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# HANFORD CULTURAL RESOURCES LABORATORY ANNUAL REPORT FOR FISCAL YEAR 1991

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# EXECUTIVE SUMMARY

The Hanford Cultural Resources Laboratory (HCRL) was established by the U.S. Department of Energy, Richland Field Office (RL) in 1987 as part of Pacific Northwest Laboratory. The HCRL provides support for managing the archaeological, historical, and cultural resources of the Hanford Site, Washington, in a manner consistent with the National Historic Preservation Act of 1966 (NHPA), the Archaeological Resources Protection Act of 1979 and the American Indian Religious Freedom Act of 1978. HCRL responsibilities have been set forth in the Hanford Cultural Resources Management Plan (HCRMP) as a prioritized list of tasks to be undertaken to keep the RL in compliance with federal statutes, regulations and guidelines. For fiscal year 1991 these tasks were to 1) ensure compliance with NHPA Section 106, 2) monitor the condition of known archaeological sites, 3) evaluate cultural resources for potential nomination to the National Register of Historic Places, 4) educate the public about cultural resources, 5) conduct a sample archaeological survey of Hanford lands, and 6) gather ethnohistorical data from Indian elders. Research conducted as a spinoff from these tasks is also reported.

NHPA Section 106 reviews are conducted.prior to each proposed ground-disturbing or building alteration/demolition project on the Hanford Site. During the 1991 fiscal year, Hanford Contractors requested 102 Section 106 reviews. Seventeen of these required the archaeological survey of a total of 820 hectares and resulted in the discovery of 21 prehistoric archaeological sites and 7 historic archaeological sites. Projects were relocated to avoid any potential impact to sites considered eligible for listing on the National Register of Historic Places.

The archaeological site monitoring program is designed to determine whether the RL's cultural resource management and protection policies are effective; results are used in planning for cultural resource site management and protection. Forty-one sites were monitored during this fiscal year.

Two cultural properties were evaluated for their eligibility to the National Register of Historic Places. Test excavations were conducted at archaeological site 45BN447, a hunting blind and kill site in the Gable Butte vicinity dating within the last 2000 years. Results of this effort are being used to support the nomination of the Gable Mountain/Gable Butte Archaeological District. A Request for Determination of Eligibility was prepared for the White Bluffs Road, an ancient Indian trail and freight road important to the settlement of central Washington.

Education activities included presenting lectures to groups of all ages and developing a series of di plays to be used in Hanford Site facilities for worker education. Lectures were presented on 14 occasions; two television spots featured the HCRL or its activities.

Twenty sample plots covering 320 ha were surveyed in FY 1991 as part of a plan to survey 10% of site lands, in compliance with NHPA Section 110. Fourteen archaeological sites and 10 isolated artifacts were recorded.

The lowest priority task involves the collection of ethnographic and ethnohistorical information about traditional cultural uses and meaning of the Hanford Site. This proved to be especially difficult this fiscal year, and no interviews were held.

Research activities included collection and analysis of data from the 2100-year-old Tsulim bison kill site and development of a model to predict archaeological fishing sites. