible, then remote sensing techniques may provide a significant level of confidence that buried human remains are either present or absent in the dune area. Current project plans include geophysical borehole testing within the "footprint" of the new laboratory and remote sensing tests for the dune area and perhaps the entire field. The results of these tests will further define the physical extent of construction impacts associated with the Environmental Molecular Sciences Laboratory.

In sum, the proposed construction of the new Environmental Molecular Sciences Laboratory will not impact any known historic properties. It is recommended that the northwest portion of the field be avoided by construction activities and that if avoidance of this area is not possible, that non-intrusive remote sensing techniques be used in the dune area to provide a high level of confidence that buried human or other remains are not inadvertently impacted.

H. REFERENCES:

36 CFR Part 60. 1992 (Amended). *National Register of Historic Places.* U. S. Code of Federal Regulations. Washington, D. C.

36 CFR Part 800. 1992 (Amended). *Protection of Historic and Cultural Properties.* U. S. Code of Federal Regulations. Washington, D. C.

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Cadoret, N. A. 1994. "300 Area South Office Building". Cultural Resources Report. Pacific Northwest Laboratory. Richland, Washington.

Cushing, C. E. 1992. *Hanford Site National Environmental Policy Act (NEPA) Characterization.* PNL-6415 Rev. 5. Pacific Northwest Laboratory, Richland, Washington.

Gard, H. A. 1990. "Cultural Resources Review of the Molecular Science Research Laboratory: Site Selection". Letter to M. T. Thomas dated December 3, 1990. HCRC #90-300-025. Pacific Northwest Laboratory. Richland, Washingon.

Battelle Pacific Northwest Laboratories
CULTURAL RESOURCE REPORT NARRATIVE
Hanford Cultural Resources Laboratory

94-3000-002: Environmental Molecular Sciences Laboratory - Site 6
Project Number Project Name

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Krieger, H. W. 1928. "A Prehistoric Pit House Village Site on the Columbia River at Wahluke Grant County, Washington". Proceedings of the United State National Museum. No. 2732. Volume 73, Article11, pp. 1-29.

Relander, C. 1986. *Drummers and Dreamers.* Caxton Printers, Caldwell, Idaho.

Rice, D. G. 1980. "Cultural Resources Assessment of the Hanford Reach of the Columbia River, State of Washington". Contract DACW67-M-80-1193. Seattle District, U. S. Army Corps of Engineers. Seattle, Washington.

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Trafzer, C. E. and R. D. Scheuerman. 1986. *Renegade Tribe The Palouse Indians and the Invasion of the Inland Pacific Northwest.* Washington State University Press, Pullman, Washington.

Thoms, A. V. 1983. "Archaeological Investigations In Upper McNary Reservoir: 1981-1982". Project Report 15. Laboratory of Archaeology and History. Washington State University, Pullman, Washington.

Woodruff, R. K., R. W. Hanf, and R. E. Lundgren. 1993. Hanford Site Environmental Report for Calendar Year 1992. PNL-8682. Pacific Northwest Laboratory. Richland, Washington.

I. ATTACHMENTS (mark if present)

1. Site form for each site? [ ]
2. Hanford Site map and project map(s)? [X]
3. Other attachments? [X]

J. CERTIFICATION OF RESULTS

I certify that I conducted the investigation reported here, that my observations and methods are fully documented, and that this report is complete and accurate to the best of my knowledge.

M. K. Wright
Signature of Reporter

5-5-94
Date

Paul R. Hibdon
Signature of Reviewer

5/5/94
Date

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Letter Report

THE CULTURAL RESOURCES INVESTIGATION OF SITE 6 FOR THE ENVIRONMENTAL MOLECULAR SCIENCES LABORATORY ON THE HANFORD SITE

M. K. WRIGHT
N. A. CADORET

June 17, 1994

Prepared for
the U. S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Richland, Washington 99352

ABSTRACT

Construction of the Environmental Molecular Sciences Laboratory (EMLS) north of Richland, Washington will provide facilities for the fundamental scientific understanding needed for the U.S. Department of Energy to successfully carry out its energy research and environmental missions. A cultural resource investigation was conducted to determine the presence or absence of cultural resources and buried human remains at EMSL Site 6, the selected location for the new EMSL complex. Following completion of a baseline field survey, subsurface excavation, soil depth probes, soil conductivity, and ground penetrating radar tests, it has been determined that construction of EMSL will not adversely effect any cultural resources that are eligible or potentially eligible for listing on the National Register of Historic Places.

INTRODUCTION

This narrative reports on results of further characterization of the proposed Environmental Molecular Sciences Laboratory (EMSL) construction site (Site 6), following the systematic survey of the project area (Wright 1994), and development of a subsurface testing plan. The testing objectives were threefold: to ensure that geophysical borehole testing would not inadvertently impact buried cultural deposits, to determine the depth of soil/sediment to gravel substrates, and to identify subsurface anomalies recorded during remote sensing tests. These actions were expected to increase confidence levels that construction activities at EMSL Site 6 would not inadvertently impact buried cultural deposits or human remains.

The stepped approach included subsurface testing, soil depth probes, and remote sensing of selected locations. The tests completed during this phase of investigation included 1) excavation of 1m x 1m test pits prior to geophysical borehole drilling 2) penetration of the surface with steel rods to determine soil depths and the depth of gravel deposits 3) the use of soil conductivity and ground penetrating radar remote sensing equipment to search for subsurface anomalies, and 4) controlled excavation to identify subsurface anomalies located during the remote sensing process.

BACKGROUND

The Hanford Site includes approximately 1450 km^2 (~ 560 mi^2) and lies in the semiarid Pasco Basin of the Columbia Plateau in southeastern Washington State (Cushing 1992). Approximately 6 to 10 % of the site has been impacted for a variety of uses including waste storage and disposal.

The U. S. Department of Energy (DOE) established a new mission for the Hanford Site that includes the management and handling of stored waste, environmental restoration of inactive waste sites and excess facilities, research and development, and the development of new technologies. This mission includes bringing federal facilities into compliance with local, state, and federal laws and proposes site-wide cleanup by 2018 (Woodruff et al., 1993).

The construction of a new EMSL is part of the DOE-RL mission at the Hanford Site (Figure 1). Ground breaking ceremonies for this new facility were held on April 8, 1994. The initial phases of earthwork for a laydown yard began on April 11, 1994. On April 12, 1994, human remains were encountered during grading activities. This discovery led to a shut down of all construction activities while officials from DOE-RL, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce, Yakama Indian Nation, Wanapum, and Pacific Northwest Laboratories (PNL) worked to resolve issues associated with the discovery. Included in the issue resolution was the selection of a new construction site for the EMSL facility. Two previously considered locations, EMSL Site 4 and EMSL Site 6, were re-evaluated as possible candidates for placement of the EMSL facility. After consideration, EMSL Site 4 was discarded and EMSL Site 6 became the new selected site. The new location, EMSL Site 6, is located approximately 4 km (2.5 miles) north of Richland, Washington and 0.8 km (0.5 mile) west of the Columbia River and is currently used to cultivate alfalfa. The field is bordered to the north by the Horn Rapids Road, to the east by George Washington Way, to the south by Battelle's Regional Office Building complex and to the west by Stevens Boulevard. The perimeter of the field, except along the southern border, is lined with planted sycamore trees.

Construction activities for the EMSL will include building the laboratory, the construction of access roads and parking lots, the placement of underground service utilities, and landscaping. Facilities construction may require the use of land west of the building as a "laydown yard" for building component storage that will accommodate assemblage and staging activities (Figure 2).

The EMSL Site 6 location is currently in use as a farm field. Known past uses of this area are listed the Table 1. Elevations in the field range from 122 m absl (402 ft) in the northwest corner to a low of 118 m absl (390 ft) in the northeast corner. In the southern portion of the field, elevations range from a high of 120 m absl (396 ft) in the southwest corner to 119 m absl (393 ft) in the southeast corner. Evidence of a northeast/southwest trending stabilized dune is apparent in the northwest corner of the field.

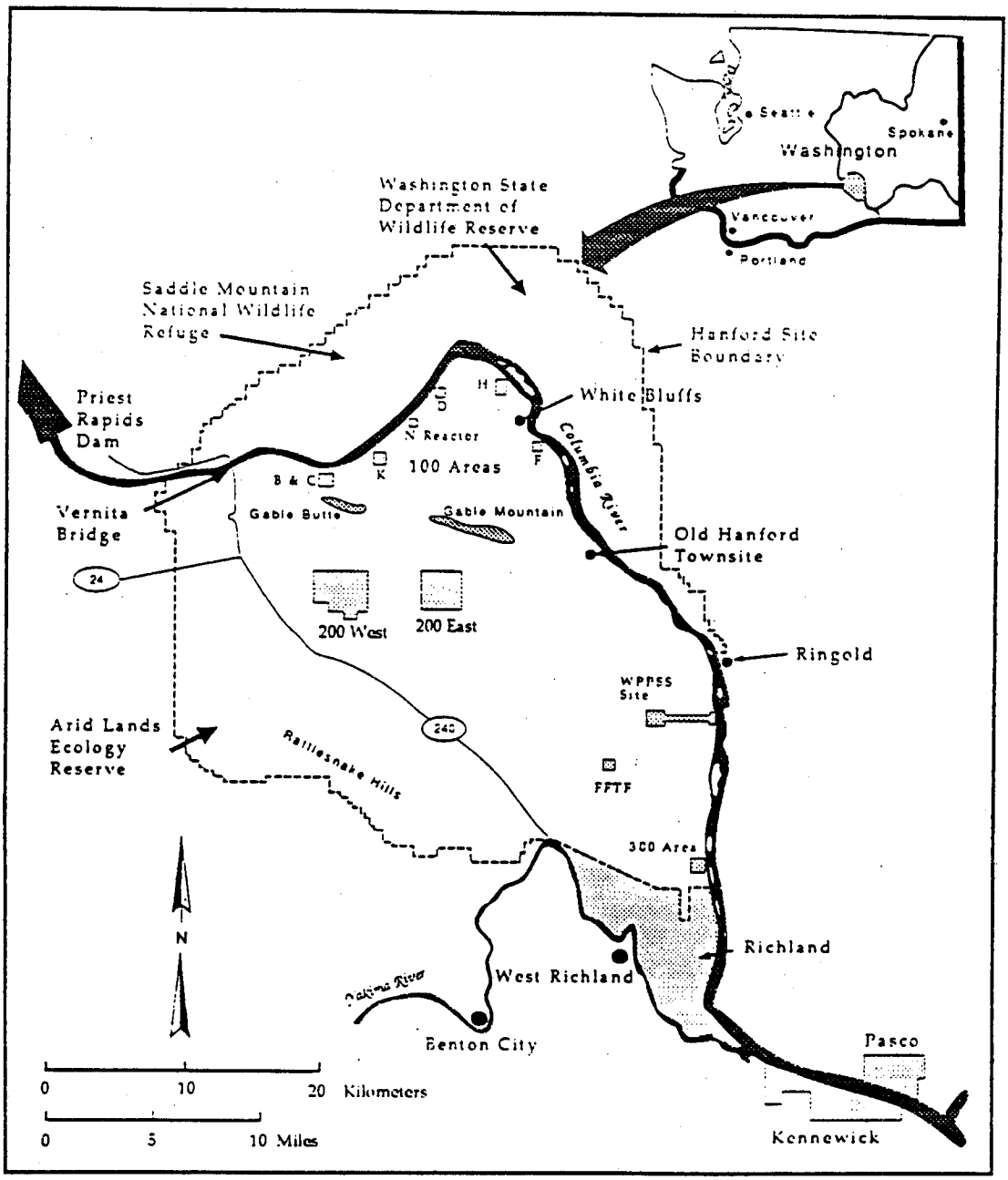


Figure 1. The location of the Environmental Molecular Sciences Laboratory Site 6 on the Hanford Site.

Table 1. Timeline for Past Use at EMSL Site 6

DATE OF USE	TYPE OF ACTIVITY	INDIVIDUAL/GROUP
Prehistoric	Intermittent Subsistence	Native Americans
Ethnographic to 1943	Intermittent Subsistence	Wanapum Indians
~1900-1943	Farming/ranching	Euroamericans
1947 through 1955	Habitation	North Richland Construction Camp managed by
General Electric Company		
1951-1961	Military	Camp Hanford
1962 through 1965	Demolition	Camp Hanford
1964	Deed Granted	Atomic Energy Commission deeded
to		City of Richland
1965	Deed Granted	City of Richland deeded to Battelle
1967 through 1972	Farming	Mr. Max Hughes
1973 through 1977	Farming	Mrs. O. J. Marcum
1978 through 1986	Farming	Mr. William R. Petheram

Previous Archaeological Studies

Several studies regarding past uses of EMSL Site 6 have been completed. The results of these efforts indicate that the general area surrounding the field has been in use prehistorically (Thoms 1983, Rice 1980), ethnographically (Relander 1986, Trafzer and Scheuerman 1986, Krieger 1928), and historically (Cadoret 1994). Relander (1986) states that "From the foot of Priest Rapids, downstream to the mouth of the Snake River...that ... [the] Wanapums had fifteen villages, the largest being Towmowtowee (Richland)". Historic use of the area includes homesteading and farming activities.

Previous work in the project area (Gard 1990) included the excavation of approximately 90 shovel probes within an area measuring 600 m in width by 200 m in length (Figure 2). The depths of these probes ranged from 10 cm in the eastern portion of the surveyed area to 50 cm in the western portion of the surveyed area. There were no buried cultural deposits reported in any of the shovel probes.

Morgan (1981) cautioned that construction activities at the corner of Horn Rapids and Stevens Drive should be monitored because the "sand dune area located on the northeast side of Stevens Drive may contain buried archaeological material" and that "although no archaeological materials were observed during the course of the present survey the potential for buried materials is present and should be considered" (Morgan 1981).

Historic Maps

The G. L. O. Plat for T. 10 N., R. 28 E., surveyed on September 15, 1864, shows a trail along both banks of the Columbia River. There are no other features shown on this township. Trails recorded in the course of Government Land Office surveys were often "Indian Trails" or pedestrian highways connecting important aboriginal fishing/hunting and meeting locations.

The 1917 U. S. G. S. topographic quadrangle for Pasco, Washington shows no structures at the project site but an irrigation canal is located in the western section of the alfalfa field (Figure 3).

Aerial Photography

An Agricultural Adjustment Administration photograph numbered CIH-204-100 and dated 6-25-39 pictures the southern part of EMSL Site 6 as agricultural fields while the northern part appeared to be rangeland (Figure 2). No structures were located within the construction area. The irrigation canal is shown in the western portion of the alfalfa field.

Aerial photograph GS-XB, 2-22 dated 5-24-48 shows the North Richland Construction Camp under construction. One road cuts across the irrigation canal in the western portion of the alfalfa field (Figure 2).

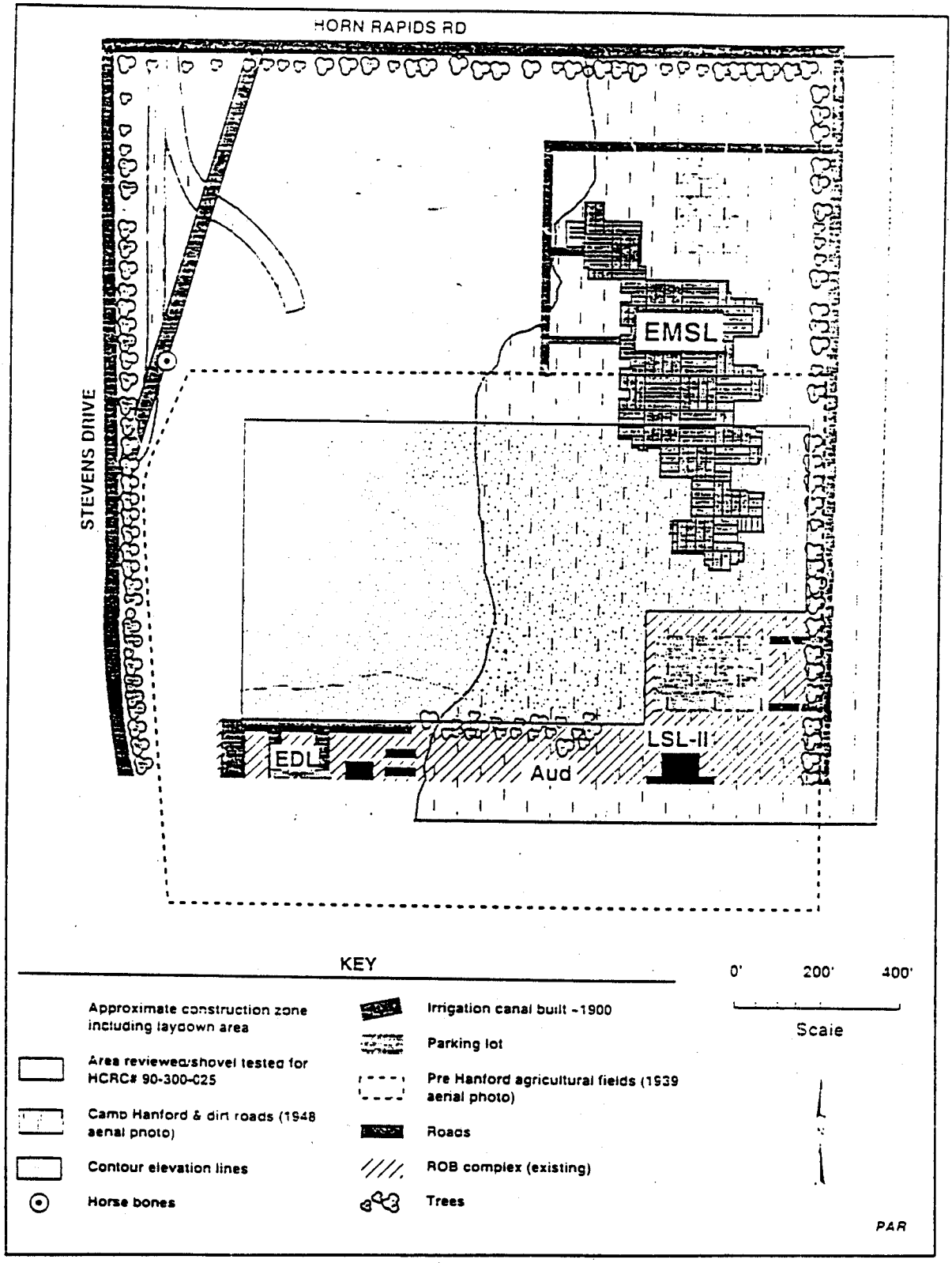


Figure 2. Historic land use and previous study area at EMSL Site 6.

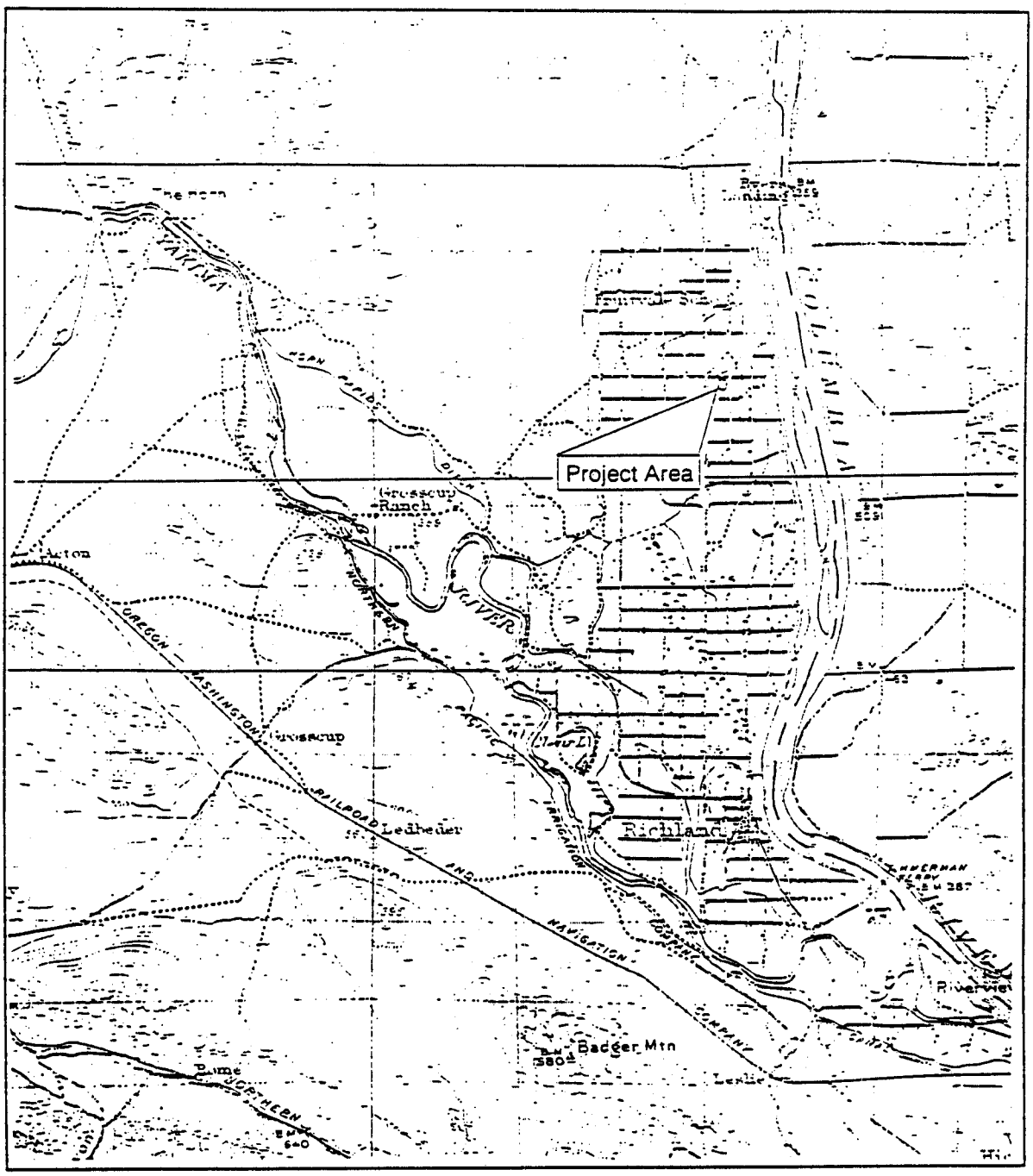


Figure 3. 1917 edition of the Pasco, Washington, U. S. G. S. 15 minute topographic quadrangle map.

An infrared aerial photograph taken in the spring of 1970 show the project area planted in crops. Traces of the roads from Camp Hanford are visible.

FIELD INVESTIGATIONS

The background research conducted for this project area provided an important directive framework for the field investigations that followed including field survey, borehole testing, depth probes, and remote sensing.

Survey

The EMSL Site 6 was surveyed by PNL archaeologists on April 25, 1994, in accordance with Section 106 of the National Historic Preservation Act. Although surface visibility was variable throughout the field, surveyors noted an intermittent fragment scatter of concrete, asphalt, brick, red ceramic (irrigation/sewer pipe), and an occasional piece of brown bottle glass. These fragments were consistently found in the east half and northwest quarter or dune area of the field. Asphalt, concrete and brick fragments found in the east half of the field were often in association with expanses of stunted plant growth that likely represent extinct streets, sidewalks, and trailer spaces from Camp Hanford. Concrete fragments found in the northwest quarter (dune area) of the field were thought to be remnants of an irrigation canal that once passed through this portion of the field.

Nine bone fragments were encountered during the survey. One 4 cm long bone with an articular surface (wall approximately 1 mm thick) was noted at the edge of the field in the northeast corner of the field. Two similar bone fragments (both shaft fragments), with thin walls (1 mm), were noted in the dune area (northwest quarter) of the field. A small concentration (diameter of 2 meters) of bone from a larger mammal was also encountered in the dune area. The bone fragments are likely horse (*Equus*, spp.). The measurable fragments are fairly consistent in size; 4.0 cm x 4.0 cm, 6 cm x 3 cm, and 3.5 cm x 3.5 cm. One fragment in the concentration is a tooth measuring 2.7 cm x 5.5 cm.

The presence of faunal material, some fragments of which are tentatively identified as *Equus*, spp. (horse), and the discovery of human remains in a stabilized dune at the original EMSL construction site heightened the concern of some Native Americans and others that human remains could be present in the northwest quarter of the alfalfa field. In sum, survey results identified the need for additional testing of subsurface deposits prior to construction of the EMSL facility and complex.

Geophysical Borehole Test Excavations

Plans for geophysical testing to determine the suitability of substrata to support the weight of the proposed EMSL structure were initiated early in May, 1994. Eight boreholes, located in the east half of the alfalfa field (Figure 4), within the "footprint" of the building, were established to investigate subsurface stratigraphy. In an effort to ensure that the drilling operations would not inadvertently impact unknown buried cultural deposits, eight 1m x 1m test units were excavated to gravels prior to drilling operations at each geophysical borehole location. Standard archaeological excavation techniques were used throughout the testing process. The matrix was removed with flat-nosed shovels in 10 cm arbitrary levels and screened through 1/8 inch wire mesh. Items recovered during this process were bagged and labeled in the field, then transported to HCRL offices.

All of the test units were shallow, extending to a maximum depth of 35 cm at B-3 (Figure 5). The top of a gravel substrate was encountered in all test units at depths ranging from 16 to 35 cm below surface. Recent historic debris including concrete, asphalt, nails, glass, ceramic pipe, and metal fragments were present in all units except for test unit at B-7 which contained no cultural material.

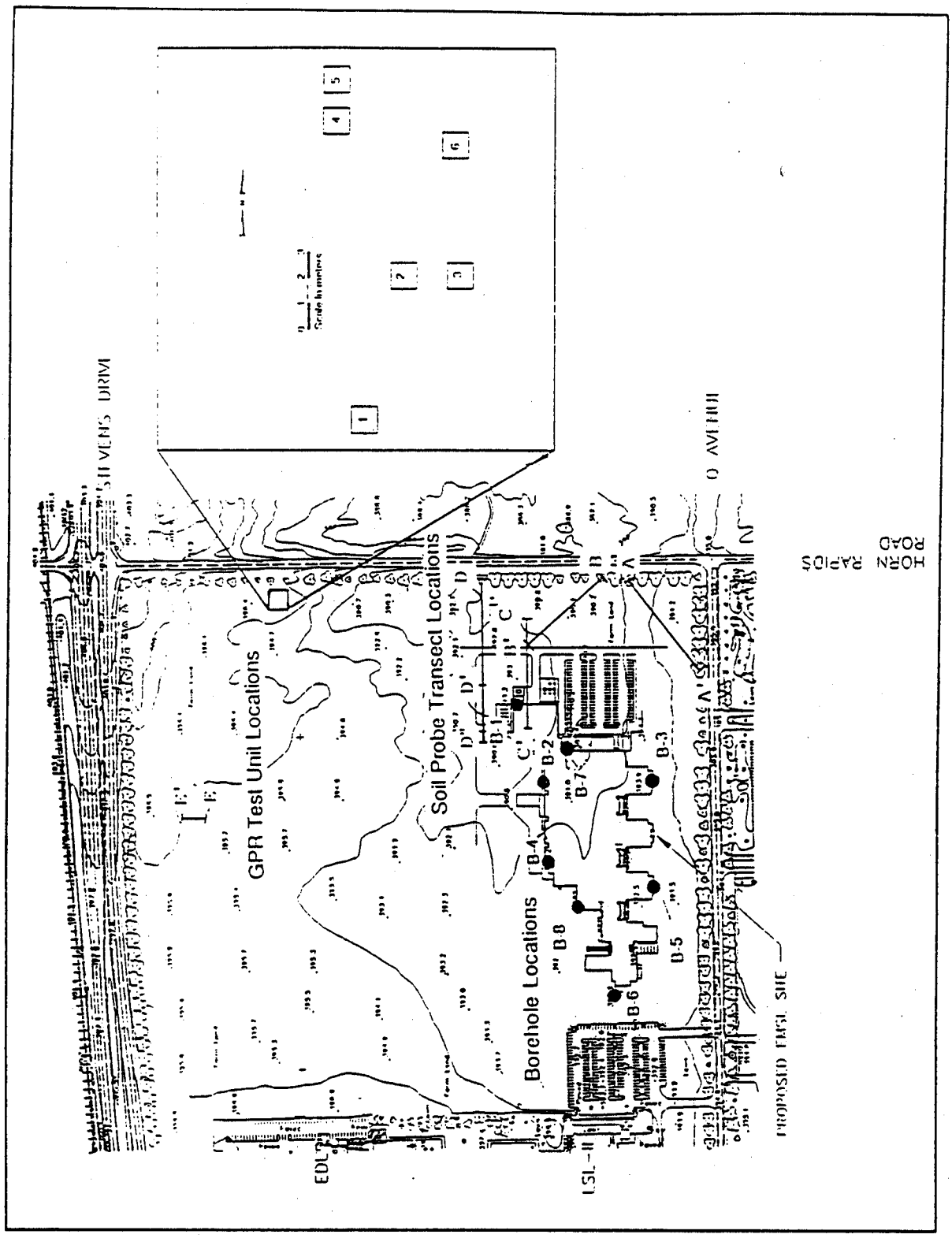
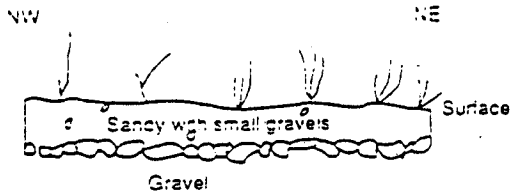
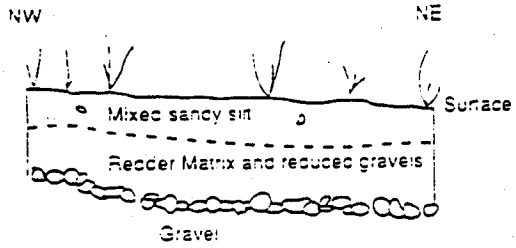


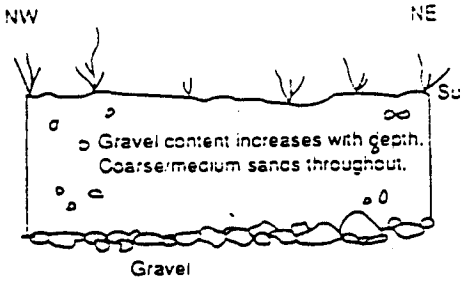
Figure 4. Topographic contour map of EMSL Site 6 showing geophysical boreholes, soil probe transects and GPR anomaly test unit locations.



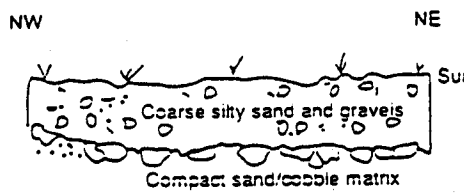
B-1
Two modified cobble fragments and two glass fragments were recovered from this test unit. The unit was abandoned at 12 cm below surface.



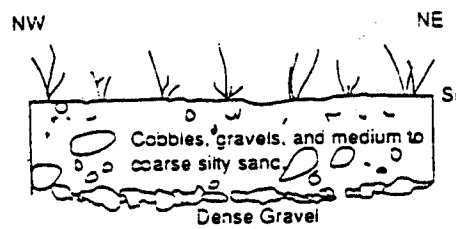
B-2
Two concrete fragments were recovered from this test unit. The test unit was abandoned at 21-29 cm below surface.



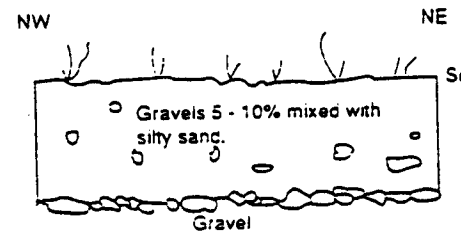
B-3
Recent historic debris in this test unit included a fabric fragment, rusted metal fragments, a cinder, one ceramic pipe fragment, one light green glass fragment, and three concrete fragments. The test unit was abandoned at 27-35 cm below surface.



B-4
Recent historic debris in this test unit included five cinders, one fragment of unknown material, and three glass fragments. The test unit was abandoned after a hard sand/cobble matrix was encountered from 10-19 cm below surface.



B-5
Eight large cobbles (15 - 20 cm) were in the matrix . Historic debris in the test unit included one cinder, one concrete fragment, one metal fragment and one red ceramic pipe fragment. The test unit was abandoned at 20-23 cm below surface.



B-6
Recent historic debris in this test unit included a fabric fragment, nails, glass fragments, a ceramic fragment, metal fragments, a concrete fragment, one cigarette filter, three fragments of an undetermined material, and one earthenware fragment. The test unit was abandoned after gravel and cobbles were encountered at 30 cm below surface.

Figure 5. Schematic stratigraphic profiles and summary of findings of borehole test units.

Soil Depth Probes

Portions of EMSL Site 6 which had not been previously tested were probed with steel rods to define areas with deep deposits of fine sediments for further investigation with ground penetrating radar (GPR).

Probing was accomplished with narrow steel rods pounded into the ground to gravels or to the limit of the rod. Probes were placed every 10 ft along 5 transects (Figure 4). Depth to gravels ranged from 10 cm to greater than 100 cm. Results are summarized in Figure 6. In the northeast corner of the project area depth to gravel was generally shallow, less than 45 cm (18 inches). Isolated pockets of deeper sediments were identified along transects A and B. More extensive areas of deep sediment were identified along transects D and E. These areas were planned for examination by GPR equipment.

Soil Conductivity Tests

Soil conductivity tests were used to detect subsurface anomalies in the northeast corner of the alfalfa field (Figure 7). This location was selected because it was within the construction zone for the EMSL complex and there was more potential soil depth in the northern portion of EMSL Site 6 than in the southern portion (Gard 1990). Soil conductivity meters project an electro-magnetic field into the ground from the ends of an internal antenna. The meter records resistance to the magnetic field and the depth at which the resistance occurs. Jim Bell, under contract with Battelle, performed the remote sensing using a Geonics EM-38 Soil Conductivity Meter. Readings were taken every 5 feet along 200 foot transects spaced at 5 foot intervals. These readings were logged and mapped to produce a map of subsurface anomalies.

Several anomalies were identified during this process, most were small, less than 5 feet in diameter, and aligned in a north/south trend,. Several were larger, 10 ft in diameter or 2 ft by 10 ft in length. One large anomaly measuring approximately 40 ft by 40 ft with long linear extensions was recorded in the west half of the grid. This anomaly appeared to be similar in shape to a basement or septic system with narrow trenches for buried pipelines. Other linear anomalies were aligned with existing water hydrants and an old sign identifying a buried water line.

Ground Penetrating Radar Tests

Ground penetrating radar equipment was used at selected locations where 1) soil conductivity tests showed anomalies, 2) where soil probes indicated that the soil layer was greater than 0.5 m (1.6 ft) in depth, and 3) where surface indictors, e.g., horse bones, suggested the potential for buried cultural materials or human remains.

A total of five locations (Figure 7), were surveyed using a SIR-3 GPR system with a 500 mHz antenna. Radar penetrated to an approximate depth of 6 ft below the surface of each continuous linear transect. Transect were spaced at a 5 foot intervals. All of the readings were recorded: most of the transects were recorded on paper printouts, a few were videotaped.
Several anomalies were located and identified during GPR testing including linear anomalies that correlated with exposed pipelines in the northeast corner of the alfalfa field and with a known irrigation canal in the northwest corner of the alfalfa field. The correlation of anomalies in the northeast corner of the alfalfa field with identifiable objects, i.e., pipes and Camp Hanford construction eliminated them from further subsurface testing. The GPR printout also clarified the relationship between faunal remains and the horse tooth noted during survey investigations and the irrigation canal. The canal and faunal material were found to be in direct association, and were therefore probably contemporaneous. These associations eliminated the "horse bone" area from further subsurface testing. Other anomalies located in the dune area at location GPR-5 could not be associated with any known historic disturbances. As a result, these anomalies located during GPR testing in the dune area were staked to receive subsurface testing, e.g., test unit excavation.

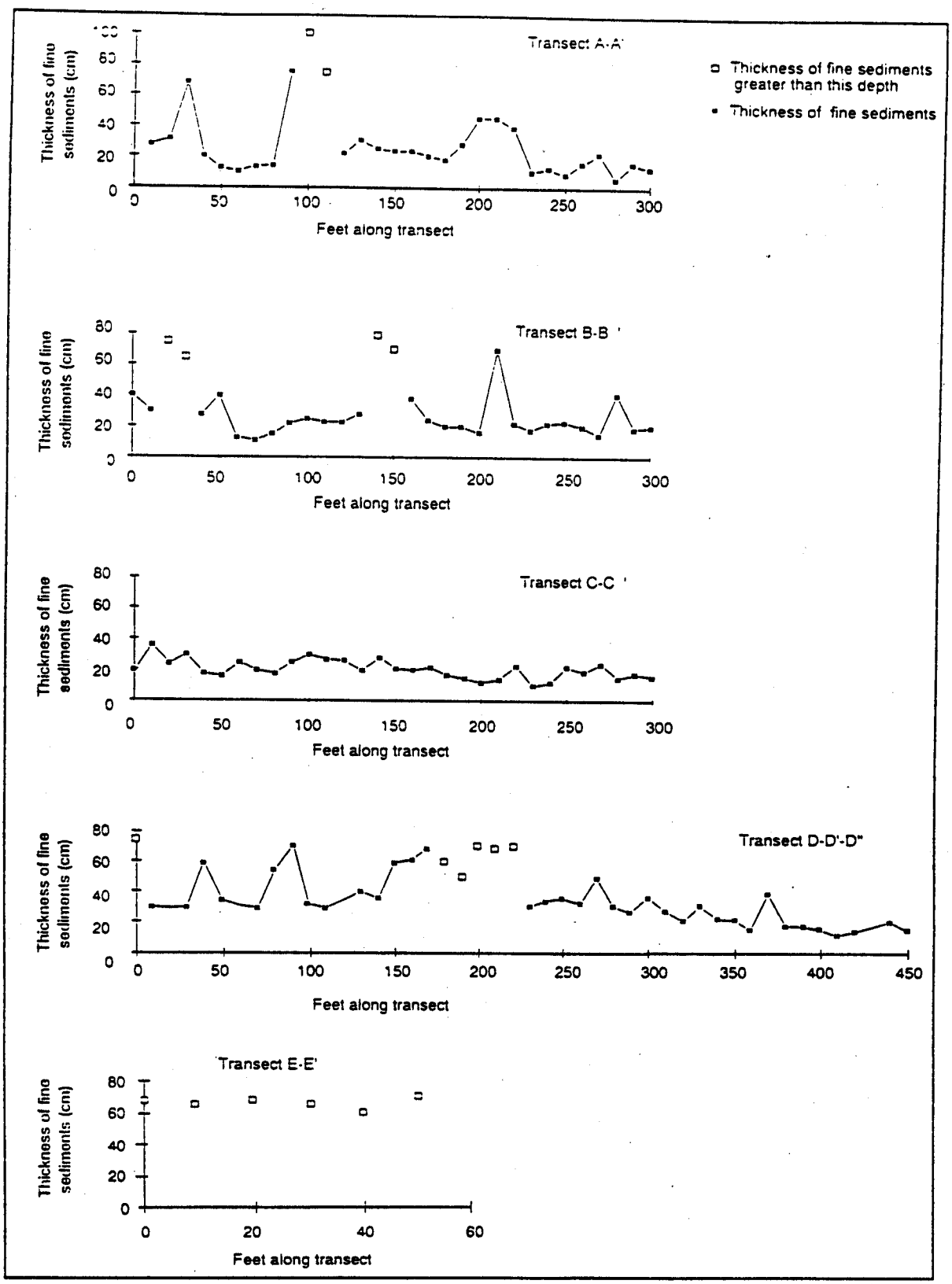


Figure 6. Thickness of fine sediments along soil probe transects.

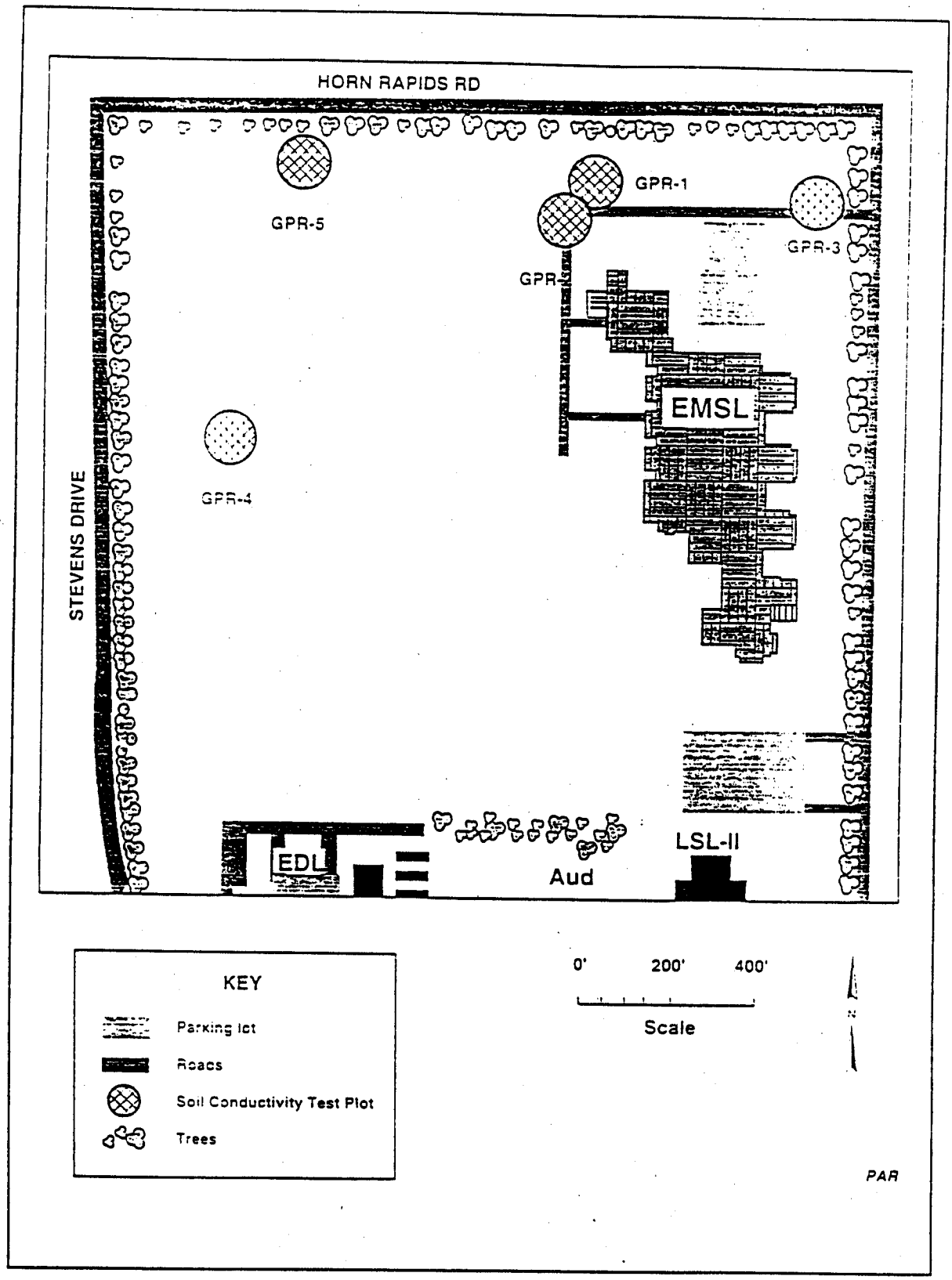


Figure 7. Location of GPR investigations.

Test Units

Six test units were dug at locations where anomalies had been identified during GPR investigations. Test units measuring 1 m^2 and were dug to 90 cm (3 ft), the lower limit of the anomalies. Four strata could be defined in all six test units, 1) an upper plow zone measuring approximately 17 cm (7 inches) thick underlain by 2) poorly sorted eolian silty sand about 45 cm (18 inches) thick underlain by 3) moderately sorted slightly silty eolian or fluvial origin measuring about 25 cm (10 inches) thick underlain by 4) moderately to well sorted slightly silty sand of eolian or fluvial origin. No sedimentary structures were identifiable in the strata, probably as a result of bioturbation, thus making it difficult to determine the origin (whether fluvial or eolian) of the strata. Stratigraphic profiles of Test Units 1 and 2 are illustrated on Figures 8 and 9. Strata are described in Table 2.

Krotovina, animal burrows filled in with sediment different from the surrounding sediment, were common in Strata 2 and 3 between 45 cm (18 inches) and 80 cm (32 inches) deep. Figure 10 graphically summarizes the depth at which krotovina were noted in the walls of the test units. Large krotovina, greater than 20 cm, were identified in four of the test units. No other features were identified in the units which would account for the anomalies.

Excavated materials were screened through 1/8 inch mesh for cultural material. Three possible artifacts were identified and collected; a possible pebble tool in Test Unit 3 at 60 cm below surface and two possible flakes, one in Test Unit 3 at 60-70 cm below surface and the other in Test Unit 5 at 35-40 cm below surface. All possible artifacts were heavily abraded by the wind.

A 10 inch bucket auger was used at the base of each test unit to determine the depth to gravels. Depth to gravels ranged from 2.05 to 2.3 m below surface.

RESULTS AND CONCLUSIONS

The investigation of EMSL Site 6 for the presence or absence of cultural deposits has been completed. These investigations involved field survey, subsurface excavation, soil conductivity tests, and the use of ground penetrating radar equipment at selected locations in an effort to search for areas that retained soil depths capable of containing buried cultural deposits. The initial phase of investigations, a background and literature review of readily available materials, revealed that EMSL Site 6 had been modified by numerous historic activities including the installation of an irrigation canal, farming activities, and the construction of Camp Hanford and/or North Richland Construction Camp . A field survey of Site 6 verified 1) the presence and later demolition of the irrigation canal and Camp Hanford and/or North Richland Construction Camp, 2) the presence of dunes in the northwest corner, and 3) the need for additional investigations including remote sensing and subsurface tests. Additional investigations conducted at EMSL Site 6 included subsurface testing at geophysical borehole locations, remote sensing of selected areas for subsurface anomalies, and excavation of anomalies to determine their identity.

This extensive testing program provided a high level of confidence that the construction of the EMSL complex as currently planned will not impact human remains or buried cultural materials that are eligible for listing on the National Register. It is recommended that the northwest corner of the alfalfa field be considered a potentially sensitive area because of the considerable depth of fine sediments in the northwest corner of the alfalfa field (dune area with elevations above 396.0 ft) which could not be fully investigated due to the limitations of current technology.

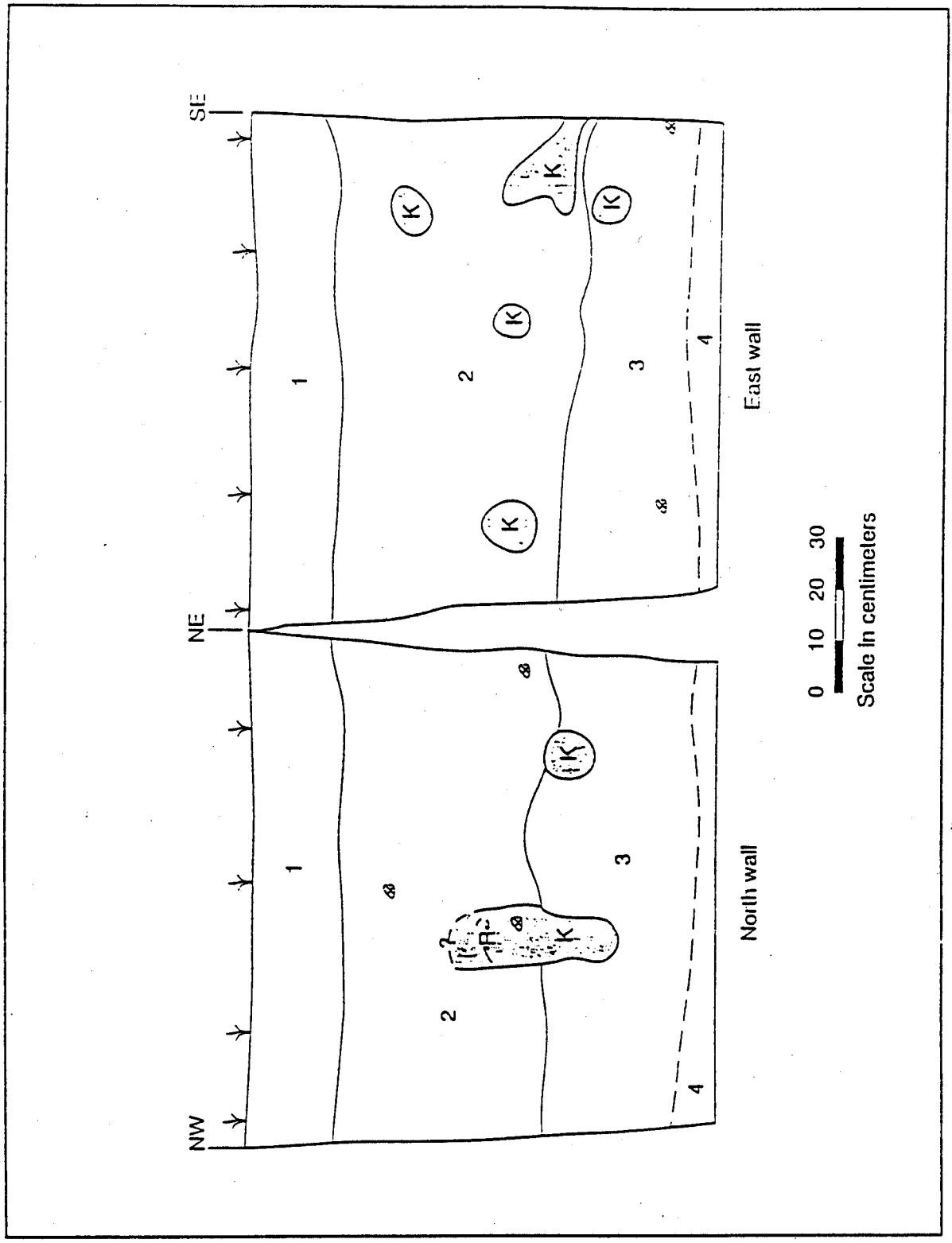


Figure 8. Stratigraphic profile of east and north walls of Test Unit 1, EMSL Site 6. See Figure 9 for explanation.

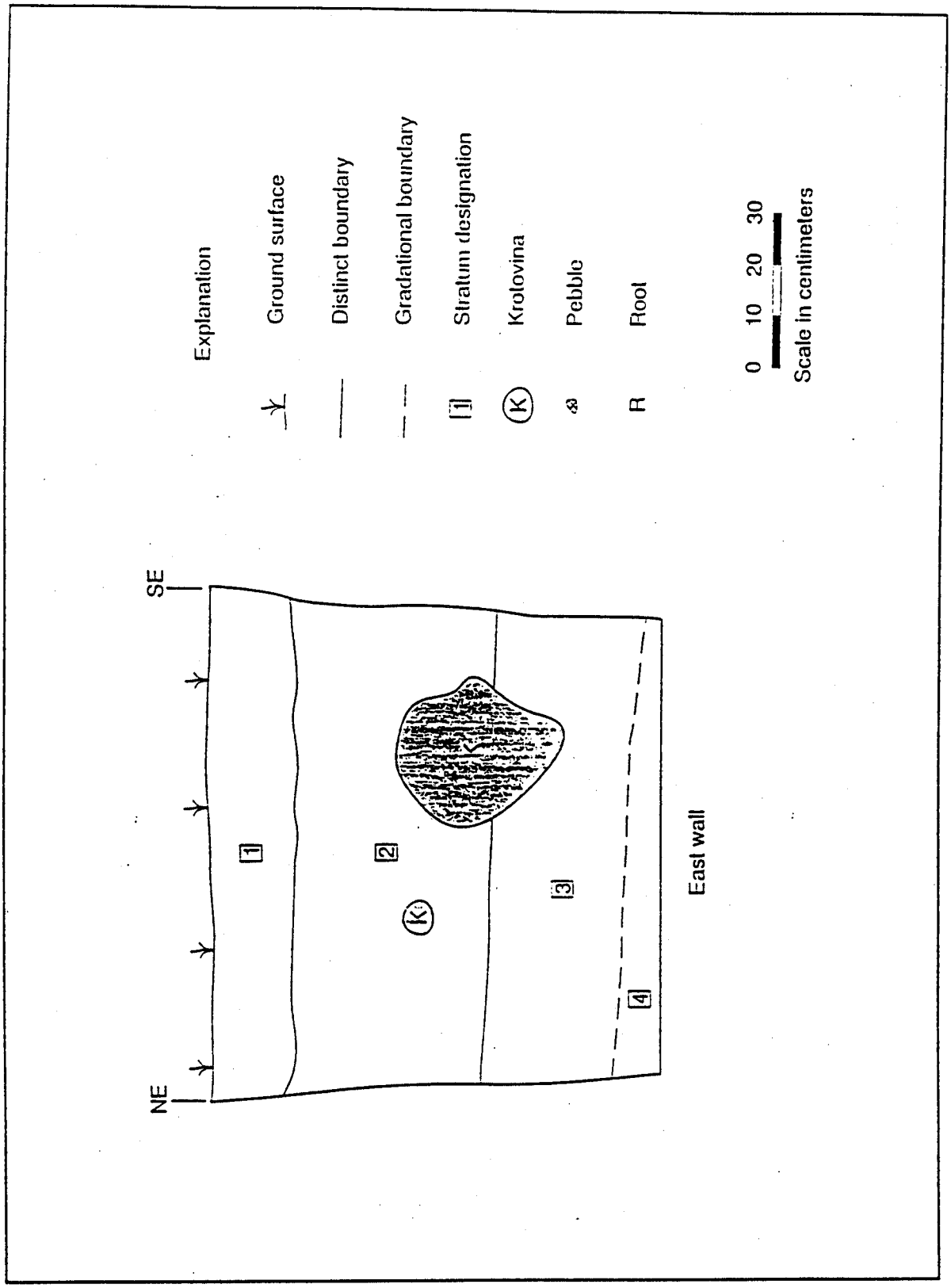


Figure 9. Stratigraphic profile of east wall of Test Unit 2, EMSL Site 6.

Table 2. Stratigraphic Descriptions for Test Units 1-6, EMSL Site 6.

	Stratum 1	Stratum 2	Stratum 3	Stratum 4
Munsell Color				
dry				
Munsell notation	2.5Y5/4	2.5Y 5/4	2.5Y5/2	2.5Y5/2
Color name	light olive brown	light olive brown	grayish brown	grayish brown
wet				
Munsell notation	2.5Y3/2	2.5Y3/2	2.5Y3/2	2.5Y3/2
Color name	very dark grayish brown	very dark grayish brown	very dark grayish brown	very dark grayish brown
Reaction to 10% HCl	-	-	-	-
Sediment name	silty sand	silty sand	slightly silty sand	slightly silty sand
Grain size				
Range	silt to very coarse sand	silt to very coarse sand, << 1% rounded pebbles	silt to very coarse sand, << 1% rounded pebbles	silt to coarse sand
Dominant	very fine and medium sand	medium sand	fine to medium sand	fine to medium sand
Sorting	poorly sorted	poorly sorted	moderately sorted	moderately to well sorted
Friability	very friable	very friable	very friable	very friable
Structures	massive	massive	massive	massive
Bioturbation	root zone	krotovina common	krotovina common	none recognized
Lower contact	distinct, wavy	smooth, abrupt to gradational	smooth, gradational	not visible
Cultural material	none	none	none	none
Comments	Darker than other strata, plow zone	"softer", less dense than stratum 3, eolian	Better sorted, less silt, more fine sand than stratum 2, fluvial or eolian?	slightly lighter color, fluvial?

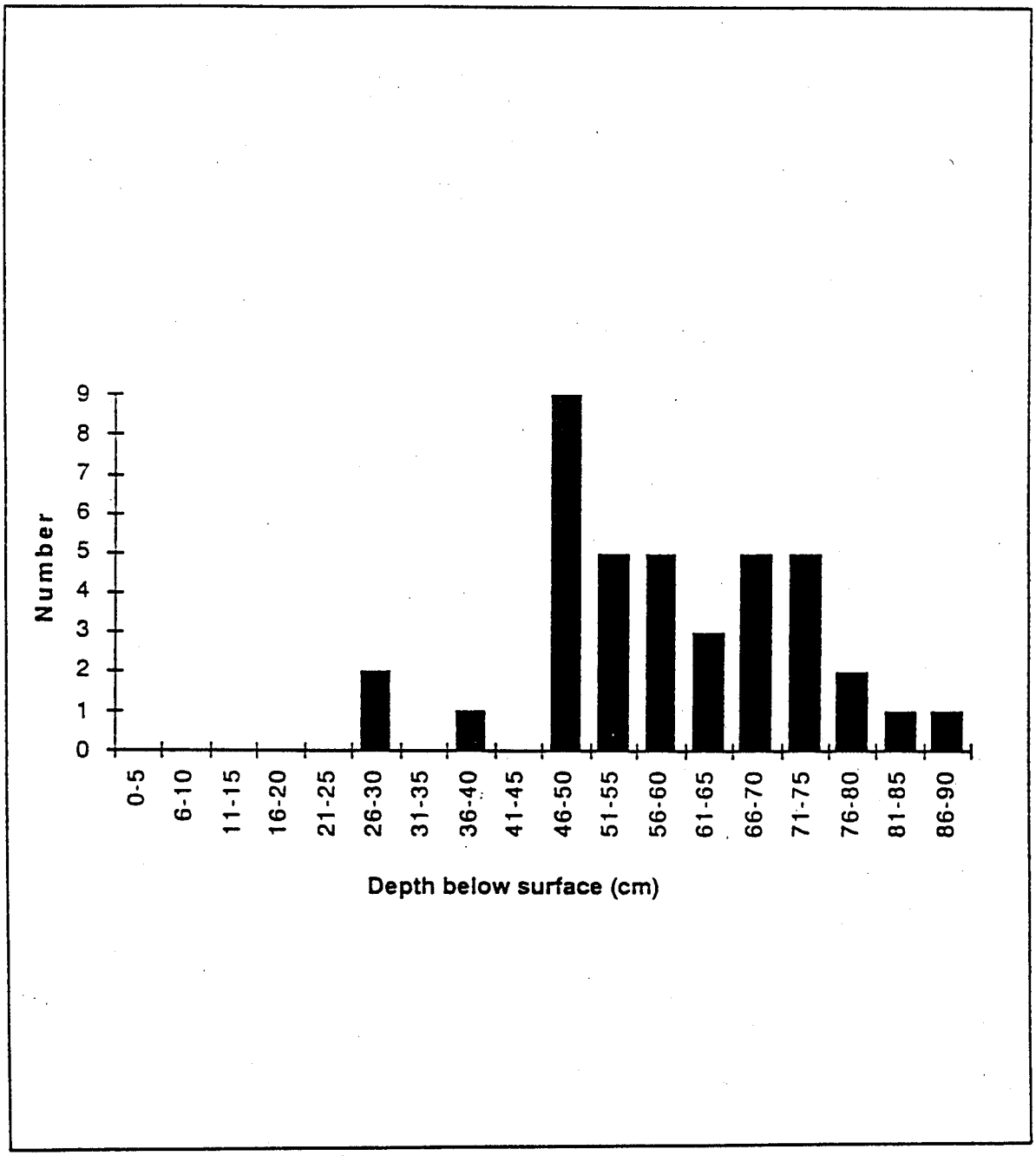


Figure 10. Frequency of krotovina mapped on stratigraphic profiles for all six test units by depth of center points of the krotovina.

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APR 2 1 1994

Mr. Robert Whitlam
State Historic Preservation Officer
Office of Archaeology and Historic Preservation
Department of Community Development
111 West Twenty-first Avenue, KL-11
Olympia, WA 98504-5411

Dear Mr. Whitlam:

This letter will confirm my conversation with David Hansen on April 12, 1994, and yourself on April 19, 1994, regarding the discovery of human skeletal remains within the proposed laydown area of the Environmental and Molecular Sciences Laboratory (EMSL) construction site on April 12 at approximately 11:15 a.m. As stated, additional remains have also been located in the area designated for the building itself. The discoveries were made by members of the Hanford Cultural Resource Laboratory. On the same day, representatives from the Nez Perce, Yakama, Umatilla and Wanapum were attending an onsite meeting regarding the Hanford Cultural Resource Management Plan. The tribes were immediately notified regarding the discovery. We have enclosed a copy of the draft report from the archaeologist who was present at the time of the discovery; the report outlines the events as they occurred on April 12th.

Since the incident, there has been a 30 day stop work order issued in compliance with the Native American Graves Protection and Repatriation Act. Currently, other locations are being considered for the relocation of this facility.

We met with Tribal representatives on Wednesday, April 13 and again on April 20, 1994, and we are scheduled to meet on April 22, 1994 to discuss restoration of the site. We will keep your office informed as these meetings progress. In the interim, should you haveany questions or require additional information, please contact me at (509) 376-6354.

Sincerely,

ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

Enclosure

cc: R. H. Engelmann, WHC
P. R. Nickens, PNL
R. C. Phillips, PNL
M. K. Wright, PNL

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT
OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 21st Avenue S.W. • P.O. Box 48343 • Olympia, Washington 98504-8343 • (206) 753-4011 • SCAN 234-4011

May 2, 1994

RECEIVED
MAY 4 1994
LANDLORD AND FACILITIES
MANAGEMENT BRANCH

Mr. Charles R. Pasternak, Manager
Cultural Resources Program
Richland Operations Office
Department of Energy
Post Office Box 550
Richland, WA 99352

Dear Mr. Pasternak:

Thank you for your letter of April 21 regarding the discovery of human skeletal remains at the proposed EMSL construction site and the attached draft report by the archaeologist that was conducting the monitoring activities.

We believe that this draft report needs substantial revision to detail and integrate this monitoring report with the prior archaeological survey and the monitoring plan that was developed for this specific project.

The report besides detailing the specific methods that were employed and providing a detailed chronology of events as they unfolded also needs to have the accompanying maps and overlays as necessary to identify the originally surveyed area, the areas identified as requiring monitoring, and the location of the discovered resources.

Finally, this report should also conclude with a series of technical findings and recommendations regarding specific courses of action that are available for the consulting parties to consider.

Thank you again for keeping us informed and we look forward to future consultation on this project. Please feel free to contact me should you have any questions.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist

RGW:lms

MAY 6 1994

Ms. Mary M. Thompson
State Historic Preservation Officer
Office of Archaeology and Historic Preservation
Department of Community Development
111 West Twenty-first Avenue, KL-11
Olympia, Washington 98504-5411

Dear Ms. Thompson:

NO KNOWN HISTORIC PROPERTIES

Enclosed are the results of the pedestrian survey recently completed at the new proposed site for the Environmental and Molecular Sciences Laboratory by the U.S. Department of Energy, Richland Operations Office (RL). As our April 21, 1994, letter to your office, and subsequent telephone conversations with your staff, have indicated, the discovery of Indian burials at the originally planned location has resulted in our relocating this facility. The new site, which is located to the southwest of the original site, is within the Richland city limits and is currently owned by Battelle Memorial Institute. As the enclosed survey indicates, this site was previously disturbed by the presence of Camp Hanford and, for the past twenty (20) years, has been utilized for farming. Battelle will be donating a portion of this site to the Government. This action will also require an Environmental Assessment under the National Environmental Policy Act which will also be forwarded to your office for comment.

After consultation with the tribes it was decided that subsurface testing at this new location should be completed before construction commences. We are currently in the process of drafting a subsurface testing plan and coordinating this activity with the tribes for their involvement. A copy of the plan will be forwarded to your office as soon as it is completed. In the interim, and in accordance with 36 CFR 800.4, RL has made a good faith effort to identify historic properties at this proposed location and to evaluate the eligibility of these properties to the National Register of Historic Places (Register). A literature and records review and site survey have indicated that no historic properties eligible for the Register will be affected by this undertaking.

If any archaeological or additional historical resources are discovered during project activities, work will be halted and your office consulted immediately. Therefore, in accordance with 36 CFR 800.4(d), we are providing documentation supporting these findings to your office.

Your signature below will acknowledge receipt of our notification. Please return a signed copy for our records. If you have any questions or are in need of additional information, I can be contacted at (509) 376-6354.

Sincerely,

Original signed by

Charles R. Pasternak, Manager
Cultural Resources Program

SID:CRP

Office of Archaeology
and Historic Preservation

Enclosure: HCRC #94-3000-002

cc w/encl.: J. Van Pelt, CTUIR

cc w/o encl.: P. Nickens, PNL
M. Wright, PNL
D. Harvey, PNL
R. Phillips, PNL
R. Engelmann, WHC

MAY 10 1994

Ms. Mary M. Thompson
State Historic Preservation Officer
Office of Archaeology and Historic Preservation
Department of Community Development
111 West Twenty-first Avenue, KL-11
Olympia, Washington 98504-5411

Dear Ms. Thompson:

SUBSURFACE TESTING PROPOSAL FOR THE REVISED ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY SITE

As indicated in our May 6, 1994, correspondence, and as shared with David Hansen during his May 9, 1994, visit to Richland, the Department of Energy, Richland Operations Office (RL) is submitting a subsurface testing proposal for the revised location of the Environmental and Molecular Sciences Laboratory (EMSL). The tribes have been notified and they are planning to participate during this phase of the project. A final report summarizing the results of this investigation will be submitted to your office upon completion of these activities.

If you have any questions or are in need of additional information, I can be contacted at (509) 376-6354.

Sincerely,

Charles R. Pasternak, Manager
Cultural Resources Program

SID:CRP

Enclosure:
EMSL Subsurface Testing Proposal

cc w/encl.: J. Van Pelt, CTUIR

cc w/o encl.: P. Nickens, PNL
M. Wright, PNL
D. Harvey, PNL
R. Phillips, PNL
R. Engelmann, WHC

STATE OF WASHINGTON
DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT
OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
111 21st Avenue S.W. • P.O. Box 48343 • Olympia, Washington 98504-8343 • (206) 753-4011 • SCAN 234-4011

May, 20, 1994

Mr. Charles Pasternak
Cultural Resources Program
Department of Energy
Richland Operations Office
Post Office Box 550
Richland, WA 99352

Dear Mr. Pasternak:

Thank you for contacting our office concerning the proposed subsurface testing proposal for the Environmental Molecular Sciences Laboratory - Site 6 at the Hanford site.

We appreciate receiving a copy of the proposed plan and we are supportive of the tribes participation in the development and implementation of this plan.

We look forward to learning of the results of your investigative efforts.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist

RGW:lsw

cc: Paul Nickens
Jeff Van Pelt

RECEIVED
MAY 23 1994
LANDLORD AND FACILITIES
MANAGEMENT BRANCH

APPENDIX D

CORRESPONDENCE WITH AFFECTED INDIAN NATIONS

This appendix contains copies of correspondence between DOE and affected Indian Nations in 1994.

Nez Perce
TRIBAL EXECUTIVE COMMITTEE
P.O. BOX 305 • LAPWAI, IDAHO 83540 • (208) 843-2253

April 13, 1994

To Whom it May Concern:

The Nez Perce Tribe learned today that construction activity in the Richland, Washington, area unearthed the ancient burial site of one adult and three children. We are very sorry to hear of that disturbance. At the same time, we understand that the construction activities ceased immediately upon the discovery of these burials and we sincerely appreciate the efforts of all involved that will allow the proper reburial of these people.

In this type of situation, there is frequently some question about the tribal identity of the individuals and, consequently, who should define or provide the reburial services. The location of this site is within the traditional territories of the Umatilla and Wanapum Tribes. Accordingly, the Nez Perce Tribe supports whatever decision is made by those tribes with regard to the reburial site and services.

Again, our thanks to all involved who will help us lay these people back to rest.

Yours truly,

Samuel N. Penney, Chairman
Nez Perce Tribal Executive
Committee

Confederated Tribes and Bands
of the Yakama Indian Nation

Established by the
Treaty of June 9, 1855

14 April 1994

Rory SnowArrow Fausett
YAKAMA NATION
Office of Legal Counsel
P.O. Box 151
Toppenish, Yakama Nation 98948

Mr. Kevin Clark, Director
Indian Nations Program Manager
DOE-RICHLAND
P.O. Box 550
Richland, WA 99352

Dear Kevin:

I am writing to follow-up on yesterday's EMSL meeting in an attempt to concretize my understandings of the various agreements that I recorded in my notes. If there are discrepancies in my notations here, please advise as quickly as possible.

- Work Stoppage. Work stoppage is in effect for the entire EMSL site. This includes the actual EMSL construction site as well as the construction laydown area. The 13 April 1994 letter that discusses "conditional suspension of on-site construction" is unclear as to which site(s) is referred to. Work at both sites should be stopped pursuant to NAGPRA § 3(d), 25 U.S.C. § 3002(d)(1). Official notification per 25 U.S.C. § 3002(d)(1), from the DOE to the Indigenous Nations, should be to the governing bodies of those Nations and should carry notice as to both sites. Indigenous people at the 13 April construction site meeting requested that the "site" area be expanded to include the entirety of area I have outlined on the enclosed copy of the Temporary Construction Site Plan.

- Security. Several requests were made by Native peoples concerning security. The NAGPRA, § 3(d), 25 U.S.C. § 3002(d)(1), requires that the DOE make a "reasonable effort to protect the items discovered." We construe the statutory protection provision to include physical security against both vandalism and nature forces. Native people at the meeting requested three things: that an on-site security station be established during the pendency of both the restoration project and the decisional process for the EMSL construction site; that the roads - the Submarine Reactor Disposal Road and the transverse bike path - be blocked off as each passageway enters into the general EMSL construction area; and that a water truck routinely hose down the site to prevent wind erosion and exposure of the burial remains. It is important that the water truck not drive onto the site but use hoses to reach the affected areas. It also is important that the water-delivery person stay off the site to the extent possible in the performance of duties.

Given the high potential for vandalism and abuse of this site, we consider all of the above requests within the statutory ambit of "reasonableness."

• Restoration. The Indigenous peoples have three primary concerns regarding the restoration of the burial sites. While the people generally are concerned about the entirety of the disturbed area, their immediate concern is with the laydown site. The laydown site should be readied for immediate restoration since we have agreement from the contractor that this portion of the construction site no longer will be used. We are aware that the EMSL site, since DOE decisions are yet to be made concerning the possible relocation of the EMSL facility, will not be restored on the same immediate schedule as the laydown site.

The Native people, of course, expect and demand that the DOE fully fund the restoration effort of both sites. Timeliness is of critical concern and the involved Nations and Tribes will be meeting during the week of 18-22 April to discuss plans for restoration. As soon as those plans are formulated, we will apprise your offices and we would expect to begin work within the week thereafter.

We also propose that all restoration work be done by Indian labor, to the extent possible. This may involve working with the individual Indigenous Nation TERO offices. If we can muster the necessary personpower, we expect the DOE to provide reimbursement to the laborers and their mileage to and from the EMSL site.

Thank you for your initial coordination of efforts on this very sensitive issue. If you have any questions or concerns about the items I have delineated herein, please reach me at (509) 865-5121, x591. I look forward to continued consultation as we proceed with these efforts.

Sincerely,
FOR THE YAKIMA NATION

Rory SnowArrow Fausett
Office of Legal Counsel

cc: Richard Buck, Wanapum, (509) 754-3541 x3168/FX 754-3074
Russell Jim, YN-ER/WM, (509) 865-5121 x617/FX 452-2503
Jeff Van Pelt, CTUIR-CRPO, (503) 276-3629/FX 276-0540
Herman Reuben, Nez Perce, (208) 843-7313/FX (208) 843-7365
Charles Pasternak, DOE-Richland-CRP, (509) 376-6354/FX 376-2964
Kevin Clark, DOE-Richland-ENP, (509) 376-6332/FX 376-0306.
Paul Nickens, PNL-CRNL, (509) 373-2894/FX 373-2958
Harry Bell, DOE EMSL Project Manager, (509) 376-9623/FX 372-2566

APR 1 - 94

Mr. Jeff Van Pelt
Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendelton, Oregon 97801

Dear Mr. Van Pelt:

POTENTIAL CEMETERY

In accordance with Section 3(d) of the Native American Graves Protection and Repatriation Act, this letter is to advise you and members of the Confederated Tribes of the Umatilla Reservation that on April 12, 1994, the U.S. Department of Energy, Richland Operation's Office (RL) located a potential cemetery in the area adjacent to the Environmental and Molecular Science Laboratory (EMSL) construction site at Hanford. Members of the Cultural Resources Laboratory, who were monitoring the grading of the EMSL construction lay down area, immediately suspended project operations in the area. Tom Bailor who was representing the Confederated Tribes of the Umatilla Indian Reservation at a cultural resources meeting in Richland, WA, was immediately notified and accompanied Hanford Cultural Resources Laboratory (HCRL) personnel to the site. Mr. Richard Buck of the Wanapum, Mr. Louis Malatare and Mr. Rory Snowarrow Fausett of the Yakama Indian Nation, and Mr. J. Herman Reuben of the Nez Perce Tribe were also present.

We would like to begin consultation immediately (in accordance with NAGPRA) on 1) the appropriate measures to protect the disturbed burials and (2) an appropriate plan of action to address this issue. Please contact me at (509) 376-6354 for additional information and to arrange a meeting time and place.

Sincerely,

ORIGINAL SIGNED BY

for Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J.R. Wilkinson, CTUIR
T. Bailor, CTUIR
L. Barkley, CTUIR

APR 15 '94

Mr. Rex Buck, Jr.
c/o Grant County Public Utility District
P.O. Box 878
Ephrata, Washington 98823

Dear Mr. Buck:

POTENTIAL CEMETERY

In accordance with Section 3(d) of the Native American Graves Protection and Repatriation Act, this letter is to advise you and members of the Wanapum Tribes that on April 12, 1994, the U.S. Department of Energy, Richland Operation's Office (RL) located a potential cemetery in the area adjacent to the Environmental and Molecular Science Laboratory (EMSL) construction site at Hanford. Members of the Cultural Resources Laboratory, who were monitoring the grading of the EMSL construction lay down area, immediately suspended project operations in the area. Mr. Richard Buck who was representing the Wanapum Tribe at a cultural resources meeting in Richland, WA, was immediately notified and accompanied Hanford Cultural Resources Laboratory (HCRL) personnel to the site. Mr. Tom Bailor of Umatilla Tribe, Mr. Louis Malatare and Mr. Rory Snowarrow Fausett of the Yakama Indian Nation, and Mr. J. Herman Reuben of the Nez Perce Tribe were also present.

We would like to begin consultation immediately (in accordance with NAGPRA) on 1) the appropriate measures to protect the disturbed burials and (2) an appropriate plan of action to address this issue. Please contact me at (509) 376-6354 for additional information and to arrange a meeting time and place.

Sincerely,

ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: R. Buck, Wanapum
B. Tomanawash Sr., Wanapum
G. Wyena, Wanapum
M. Buck, Wanapum
K. Kiefer, Grant County PUD

APR 15 1994

Mr. Russell Jim, Program Manager
Environmental Restoration/Waste Management
Confederated Tribes and Bands of the
Yakama Indian Nation
P.O. Box 151
Toppenish, Washington 98948

Dear Mr. Jim:

POTENTIAL CEMETERY

In accordance with Section 3(d) of the Native American Graves Protection and Repatriation Act, this letter is to advise you and members of the Confederated Tribes of the Yakama Indian Nation that on April 12, 1994, the U.S. Department of Energy, Richland Operation's Office (RL) located a potential cemetery in the area adjacent to the Environmental and Molecular Science Laboratory (EMSL) construction site at Hanford. Members of the Cultural Resources Laboratory, who were monitoring the grading of the EMSL construction lay down area, immediately suspended project operations in the area. Rory Snowarrow Faucett and Louis Malatare who were representing the Confederated Tribes and Bands of the Yakama Indian Nation at a cultural resources meeting in Richland, WA, were immediately notified and accompanied Hanford Cultural Resources Laboratory (HCRL) personnel to the site. Mr. Richard Buck of the Wanapum, Mr. Louis Malatare and Mr. Rory Snowarrow Fausett of the Yakama Indian Nation, and Mr. J. Herman Reuben of the Nez Perce Tribe were also present.

We would like to begin consultation immediately (in accordance with NAGPRA) on 1) the appropriate measures to protect the disturbed burials and (2) an appropriate plan of action to address this issue. Please contact me at (509) 376-6354 for additional information and to arrange a meeting time and place.

Sincerely,

ORIGINAL SIGNED BY

MJ Plahuta

for Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. Meninik, YIN
R. Snowarro Fausett, YIN
G. Cleveland, YIN
L. Malatare, YIN

APR 15 '94

Ms. Donna Powaukee
Nez Perce Tribal Executive Committee
P.O. Box 305
Lapwai, Idaho 83540

Dear Ms. Powaukee:

POTENTIAL CEMETERY

In accordance with Section 3(d) of the Native American Graves Protection and Repatriation Act, this letter is to advise you and members of the Nez Perce Tribal Executive Committee that on April 12, 1994, the U.S. Department of Energy, Richland Operation's Office (RL) located a potential cemetery in the area adjacent to the Environmental and Molecular Science Laboratory (EMSL) construction site at Hanford. Members of the Cultural Resources Laboratory, who were monitoring the grading of the EMSL construction lay down area, immediately suspended project operations in the area. Herman Reuben who was representing the Nez Perce at a cultural resources meeting in Richland, WA, was immediately notified and accompanied Hanford Cultural Resources Laboratory (HCRL) personnel to the site. Mr. Richard Buck of the Wanapum, Mr. Tom Bailor of the Umatilla Tribe and Mr. Louis Malatare and Mr. Rory Snowarrow Fausett of the Yakama Indian Nation were also present.

We would like to begin consultation immediately (in accordance with NAGPRA) on 1) the appropriate measures to protect the disturbed burials and (2) an appropriate plan of action to address this issue. Please contact me at (509) 376-6354 for additional information and to arrange a meeting time and place.

Sincerely,

ORIGINAL SIGNED BY
M. J. Plahuta

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. Herman Reuben, NPTEC
A. Taylor, Nez Perce

Confederated Tribes and Bands
of the Yakama Indian Nation

Established by the
Treaty of June 9, 1855

M E M O R A N D U M

DATE: April 19, 1994

TO: Hanford Burial Site Parties

FROM: Rory SnowArrow Fausett, YN-OLC

SUBJECT: EMSL site activities

FOR YOUR INFORMATION. On 4-18-94, at the request and direction of the Wanapum, I walked the EMSL construction and laydown sites and removed all evidence of flags and cordon tape that identified the exact locations of the burial sites. This should assist with the prevention of vandalism and pot-hunting.

While on the site, I was stopped by the Hanford security police and asked to provide identification. I was pleased at the security arrangements. All roads - except the heavily-trafficked George Washington Blvd - into and through the area had been blocked off to traffic. Security patrols were on a 1-hour sweep, and when not patrolling, security police essentially "sit" on the road into the site. The guard informed me that they had been turning people - joggers and lunchtime walkers - away with some regularity - some 12-15 people over Mondays lunchtime and afternoon alone. When asked if people were just "out walking," he said no that all had expressed a keen interest in seeing the "bones." All heavy equipment has been removed from the area and there was no evidence of work or any other intrusion at either site.

cc: Richard Buck, Wanapum, (509) 754-3541 x3168/FX 754-5074
Russell Jim, YN-ER/WM, (509) 865-5121 x617/FX 452-2503
Jeff Van Pelt, CTUIR-CRPO, (503) 276-3629/FX 276-0540
Herman Reuben, Nez Perce, (208) 843-7313/FX 843-7365
Charles Pasternak, DOE-Richland-CRP, (509) 376-6354/FX 376-2964
Kevin Clark, DOE-Richland-INP, (509) 376-6332/FX 376-0306
Paul Nickens, PNL-CRNL, (509) 373-2894/FX 373-2958
Harry Bell, DOE EMSL Project Manager, (509) 376-9623/FX 372-2566

Confederated Tribes and Bands
of the Yakima Indian Nation

Established by the
Treaty of June 9, 1855

April 26, 1994

Mr. John Wagoner, Manager
Richland Field Office
Department of Energy
P.O. Box 550
Richland, WA 99352

Dear Mr. Wagoner:

The recent events surrounding the siting of the new Environmental and Molecular Sciences Laboratory (EMSL) should not be taken as an indication of Yakama Nation disapproval for the Laboratory. To the contrary, the Yakama Nation considers the EMSL and its potential for increasing both the speed of cleanup and the degree to which the land can be cleaned to be of immense importance to our region's future generations. Hazardous waste remaining in place at Hanford for centuries should not be the kind of legacy the people of our time feel comfortable leaving behind.

We hope the Laboratory will provide methods of resolving many of the problems regarding soil and water monitoring, remediation, waste recycling, and destruction of hazardous materials. Its potential for developing methods to remove and treat wastes, rather than cover them up, has long term significance to the Yakama Nation. We believe it essential that, within 100 years of the completion of remedial activities, the land must be suitable for unrestricted use. We also know this conflicts with the philosophies of some DOE personnel who favor sacrifice zones which may leave the land dangerous for 100,000 years or more. For thousands of years, the ancestors of the Yakama people managed these very lands without leaving a legacy of poison behind them. We wish to continue that time-honored tradition.

Your quick response to relocate the EMSL indicates the long-awaited DOE culture change addressed by Secretary O'Leary and Assistant Secretary Grumbly is beginning to occur at Hanford. Let us mutually carry this culture forward into the future as we make Hanford safe for our children.

Sincerely,

Russell Jim, Manager
ER/WM Program
Yakama Nation

cc: Augustine Howard, YIN
Thomas Grumbly, DOE-HQ
Kevin Clarke, DOE-RL

RECEIVED
APR 28 1994
DOE-RL/CCC

Post Office Box

APR 26 1994

Mr. Jeff Van Pelt
Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Mr. Van Pelt:

POTENTIAL CEMETERY AT THE HANFORD ENVIRONMENTAL AND MOLECULAR SCIENCE LABORATORY CONSTRUCTION SITE

This letter is an addendum to our April 15, 1994 letter regarding the above mentioned subject.

Subsequent to our original discovery in the area adjacent to the Environmental and Molecular Science Laboratory site, additional remains were located close to the proposed building location. Therefore, in accordance with Section 3(d) of the Native American Graves Protection and Repatriation Act, this letter is to advise you and members of the Confederated Tribes of the Umatilla Indian Reservation that the U.S. Department of Energy, Richland Operations Office has suspended on-site construction activity for the entire construction project.

We are continuing to meet with tribal representatives to resolve this situation. In the interim, security has been increased in the immediate area to protect the grave sites, and with the assistance of members of the Indian nations, all location markers have been removed to prevent vandalism and unlawful site intrusion.

If you have additional questions or are in need of additional information, I may be contacted at (509) 376-6354.

Sincerely,

ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. R. Wilkinson, CTUIR
T. Bailor, CTUIR
L. Barkley, CTUIR

APR 26 1994

Ms. Donna Powaukee
Nez Perce Tribal Executive Committee
P.O. Box 305
Lapwai, Idaho 83540

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ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. Herman Reuben, NPTEC

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

94-LMD-121

APR 2 3 1994

Ms. D. Pwaukee
Nez Perce Tribe
P.O. Box 365
Lapwai, Idaho 83540

Dear Ms. Pwaukee:

The U.S. Department of Energy (DOE) is proposing a relocated site for the Environmental and Molecular Sciences Laboratory (EMSL) in the North Richland Pacific Northwest Laboratory complex. The relocated site is in a farmed field immediately north of Battelle's Research Operations Building. EMSL will be an approximately 200,000 square foot facility for conducting state of the art environmental and molecular sciences research. The facility construction will disturb less than 50 acres of previously disturbed land.

This action is necessary because Native American remains were discovered when construction on EMSL was being initiated at the location previously selected under DOE/EA-0429.

DOE has made an initial determination that an environmental assessment (EA) is the appropriate level of National Environmental Policy Act review for this proposed action. Preliminary evaluations indicate that the proposed project (1) does not affect areas/activities covered by the Endangered/Threatened Wildlife and Plant regulations, (2) does not involve sites addressed by the National Register of Historical Places, (3) will not disturb contaminated areas or generate radioactive/hazardous waste during construction, and (4) is not located within a wetland area or on the 100-year floodplain. The draft EA will be sent to you for your review and comments.

If you have questions regarding the determination or the development of the EA, you may contact me on (509) 376-6667.

Sincerely,

Paul F. X. Dunigan, Jr.

Paul F. X. Dunigan, Jr.
NEPA Compliance Officer

LMD:PWK

cc: C. Borgstrom, EH-25
J. K. Farley, ER-8.2
E. B. Moore, PNL
R. C. Phillips, PNL
H. Reuben, Nez Perce Tribe

APR 26 1994

Mr. Jeff Van Pelt
Confederated Tribes of the
Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Mr. Van Pelt:

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ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. R. Wilkinson, CTUIR
T. Bailor, CTUIR
L. Barkley, CTUIR

APR 26 1994

Mr. Russell Jim, Program Manager
Environmental Restoration/Waste Management
Confederated Tribes and Bands
of the Yakama Indian Nation
P.O. Box 151, Fort Road
Toppenish, Washington 98948

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Sincerely,

ORIGINAL SIGNED BY

Charles R. Pasternak, Manager
Cultural Resources Program
Site Infrastructure Division

SID:CRP

cc: J. Meninik, YIN
R. SnowArrow Fausett, YIN
G. Cleveland, YIN
L. Malatare, YIN

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

94-LMD-122

APR 1 : 1994

Mr. J. R. Wilkinson
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Mr. Wilkinson:

The U.S. Department of Energy (DOE) is proposing a relocated site for the Environmental and Molecular Sciences Laboratory (EMSL) in the North Richland Pacific Northwest Laboratory complex. The relocated site is in a farmed field immediately north of Battelle's Research Operations Building. EMSL will be an approximately 200,000 square foot facility for conducting state of the art environmental and molecular sciences research. The facility construction will disturb less than 50 acres of previously disturbed land.

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Sincerely,

Paul F. X. Dunigan, Jr.

Paul F. X. Dunigan, Jr.
NEPA Compliance Officer

LMD:PWK

cc: C. Borgstrom, EH-25
J. K. Farley, ER-8.2
R. George, CTUIR
E. B. Moore, PNL
R. C. Phillips, PNL

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

94-LMD-123

APR [illegible]

Mr. Rex Buck, Jr.
Wanapum P.O. Box 878
Ephrata, Washington 98823

Dear Mr. Buck:

The U.S. Department of Energy (DOE) is proposing a relocated site for the Environmental and Molecular Sciences Laboratory (EMSL) in the North Richland Pacific Northwest Laboratory complex. The relocated site is in a farmed field immediately north of Battelle's Research Operations Building. EMSL will be an approximately 200,000 square foot facility for conducting state of the art environmental and molecular sciences research. The facility construction will disturb less than 50 acres of previously disturbed land.

This action is necessary because Native American remains were discovered when construction on EMSL was being initiated at the location previously selected under DOE/EA-0429.

DOE has made an initial determination that an environmental assessment (EA) is the appropriate level of National Environmental Policy Act review for this proposed action. Preliminary evaluations indicate that the proposed project (1) does not affect areas/activities covered by the Endangered/Threatened Wildlife and Plant regulations, (2) does not involve sites addressed by the National Register of Historical Places, (3) will not disturb contaminated areas or generate radioactive/hazardous waste during construction, and (4) is not located within a wetland area or on the 100-year floodplain. The draft EA will be sent to you for your review and comments.

If you have questions regarding the determination or the development of the EA, you may contact me on (509) 376-6667.

Sincerely,

Paul F. X. Dunigan

Paul F. X. Dunigan, Jr.
NEPA Compliance Officer

LMD:PWK

cc: C. Borgstrom, EH-25
J. K. Farley, ER-8.2
E. B. Moore, PNL
R. C. Phillips, PNL

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

94-LMD-124

Mr. Russell Jim
Yakama Indian Nation
P.O. Box 151
Toppenish, Washington 98948

Dear Mr. Jim:

The U.S. Department of Energy (DOE) is proposing a relocated site for the Environmental and Molecular Sciences Laboratory (EMSL) in the North Richland Pacific Northwest Laboratory complex. The relocated site is in a farmed field immediately north of Battelle's Research Operations Building. EMSL will be an approximately 200,000 square foot facility for conducting state of the art environmental and molecular sciences research. The facility construction will disturb less than 50 acres of previously disturbed land.

This action is necessary because Native American remains were discovered when construction on EMSL was being initiated at the location previously selected under DOE/EA-0429.

DOE has made an initial determination that an environmental assessment (EA) is the appropriate level of National Environmental Policy Act review for this proposed action. Preliminary evaluations indicate that the proposed project (1) does not affect areas/activities covered by the Endangered/Threatened Wildlife and Plant regulations, (2) does not involve sites addressed by the National Register of Historical Places, (3) will not disturb contaminated areas or generate radioactive/hazardous waste during construction, and (4) is not located within a wetland area or on the 100-year floodplain. The draft EA will be sent to you for your review and comments.

If you have questions regarding the determination or the development of the EA, you may contact me on (509) 376-6667.

Sincerely,

Paul F. X. Dunigan, Jr.
NEPA Compliance Officer

LMD:PWK

cc: C. Borgstrom, EH-25
F. R. Cook, Yakima Indian Nation
J. K. Farley, ER-8.2
E. B. Moore, PNL
R. C. Phillips, PNL

APPENDIX E

COMMENT LETTERS

This appendix contains copies of comment letters from Indian Nations and from the City of Richland and copies of DOE responses to the Indian Nations.

GENERAL COUNCIL
and
BOARD OF TRUSTEES

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
P.O. Box 638
PENDLETON, OREGON 97801
Area code 503 Phone 276-3165 FAX 276-3095

June 22, 1994

Mr. Paul Dunnigan
NEPA Compliance Officer
US DOE
P.O. Box 550
Mail Stop A5-15
Richland, WA 99352

RE: Submission of CTUIR Comments on the Draft Environmental Assessment for Re-siting the Environmental Molecular Science Laboratory (EMSL)

Dear Mr. Dunnigan:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) regrets having to re-submit comments on the Environmental Assessment (EA) for the siting of the Environmental Molecular Science Lab (EMSL). The CTUIR originally submitted comments regarding EMSL siting that focused primarily on cultural resource protection issues along the Columbia River corridor in August 1992. This EA must now be revisited because the Department of Energy (DOE) failed to fully consider existing information supplied both by the Tribes and DOE's own contractor, PNL, pertaining to the likelihood of encountering cultural resources at the original site and the need to protect those resources. Furthermore, because the DOE did not take seriously its duty to consult with American Indian tribes and its fiduciary trust responsibility to those tribes, a sacred area was significantly disturbed. This unfortunate incident has caused considerable grief to not only our people but to all Columbia Plateau Indian people. It has resulted in significant additional -- and unnecessary-- expenditures by the federal government, and has caused a delay in the establishment of a much needed research facility that will help solve Hanford's complex environmental remediation and restoration problems.

CTUIR Comments on the
Draft EA for Re-siting EMSL
Page 2

The event on Tuesday, April 12, 1994 could have been avoided in its entirety had the NEPA process been sufficiently completed prior to signing the decision to proceed. A Finding Of No Significant Impact (FONSI) was not supported by the body of information that was available. The original EA is an excellent example of the federal government attempting to justify a decision with nothing more than a paper exercise rather than conducting a thorough and objective analysis that fully incorporated the issues that were truly significant to the decision being made.

For example, the fact that three separate siting evaluations were conducted by Kaiser in 1987, PNL in 1988, and by Stone and Webster Engineering Corporation in 1991 clearly demonstrates that the decision making process was heavily influenced by the desire to locate the EMSL immediately adjacent to the Columbia River. Site 6 (currently the preferred site in this analysis) was considered in all three prior evaluations and selected as the preferred site in the 1987 and 1988 siting studies. Site 6 also was one of three preferred sites in the 1991 evaluation conducted by Stone and Webster. However, based on the criteria of accessibility, minor environmental impacts, and convenience for visitor access that were used to evaluate and compare the alternatives, site 2, located within very close proximity of the Columbia River, was selected over site 6 as the preferred alternative. By selecting site 2, the EA implied that site 2 had less environmental impact than site 6, when all the evidence was to the contrary.

Sufficient information was available in the original analysis to demonstrate that the preferred alternative was not viable due to the high probability of disturbing Native American cultural resources along the river corridor. This information obviously did not weigh very heavily in the decision making process. Simply flagging cultural resources as an issue, conducting a pedestrian survey of the site, and only requiring monitoring of the site during construction activities without additional investigations is unacceptable.

Furthermore, the alternatives to the proposed action were not fully developed and were simply presented as "strawman" alternatives to justify the preferred alternative. A comparison of the alternatives and the effects on the key issues for each alternative were not considered in any detail. Consequently, the alternatives were not given due consideration in the analysis. Failure to comply with applicable land and resource management laws and regulations governing federal actions constitutes a major breach of the federal government's trust responsibility.

We request that additional information concerning the original EMSL decision making process be incorporated into the body of this EA to fully disclose the sequence of events that ultimately led to the reasonably foreseeable impacts on the culturally sensitive area. The EA, in its current form, was drafted to downplay the significance of the site disturbance and very little is mentioned about mitigating these effects. A full discussion of the findings of the original selected alternative, including disclosure of information that was ignored in the original decision making process, and discussion about mitigating the effects as part of the environmental analysis process, must be included in the EA to ensure that the Administrative Record for the EMSL project is accurately portrayed and complete.

In addition, although it is highly unlikely that sensitive cultural resources will be encountered at the new EMSL site, we recommend that a cultural resource monitor and an archaeologist from the PNL-Cultural Resource Program be present at least in the initial phases of ground disturbing activities.

DOE must realize, organizationally, that sound decision making needs to incorporate key issues such as cultural and natural resource protection and management into the planning process. DOE also should extend to tribal governments the simple courtesies regarding planning that it would extend to any other government. Fourteen-day comment periods and one-day notices of activities are unacceptable and inexcusable. DOE must integrate issues that are identified by tribal governments, such integration is an invaluable aid to DOE in fulfilling its trust responsibility -- and in saving taxpayers money.

The EMSL incident has been a warning bell to DOE and to the Tribes. DOE must educate itself about its responsibilities under cultural and natural resource laws and the federal trust responsibility to Indian tribes. Substantial funding should be provided for cultural and natural resource protection and management at Hanford -- resources that will be the legacy of Hanford once it is finally cleaned up. Most importantly, DOE must follow the dictates of its own Indian policy and involve tribes early in planning and decision making processes to incorporate and address Tribally identified issues. Unless DOE institutes these changes, other EMSLs can be assured of occurring in the future.

The CTUIR is encouraged that the DOE has agreed to relocate the EMSL and facilitate restoration efforts at the disturbed site. Furthermore, cooperation between the CTUIR, the Wanapum people, the Yakama Indian Nation, the Nez Perce Tribe, the DOE, and its contractors has been very positive in many respects. The CTUIR have been working to encourage and develop co-management relationships concerning cultural and natural resource protection and management at Hanford. Restoration of the EMSL site can be used as a "blueprint" from which to develop this resource management and protection model. The Tribes can bring to the EMSL restoration project, as well as other projects throughout the Hanford region and Columbia Basin, the lessons learned from over 13,000 years of stewardship and sustainable management of these resources. The Tribes also can provide the unique perspective of the Native American world view and bring balance and successful remediation and restoration decisions -- and results -- at the Hanford site.

The four affected Tribes are developing a restoration strategy for the former EMSL site that will include all aspects of stabilization of the site, establishment of a nursery to provide plant stock for reestablishing native vegetation on the site, and monitoring of all activities to track successes and failures. This draft plan is expected to be completed within the next few weeks.

We are anxiously awaiting a firm commitment from the DOE for restoration of the former EMSL site and to moving forward with remediation and restoration efforts in other areas at Hanford. Particularly important in the near-term is the establishment of a funding source for activities that were accomplished in the initial stabilization phase of the restoration project, other planned near-term activities, including seed and seedling collection by Tribal members, and establishment and operation of a nursery to grow native plant stock for revegetating the former EMSL site.

We anticipate that the final draft of the EA will include an accurate characterization and disclosure of the events that resulted in selection of the original site. We also expect that it will include a copy of these comments, a commitment to have a cultural resource monitor and PNL archaeologist onsite during initial construction activities, and a full commitment to restoration of the former EMSL site. This commitment by the DOE to cooperatively work with the Tribes in accomplishing restoration of the site will result in the CTUIR's support of the preferred alternative contained in the draft EA for re-siting the EMSL.

CTUIR Comments on the
Draft EA for Re-siting EMSL
Page 5

We appreciate this opportunity to participate in the decision making process and look forward to working with the DOE in restoring not only the former EMSL site but other areas of Hanford.

Sincerely,

Donald Sampson

Chairman
Board of Trustees

cc: John Wagoner, DOE Hanford Site Manager
Kevin Clarke, DOE Indian Program Manager
William H. Burke, CTUIR Board of Trustees
John Bevis, CTUIR Board of Trustees
Rosemary Narcisse, CTUIR Board of Trustees
Roberta Wilson, CTUIR Board of Trustees
Antone Minthorn, CTUIR Board of Trustees
CTUIR Cultural Resource Commission
Mike Farrow, CTUIR Director, Department of Natural Resources (DNR)
Jeff VanPelt, CTUIR, DNR, Cultural Resource Protection Program Manager
J.R. Wilkinson, CTUIR, DNR, Hanford Projects Program Manager
Rick George, CTUIR, DNR, Environmental Planning and Rights Protection Program Manager (EPRP)
CTUIR Hanford Projects Staff
Richard Buck, Wanapum People
J. Herman Reuben, Nez Perce Tribe
Donna Powaukee, Nez Perce Tribe
Rory Snowarrow Fausett, Yakama Indian Nation

Nez Perce
TRIBAL EXECUTIVE COMMITTEE
P.O. BOX 305 • LAPWAI, IDAHO 83540 • (208) 843-2253

June 27, 1994

Mr. Paul Dunnigan
NEPA Compliance Officer
U.S. DOE
P.O. Box 550
Mail Stop A5-15
Richland , Washington 99352

RE: Submission of Nez Perce Tribe Department of E.R.W.M.'s Comments on the Draft Environmental Assessment for re-siting the Environmental Molecular Science Laboratory (EMSL)

Dear Mr. Dunnigan:

The Nez Perce Tribe regrets the unfortunate events leading up to the resiting of the EMSL but in the spirit of cooperation wishes to carry on and focus on the eventual clean-up of the Hanford Reservation.

We wish to make it clear that our comments are not final and do not signal acceptance of the serious lack of trust responsibility the Department of Energy has shown in its efforts to site the EMSL. The likelihood of discovering Tribal remains was known and ignored in the face of contracts and time. Significant amounts of time and money could have been saved if the affected tribes were properly notified and consulted.

We appreciate this opportunity to participate in the decision making process and wish to be of assistance. We are looking forward to the cleanup of the Hanford site and in working with the DOE in restoring the former EMSL and other areas of the Hanford Reservation.

Sincerely:

Charles H. Hayes

Charles H. Hayes
Chairman
Nez Perce Tribal Executive Committee

THE NEZ PERCE ERWM's RECOMMENDATIONS FOR THE DRAFT ENVIRONMENTAL ASSESSMENT FOR RE-SITING THE ENVIRONMENTAL MOLECULAR SCIENCE LABORATORY (EMSL)

Since 1855, reserved treaty rights of the Nez Perce Tribe in the Mid-Columbia area have been recognized and reaffirmed through a series of federal and state actions. These actions have protected the interests of the Nez Perce to utilize their usual and accustomed resources and resource areas in the Hanford Reach of the Columbia River and elsewhere. Accordingly, the Nez Perce Tribe Department of Environmental Restoration and Waste Management (ERWM) has received support from the U.S. Department of Energy (DOE) to participate in and monitor certain DOE Five-Year Plan activities. The Nez Perce ERWM reviewed the Draft Environmental Assessment (Draft EA) for re-siting the Environmental Molecular Science Laboratory (EMSL) in June 1994.

The purpose of the Draft EA is to ascertain the known state of the environment where the EMSL will be. The Draft EA should also provide a glimpse of the possible effects of building a state-of-the-art science building containing not only hazardous but radiological substances. The Draft EA is useful in providing a suitable template, but needs some additions and some revisions in order to be fully effective.

The general impression we recieve from the Draft EA is that it needs work in some areas in order to bring to light exactly what is expected to be done. Numerous inadequate figures were used, references not cited were noticed, and more explanation of construction techniques is needed.

The Draft EA needs to explain why the EMSL is going to have emmissions, both during the construction phase and during the operation phase. More information is needed on the treatment of the liquid wastes that will be going to the sewer system. How is waste minimization going to be addressed? Will the local environment be restored as a shrub steppe habitat, or will a typical high maintenance artificial ground cover be employed? The lack of adequate maps with a consistent format and standard cartographic features needs to be addressed. The portrayal of the area with the figures presented in the current Draft EA is unacceptable.

The Nez Perce ERWM has provided comments expressing these concerns, and desires to work with DOE in building a stronger government to government relationship incorporating Nez Perce-specific issues into the reconstruction of the former EMSL site. The Nez Perce also wish to assist the DOE in the construction of the new EMSL site, specifically with the reconstruction of the landscape using materials and knowledge learned from the former EMSL site.

Appendix A:

The Following comments are listed in terms of "citation" followed by the Nez Perce ERWM's comments in the following format:

Page 1: Paragraph 2: Section 2.0

Comment

Page 1: Paragraph 2: Section 2.0

The Department of Energy (DOE) issued a Finding Of No sSignificant Impact (FONSI) for the construction of the Environmental Molecular Sciences Laboratory (EMSL) overlooking the Columbia River at the south end of the 300 Area. The Nez Perce Tribe in light of the evidence presented in prior reports, (KEH 1987; PNL 1988; SW 1991; and CHATTERS 1991) would prefer the inclusion of the complete history and why the river site was chosen.

Page 2: Figure 1

The Nez Perce ask why this map has no legend, no corresponding graphic scale (1 cm to 8 km), and is unclear as to the portrayal of the figures.

Page 3: Figure 2

The scales should be uniform in positioning on the maps and in the quality. There is no legend to identify the figures. The line indicating the Columbia River makes the Nez Perce ask if this is the high water mark or the edge of the riverine zone. Please explain exactly what the map symbols mean. There is no border, range or township indicators.

Page 4: Figure 3

The North arrows in your presentation should be the same for consistency, as should the scale bars, the borders, and the legends; they are not. There is no indication of what the figures are. There is no border, legend, orientation marks, nor date.

Page 5: Figure 4

This map is as inadequate as the previous, meaning that there is no border, legend, indicator marks, date, nor consistency with the other figures. Where are the power lines, rail lines, sewer lines, and telephone lines. The Nez Perce ERWM asks why there is no consistancy with the label prints? The line indicating the Columbia River is also very unclear, the figures presented do not have cultural resource zones.

A contour elevation map with a geologic overlay would be appropriate especially with the larger scale maps.

Page 6: Paragraph 3: Sentence 3

The Nez Perce asks why the maps provided do not adequately reflect the 260 parking spaces needed, and why they are split into two instead of one.

Page 6: Paragraph 3: Sentence 4

The Nez Perce ERWM would like to know if the use of reconstructed shrub steppe habitat would be more appropriate than a typical high maintenance landscape that is not a reflection of the local environment?

The combined American Indian Tribes; The Nez Perce, Confederated Tribes of the Umatilla Indian Reservation, The Confederated Tribes of the Yakama Indian Nation, and the Wanapum Tribes, are in the process of restoring the former EMSL site with native vegetation and would be a valuable resource which could save time and money on the construction of the new EMSL site.

Page 7: Paragraph 4

The Nez Perce Tribe asks why the Chatters' report (HCRC#91-300-024) is not referenced?

Page 8: Paragraph 1: Sentences 2 and 3

The Nez Perce ERWM regrets that the consideration of the sites were not fully appreciated.

Page 10: Paragraph 5: Section 5.1.1.

The Nez Perce ERWM asks what is the expected air emissions from the construction equipment, and why was this left out? We ask this question because of the potential amounts of particulates from machinery exhaust that are involved.

Page 12: Paragraph 1

The Nez Perce Tribe understands that while the expected plant operation emissions are within the acceptable ranges under the law, why should there be any emissions at all if this project is supposed to be state-of-the-art? Were other types of exhaust scrubbers considered?

Page 13: Paragraph 2

In the interest of saving money the Nez Perce ERWM asks, was solar design considered for supplementing the fossil fuel burners?

Page 13: Paragraph 4: Sentence 2

The Nez Perce Tribe asks if the concrete pit and sump is going to be lined, and if it is with what? Will the application of the lining be hazardous to the construction workers?

Page 14: Paragraph 1: Section 5.2.3.

The Nez Perce ask if there was any consideration of waste minimization for paper goods such as a press suitable for use with 55 gallon drums?

Page 14: Paragraph 5: Section 5.2.5.

The Nez Perce ask if there is going to be an active minority program?

Office of Legal Counsel

Since Time Immemorial...

Legal Counsel and Litigation,
Jack W. Flander

Natural Resources,
Elizabeth F. M. Hamilton

General Legal Services,
James R. Barkley

Taxation/Regulatory Affairs,
Thomas Van Norman

A.I.R.F.A./Cultural Site Protection,
R. SnowArrow Fausett

Wildlife Mitigation/Environmental Protection,
Michael R. Bauer

Water Rights,
Jeffrey S. Schuster
Cindy Shapiro

Program Coordinator,
Laurene G. Contreras

Legal Secretaries,
Yvette L. Looney
Stephanie A. Lake

Bookkeeper/Secretary,
Maryjo Eagle Speaker

Receptionist,
Lydia Shilow

Legislative Aids,
Lisa G. Gauvelas

Of Counsel,
Legislative Affairs,
Dawn P. Vyvyan

June 29, 1994

Harold Yancy, K6-05
Pacific Northwest Laboraties
P.O. Box 999
Richland, WA 99352

Re: Hanford EMSL Environmental Assessment

Dear Mr. Yancy:

Below are the comments of the Yakama Indian Nation regarding the above matter. The Yakama Nation joins in and supports the comments of the Confederated Tribes of the Umatilla Indian Reservation.

The Yakama Nation is concerned that the Environmental Assessment (EA) appears predisposed to unduly favor Site 6 without adequately discussing the full range of alternative sites available. Although the analysis of this site (Site 6) is thorough, it does not appear that the analysis of other sites or alternatives are addressed nearly as thoroughly. This is not to say that the selection of Site 6 is inappropriate, but merely that further assessment is necessary.

The Yakama Nation also has the following specific comments:

1. The biological assessment report (Appendix B) appears to be a report detailing the findings from Sites 4 & 6. According to the EA Site 4 had been eliminated earlier due to potential for human remains. Site 7 is not discussed.

2. On page 2-Appendix B the biological assessment states that the open habitat within the project area does provide potential habitat nesting for Long-billed curlews (federal candidate species). Page

Post Office Box 151, Fort Road, Toppenish, WA 98948
Telephone: (509) 865-5121 Telefax: (509) 865-4713

9 (4.0 Affected Environment) states that the frequent cutting of alfalfa does not make EMSL site a suitable nesting habitat. Does spring nesting season conflict with early cutting schedule? Is there a prescribed distance for minimizing impacts to nesting sites for this species like the one for raptors (p.3, Appendix B)? The Report is essentially written as a trade off between Sites 4 & 6; which provides less damage to environment. If Site 4 is not seriously being considered how justifiable is this approach? Shouldn't Site 7 be included in this part of the assessment?

3. The cumulative effects of impacts due to loss and fragmentation of sagebrush habitat on the Hanford site is never really discussed except to state that it will occur (p.4, Appendix B). Biological report calls for development of method to predict effects of project and plans to mitigate the cumulative losses. No mention of such a plan is included in this EA.

4. Page 8 states that Sites 1, 2, 3, 4, and 5 have been eliminated because of the discovery of human remains on Site 2 and because of the proximity of the other sites to this area, the Columbia River and/or to the existence of landforms where additional remains could be found. That leaves Sites 6 and 7. Site 7 is being rejected due to the existence of utilities in the Site 6 area and due to its having already been disturbed. There were no utilities located near Site 2 nor had it suffered any ground disturbance activities prior to it being selected as the initial site of the EMSL. How justifiable is the exclusion of Site 7 on these criteria? Is this EA really considering any alternatives except the preferred? The Cultural Resource survey only covers Site 6. What happened to Site 7? Supposedly this alternative was not reconsidered (p.1 Cultural Resource Report Narrative) after finding the human remains at Site 2. EA's should cover a range of alternatives and after stating all of the high points and deficits of each area a preferred alternative is selected. It appears that this has not occurred.

5. The decision to avoid the dune area located in the northwest portion of the site should take care of any highly potential area for discovering buried human remains. If avoidance is not possible the archaeologists recommend that non-intrusive remote sensing techniques be used in the dune area prior to any ground

disturbance. The presence of a Native American monitor is also recommended on a full-time basis during any subsequent ground disturbing activities in this area.

6. The Yakama Nation is interested in knowing what degree of a review was initially carried out with the first Molecular Science Research Laboratory conducted by Gard in 1990. Was there an actual on-the-ground survey and/or testing completed in this area?

Thank you for providing this opportunity to comment.

Sincerely,

Jack W. Fiander
Yakama Indian Nation
Office of Legal Counsel

JF/yl

yl c:\doc\letter\EMSL

MEMORANDUM

June 29, 1994

TO: Department of Energy

FROM: Richard Buck, Native American Spec II

SUBJECT: E. M. S. L. RE-SITING

This land that is being commonly referred to as the "E.M.S.L. site proposal." has always since time immemorial been a part of the Wanapum people it is not just a piece of land that can be referred to as belonging to someone. It is the Wanapum belief that this land takes care of us and we in turn should take care of it so that we will be following in the way that our culture and religion dictates that we should.

The cultural and religious laws are indeed alive and these lands are looked upon to carry out these laws that were handed to our people which have been laid to rest throughout the Hanford reservation, the teachings that they have given back to us to perpetuate our way of life will exist in the Wanapum people and we in turn wish to give these teachings to the generations of people that have not yet been born so they too will know to carry their life the way that creators law dictates.

Whatever the study finds to be as acceptable still yet not be able to clean the things that have already been disturbed in the hearts and should of our people. So as time goes on and things start to proceed we the wanapum people wish to let it be known that no nation speaks for us in representation. For these lands that are referred to as ceded area existed long before any treaty was made and before there was any form of government whether it be "D.O.E." or the "United States". The Wanpaum people did not leave any land to be considered as ceded we still live on these lands and practice our way of life, we have never left.

So it is in that spirit that we would like to have a voice in the decision making process so that we will feel in our hearts that we are in a small way still being stewards of the land just as our ancestors have and so will continue the teachings that we are borrowing from our future generations, this is how we feel we can best perpetuate our culture our heritage and religion and all the things that surround the environment that is necessary to provide life to the land as it was created and gifted to the people of this land to survive in this world.

The wanapum people only can support the "No Action Alternative" because this is what our religious law dictates. However, should any work continue a Wanapum cultural monitor should be present during the ground disturbing activities, also DOE must dedicate substantial funding to cultural and natural resource protection and management.... So that DOE will be able to leave us the land and environment in as much the same way that they borrowed it.

Sincerely, Richard Buck

505 Swift Blvd. • Box 190 • Richland, Washington 99352 • (509) 943-9161 • FAX (509) 943-3666

RICHLAND

Community Development Department
Planning Division
June 29, 1994

Mr. Paul F. X. Dunigan, Jr.
NEPA Compliance Officer
Department of Energy
Richland Operations Office
P.O. Box 550
Richland, WA 99352

RE: Environmental Assessment--Proposed EMSL

Dear Mr. Dunigan:

Thank you for the opportunity to comment on the advanced copy of the above referenced environmental assessment. The material was routed for review by the various affected City Departments.

As the proposal proceeds, the City would like to stress the importance of coordination with affected City Departments to ensure that impacts to City services such as fire and emergency response, impacts associated with increased traffic on the surrounding City street network, and impacts to the City's water and sewer facilities are adequately addressed.

If you have any questions please contact me at 943-7587.

Sincerely,

Jeff Rolph
Senior Planner

cc: Bill King, Deputy City Manager
Herb Everett, Planning Manager

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

JUL 21 1994

94-SPB-035

Mr. Charles H. Hayes, Chairman
Nez Perce Tribal Executive Committee
P. O. Box 305
Lapwai, Idaho 83540

Dear Mr. Hayes:

ENVIRONMENTAL ASSESSMENT (EA) FOR THE RESITING, CONSTRUCTION, AND OPERATION OF THE ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL)

Thank you for your comment letter (June 27, 1994) in response to the U.S. Department of Energy's (DOE) draft EA for the Resiting, Construction, and Operation of the EMSL at the Hanford Site. We are pleased to respond both in the EA and in this letter. Where appropriate, we responded to your comments in the EA, and in those cases where a comment appeared to be outside the scope of the EA, we are responding in this letter. In the following, we have restated your comments individually followed by our response.

1. Comment: The Department of Energy (DOE) issued a Finding Of No Significant Impact (FONSI) for the construction of the Environmental Molecular Sciences Laboratory (EMSL) overlooking the Columbia River at the south end of the 300 Area. The Nez Perce Tribe in light of the evidence presented in prior reports, (KEH 1987; PNL 1988; SW 1991; and CHATTERS 1991) would prefer the inclusion of the complete history and why the river site was chosen.

   Response: Selection of the original EMSL site is outside the scope of the new EA. In response to your comment, however, the EA has been clarified in section 3.2. The three studies you mention resulted in three preferred sites from which a final choice was made by DOE management.

2, 3, 4, 5, 6. Comments: 2. The Nez Perce ask why this map has no legend, no corresponding graphic scale (1 cm to 8 km), and is unclear as to the portrayal of the figures. 3. The scales should be uniform in positioning on the maps and in the quality. There is no legend to identify the figures. The line indicating the Columbia River makes the Nez Perce ask if this is the high water mark or the edge of the riverine zone. Please explain exactly what the map symbols mean. There is no border, range or township indicators. 4. The North arrows in your presentation should be the same for consistency, as should the scale bars, the borders, and the legends; they are not. There is no indication of what the figures are.

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

JUL 21 1994

94-SPB-035

Mr. Charles H. Hayes, Chairman
Nez Perce Tribal Executive Committee
P. O. Box 305
Lapwai, Idaho 83540

Dear Mr. Hayes:

ENVIRONMENTAL ASSESSMENT (EA) FOR THE RESITING, CONSTRUCTION, AND OPERATION OF THE ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL)

Thank you for your comment letter (June 27, 1994) in response to the U.S. Department of Energy's (DOE) draft EA for the Resiting, Construction, and Operation of the EMSL at the Hanford Site. We are pleased to respond both in the EA and in this letter. Where appropriate, we responded to your comments in the EA, and in those cases where a comment appeared to be outside the scope of the EA, we are responding in this letter. In the following, we have restated your comments individually followed by our response.

1. Comment: The Department of Energy (DOE) issued a Finding Of No Significant Impact (FONSI) for the construction of the Environmental Molecular Sciences Laboratory (EMSL) overlooking the Columbia River at the south end of the 300 Area. The Nez Perce Tribe in light of the evidence presented in prior reports, (KEH 1987; PNL 1988; SW 1991; and CHATTERS 1991) would prefer the inclusion of the complete history and why the river site was chosen.

   Response: Selection of the original EMSL site is outside the scope of the new EA. In response to your comment, however, the EA has been clarified in section 3.2. The three studies you mention resulted in three preferred sites from which a final choice was made by DOE management.

2, 3, 4, 5, 6. Comments: 2. The Nez Perce ask why this map has no legend, no corresponding graphic scale (1 cm to 8 km), and is unclear as to the portrayal of the figures. 3. The scales should be uniform in positioning on the maps and in the quality. There is no legend to identify the figures. The line indicating the Columbia River makes the Nez Perce ask if this is the high water mark or the edge of the riverine zone. Please explain exactly what the map symbols mean. There is no border, range or township indicators. 4. The North arrows in your presentation should be the same for consistency, as should the scale bars, the borders, and the legends; they are not. There is no indication of what the figures are.

There is no border, legend, orientation marks, nor date. 5. This map is as inadequate as the previous, meaning that there is no border, legend, indicator marks, date, nor consistency with the other figures. Where are the power lines, rail lines, sewer lines, and telephone lines. The Nez Perce ERWM asks why there is no consistency with the label prints? The line indicating the Columbia River is also very unclear, the figures presented do not have cultural resource zones. A contour elevation map with a geologic overlay would be appropriate especially with the larger scale maps. 6. The Nez Perce asks why the maps provided do not adequately reflect the 260 parking spaces needed, and why they are split into two instead of one.

Response: The maps are computer drawn, not pen and ink drawn. Sufficient clarifications of these maps to help orient the reader have been incorporated in the final EA. Details and information are provided in each map and caption to convey the information that is important to the decision as to whether or not to prepare an environmental impact statement (EIS). A contour map with geologic overlay would not bear on the decision on siting and was therefore not included. Sufficient parking lot area is indicated on the figures for the appropriate number of parking spaces for building staff and seminar attendees. Parking lot design will be finalized in the detailed design phase.

7. Comment: The Nez Perce ERWM would like to know if the use of reconstructed shrub steppe habitat would be more appropriate than a typical high maintenance landscape that is not a reflection of the local environment? The combined American Indian Tribes; The Nez Perce, Confederated Tribes of the Umatilla Indian Reservation, The Confederated Tribes of the Yakama Indian Nation, and the Wanapum Tribes, are in the process of restoring the former EMSL site with native vegetation and would be a valuable resource which could save time and money on the construction of the new EMSL site.

Response: While a reconstructed shrub-steppe habitat would be in keeping with the other natural areas of the Hanford Site, it would not be in keeping with the existing nearby office areas. Also, a shrub-steppe habitat in an office area is a fire hazard.

8. Comment: The Nez Perce Tribe asks why the Chatters' report (HCRC#91-300-024) is not referenced?

Response: The Chatters' report was included in its entirety in the previous EA. The subject of the report is the site on which human remains were found and not the new proposed site.

9. Comment: The Nez Perce ERWM regrets that the consideration of the sites were not fully appreciated.

Response: The Department regrets the disturbance of the remains found during the initial excavations at Site 2, and recognizes the need to change the process by which cultural resources considerations are included in selection of new construction sites.

10. Comment: The Nez Perce ERWM asks what is the expected air emissions from the construction equipment, and why was this left out? We ask this question because of the potential amounts of particulates from machinery exhaust that are involved.

Response: The discussion of emissions from construction equipment in the EA is sufficient for the purpose for which the EA was intended, i.e., to determine whether or not an EIS should be prepared. Actual air emissions are not expected to cause any air quality standards to be exceeded. The National Ambient Air Quality Standards can be found in 40 CFR 50.

11. Comment: The Nez Perce Tribe understands that while the expected plant operation emissions are within the acceptable ranges under the law, why should there be any emissions at all if this project is supposed to be state-of-the-art? Were other types of exhaust scrubbers considered?

Response: Any facility that uses air for ventilation must necessarily re-emit that air, i.e., emission of air is inevitable. With respect to hazardous substances, emission of these from the EMSL are controlled both by limiting the amount of each hazardous substance handled in the EMSL and by applying the best available control technology (Chapter 5). All applicable state and federal standards will be met or exceeded with respect to emissions. From the design phases through construction and operation the EMSL Project has and will continue to consider appropriate existing and developing technologies (which could include scrubbers) for controlling airborne emissions.

12. Comment: In the interest of saving money the Nez Perce ERWM asks, was solar design considered for supplementing the fossil fuel burners?

Response: The design for the facility considered many energy conservation features including both passive and active solar systems. Many of these features have been included in the facility design, however, no solar application was chosen to supplement the facilities high efficient gas boiler as they are determined not cost effective.

13. Comment: The Nez Perce Tribe asks if the concrete pit and sump is going to be lined, and if it is with what? Will the application of the lining be hazardous to the construction workers?

Response: The concrete sump will be coated with a liquid urethane elastomer coating (Section 5.2.2). Application of the coating in accordance with the manufacture's recommendation is not expected to be hazardous to workers.

14. Comment: The Nez Perce ask if there was any consideration of waste minimization for paper goods such as a press suitable for use with 55 gallon drums?

Response: DOE and its contractors actively carry out a waste minimization program as identified in section 5.2.3.

15. Comment: The Nez Perce ask if there is going to be an active minority program?

Response: The DOE is committed to an affirmative action program. The Richland Office and the Hanford contractors are recognized as having one of the most successful Equal Employment Opportunity and Small Disadvantage Business programs in the DOE.

Please call me if you have further questions at (509) 376-6667.

Sincerely,

Paul F. X. Dunigan, Jr.

Paul F. X. Dunigan Jr.
NEPA Compliance Officer

cc: Donna Powaukee

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
JUL 21 1994

94-SPB-038

Mr. Donald Sampson, Chairman
Board of Trustees
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Mr. Sampson:

ENVIRONMENTAL ASSESSMENT (EA) FOR THE RESITING, CONSTRUCTION, AND OPERATION OF ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL)

Thank you for your comment letter (June 22, 1994) in response to the U.S. Department of Energy's (DOE) draft EA for the Resiting, Construction, and Operation of the Environmental and Molecular Sciences Laboratory at the Hanford Site. We have responded to your comments in the EA where appropriate, and in those cases where it appears to us that your comment is outside the scope of the EA, we have responded in this letter. In the following, we have restated your four major comments individually and then presented our responses.

1. Comment: The EA should include an accurate characterization of the events that resulted in selection of the original site.

   Response: Selection of the original EMSL site is outside the scope of the new EA and, hence, was not discussed in detail in the new EA. In response to your comment, however, three studies were carried out for the original site:

   Molecular Science Research Laboratory, Kaiser Engineers Hanford, KEH-87-60-D-384, December 1987.

   Site Evaluation for the EMSL, Pacific Northwest Laboratory, 90-R-400, September 1988.

   Site Evaluation for the EMSL, Stone and Webster Engineering Corp., August 1991.

   These three studies resulted in three preferred sites from which a final choice was made by the DOE management.

2. Comment: The EA should include a copy of these comments.

   Response: Both the Umatilla comment letter of June 22, 1994, and this DOE response letter are appended to the EA.

3. Comment: The EA should include a commitment to have a cultural resource monitor and a PNL archaeologist present onsite during initial construction activities.

   Response: The DOE has committed both to inviting tribal cultural resource monitors and to having a Hanford Cultural Resources Laboratory archaeologist present for EMSL excavation activities. See Chapter 6 of the EA.

4. Comment: The EA should include a full commitment to restoration of the former site.

   Response: The former EMSL site is being restored by tribal representatives with financial assistance from the DOE.

Please call me if you have further questions at (509) 376-6667.

Sincerely,

Paul F. X. Dunigan Jr.

Paul F. X. Dunigan Jr.
NEPA Compliance Officer

cc: J. R. Wilkinson

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

JUL 21 1994

94-SPB-037

Mr. Richard Buck, Native American Spec II
Wanapum People
Grant County Public Utility District
P.O. Box 878
Ephrata, Washington 98823

Dear Mr. Buck:

ENVIRONMENTAL ASSESSMENT (EA) FOR THE RESITING, CONSTRUCTION, AND OPERATION OF ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL)

Thank you for your comment letter (June 29, 1994) in response to the U.S. Department of Energy's (DOE) draft EA for the Resiting, Construction, and Operation of the EMSL at the Hanford Site. We appreciate your comments and are pleased to convey to you our responses. In the following, I have restated your four major comments and then presented our responses.

1. Comment: We would like to have a part in the decision-making process.

   Response: The Hanford Cultural Resources Management Plan is being revised in consultation with the tribes to include more substantial and more timely tribal participation in cultural resource reviews. Also, DOE regulations in 10 CFR 1021 require that affected Indian tribes be given the opportunity to comment on both EAs and Environmental Impact Statements. We will continue to solicit Wanapum comments on any decision with the potential to affect cultural resources.

2. Comment: The Wanapum people support the "no action" alternative.

   Response: DOE believes that the research to be carried out in the EMSL will lead to more effective cleanup of the Hanford Site and has chosen to proceed with the project. It is possible that the research may also benefit cleanup activities at other sites.

3. Comment: Should any work continue, a Wanapum cultural monitor should be present during ground disturbing activities.

   Response: DOE has committed both to having a Hanford Cultural Resources Laboratory archaeologist present and to inviting tribal cultural resource monitors for EMSL excavation activities. See Chapter 6 of the EA.

4. Comment: DOE must dedicate substantial funding to cultural and natural resource protection and management, so that DOE will be able to leave us the land and environment in as much the same way that they borrowed it.

Response: Regarding the discovery of human remains on the former EMSL site, the tribes are restoring the site with financial support from the DOE. Regarding the discovery of cultural resources in the future on the Hanford Site, the Department's actions will be in accordance with 36 CFR 800 and the Hanford Cultural Resources Management Plan. Funding for cultural resources at the Hanford Site has been increased from $500,000 to over $1,000,000 for FY 1995. Substantial portions of the Hanford Site are already dedicated to the preservation of natural resources, specifically the Fitzner/Eberhardt Arid Lands Ecology Reserve managed by the DOE and two wildlife areas north of the Columbia River managed by the U.S. Fish and Wildlife Service and Washington Department of Fish and Wildlife, respectively.

Please call me at (509) 376-6667 if you have questions.

Sincerely,

Paul F. X. Dunigan, Jr.

Paul F. X. Dunigan Jr.
NEPA Compliance Officer

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
JUL 21 1994

94-SPB-036

Mr. Jack W. Fiander
Yakama Indian Nation
Office of Legal Counsel
P.O. box 151, Fort Road
Toppenish, Washington 98948

Dear Mr. Fiander:

ENVIRONMENTAL ASSESSMENT (EA) FOR THE RESITING, CONSTRUCTION, AND OPERATION OF THE ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY (EMSL)

Thank you for your comment letter (June 29, 1994) in response to the U.S. Department of Energy's (DOE) draft EA for the Resiting, Construction, and Operation of the EMSL at the Hanford Site. We are pleased to respond to your comments both in the EA and in this letter. Where appropriate, we responded to your comments in the EA, and in those cases where a comment appeared to us to be outside the scope of the EA, we are responding in this letter. In the following, we have restated your comments individually and then presented our responses.

1. Comment: The biological assessment report (Appendix B) appears to be a report detailing the findings from Sites 4 & 6. According to the EA site 4 had been eliminated earlier due to potential for human remains. Site 7 is not discussed.

   Response: The EA has been corrected to exclude site 7. Only sites 4 and 6 were reconsidered again for the purpose of this EA. Site 7 was eliminated from consideration for other than biological reasons during the 1991 site selection study.

2. Comment: On page 2-Appendix B the biological assessment states that the open habitat within the project area does provide potential habitat nesting for Long-billed curlew (federal candidate species). Page 9 (4.0 Affected Environment) states that the frequent cutting of alfalfa does not make EMSL site a suitable nesting habitat. Does spring nesting season conflict with early cutting schedule? Is there a prescribed distance for minimizing impacts to nesting sites for this species like the one for raptors (p.3, Appendix B)? The Report is essentially written as a trade off between Sites 4 & 6; which provides less damage to environment. If Site 4 is not seriously being considered how justifiable is this approach? Shouldn't Site 7 be included in this part of the assessment?

Response: The biological review makes clear that Site 4 provides better habitat than Site 6. According to a June 17, 1994, letter from the U.S. Fish and Wildlife Service, the long-billed curlew is not a protected species nor is it a federal candidate species in this area. Site 7 was eliminated from consideration on grounds other than habitat during the 1991 site selection study.

3. Comment: The cumulative effects of impacts due to loss and fragmentation of sagebrush habitat on the Hanford site is never really discussed except to state that it will occur (p.4, Appendix B). Biological report calls for development of method to predict effects of project and plans to mitigate the cumulative losses. No mention of such a plan is included in this EA.

Response: No loss of sagebrush habitat will occur if the EMSL is constructed on Site 6 because it has been farmed as a alfalfa field for years.

4. Comment: Page 8 states that Sites 1, 2, 3, 4, and 5 have been eliminated because of the discovery of human remains on Site 2 and because of the proximity of the other sites to this area, the Columbia River and/or to the existence of landforms where additional remains could be found. That leaves Sites 6 & 7. Site 7 is being rejected due to the existence of utilities in the Site 6 area and due to its having already been disturbed. There were no utilities located near Site 2 nor had it suffered any ground disturbance activities prior to it being selected as the initial site of the EMSL. How justifiable is the exclusion of Site 7 on these criteria? Is this EA really considering any alternatives except the preferred? The Cultural Resource survey only covers Site 6. What happened to Site 7? Supposedly this alternative was not reconsidered (p.1 Cultural Resource Report Narrative) after finding the human remains at Site 2. EA's should cover a range of alternatives and after stating all of the high points and deficits of each area a preferred alternative is selected. It appears that this has not occurred.

Response: Section 3.2. has been rewritten to clarify the alternatives considered for the resiting of the EMSL and correct the reference to site 7 (see response to 1 above).

5. Comment: The decision to avoid the dune area located in the northwest portion of the site should take care of any highly potential area for discovering buried human remains. If avoidance is not possible the archaeologists recommend that non-intrusive remote sensing techniques be used in the dune area prior to any ground disturbance. The presence of a Native American monitor is also recommended on a full-time basis during any subsequent ground disturbing activities in this area.

Response: The dune area referred to in the northwest portion of the site was not part of the DOE acquisition although it was surveyed. However, a ground-penetrating radar survey of Site 6 was carried out (see Appendix C). The DOE has committed both to having a Hanford Cultural Resources Laboratory archaeologist present and to inviting tribal cultural resource monitors for any EMSL excavation activities (see Chapter 6).

6. Comment: The Yakama Nation is interested in knowing what degree of a review was initially carried out with the first Molecular Science Research Laboratory conducted by Gard in 1990. Was there an actual on-the-ground survey and/or testing completed in this area?

Response: Gard's 1990 cultural resources survey was included by reference in the EA because it covered a limited area immediately north of the Battelle complex on Site 6, the new EMSL Site. This survey included a walk and some subsurface testing.

Please call me if you have further questions at (509) 376-6667.

Sincerely,

Paul F. X. Dunigan Jr.
NEPA Compliance Officer

cc: Russell Jim

APPENDIX F

FINDING OF NO SIGNIFICANT IMPACT

This appendix contains a copy of the finding of no significant impact.

FINDING OF NO SIGNIFICANT IMPACT FOR THE RESITING, CONSTRUCTION AND OPERATION OF THE ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY AT THE HANFORD SITE, RICHLAND, WASHINGTON

AGENCY: U. S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U. S. Department of Energy (DOE) has prepared an environmental assessment (EA) (DOE/EA-0959) to assess potential environmental impacts associated with the proposed resiting, construction, and operation of the Environmental and Molecular Sciences Laboratory (EMSL) at the Hanford Site. Preparation of this EA was made necessary by the discovery of remains thought to be those of Native Americans on the site originally selected for the EMSL and the subsequent decision, consistent with the wishes of the local Indian tribes and with the spirit of the Native American Graves Protection and Repatriation Act and the American Indian Religious Freedom Act, to chose a new site for the facility. Based on the analyses in the EA and preapproval review comments received from the local Indian tribes and the City of Richland, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). Therefore, the preparation of an environmental impact statement is not required.

ADDRESSES AND FURTHER INFORMATION:

Single copies of the EA and further information about the proposed project are available from:

Mr. John P. Neath
EMSL Project Manager
U. S. Department of Energy
Richland Operations Office
P. O. Box 550
Richland WA 99352
Phone: (509) 376-3964

For further information regarding the DOE NEPA process, contact:

Carol M. Borgstrom, Director
Office of NEPA Oversight
U. S. Department of Energy
1000 Independence Avenue, S. W.
Washington DC 20585
Phone: (202) 586-4600 or leave a message at (800) 472-2756

BACKGROUND: On September 17, 1992, DOE issued a finding of no significant impact (FONSI) for the construction and operation of the EMSL on a site overlooking the Columbia River at the south end of the 300 Area at DOE's Hanford Site. The FONSI was based on an environmental assessment (EA) published in September 1992 (DOE/EA-0429). On the second day of construction, April 12, 1994, construction crews uncovered remains thought to be those of Native Americans. DOE halted construction, and consistent with the wishes of local Indian tribes and with the spirit of the Native American Graves Protection and Repatriation Act and the American Indian Religious Freedom Act, decided to select a new location for the facility. The design of the facility itself changed little from that in the original EA, but the selection of the new site and the impacts of construction and operation of the facility at the new site have been evaluated. The Indian tribes with the support of DOE are restoring the former site.

PROPOSED ACTION: Under the proposed action, the EMSL would be constructed and operated as part of DOE's Pacific Northwest Laboratory (PNL) at the Hanford Site near Richland, Washington. The purpose of and need for DOE's proposed action is to provide in a single location the combined office and laboratory facilities necessary to conduct research directed toward environmental restoration programs carried out by DOE at the Hanford Site and at other DOE sites. The proposed new location for the EMSL is within the city limits of Richland in north Richland, adjoining the south end of the existing Hanford

Site on land to be donated to DOE by the Battelle Memorial Institute. This location was selected over an alternative site immediately north of the proposed location because it had been previously disturbed, and was considered less likely to contain cultural resources or human remains. The EMSL design includes approximately 200,000 square feet of floor space for laboratories, offices, research support shops, computer and graphics rooms, storage areas, conference rooms, a library, kitchen, lunch room, and a 100-person lecture hall. Site development would require construction areas adjacent to the EMSL, utility extensions,driveways, parking lots, and landscaped areas. The building and site would be arranged to permit integration of laboratory and support activities with those in existing PNL facilities and other 300 Area facilities. EMSL staff would consist of approximately 200 scientists, technicians, and support staff. In addition, approximately 60 visiting scientists are expected to be working at the facility at any given time. During excavation an archaeologist from the Hanford Cultural Resources Laboratory will be present in case artifacts or remains are discovered. Indian cultural resource monitors will also be invited to be present during excavation.

ALTERNATIVES TO THE PROPOSED ACTION:

DOE considered a no action alternative, under which the proposed laboratory would not be built. DOE would be deprived of a critical facility needed to conduct basic and applied research to support DOE's environmental restoration programs. No action does not meet the need for agency action.

Existing laboratories and offices at Hanford were considered for the EMSL, but were not considered viable alternatives because 1) suitable facilities were in use; 2) none of the available facilities met the stringent vibration

Comprehensive Environmental Response, Compensation, and Liability Act.

Operation Impacts: Routine operation of the EMSL would generate small quantities of gaseous, liquid, solid, radioactive, and hazardous wastes. Through the use of appropriate controls, in conjunction with meeting all applicable local, state, and federal regulations, impacts resulting from these wastes are expected to be extremely small. For example, the EMSL design includes the best available radiation control technology for each room and/or hood dedicated to experiments with radionuclides. Ecological and socioeconomic resources are not expected to be affected by routine operations. The occupational radiation dose to an EMSL staff member during normal operations is estimated to be 20 mrem per year or less. This estimate is substantially lower than DOE's occupational limit of 5 rem per year, and would not likely result in any health effects.

Cumulative Impacts: The proposed construction and operation of the EMSL would not have a substantial cumulative effect when considered against other activities in the City of Richland and on the Hanford Site. The incremental impact of the radioactive and nonradioactive emissions from the EMSL would be very small.

Potential Accidents: The maximum credible accident postulated for the proposed action assumes that one container each of I-125 and I-131 is dropped and broken simultaneously inside the building, but outside a radiation control area. Of the 10 millicuries in each container, 10 percent was assumed to be released to the atmosphere. From this accident, the maximally exposed offsite individual was calculated to receive an effective dose equivalent of 0.3 mrem. The population dose from this accident was calculated to be 1.3 person-rem.

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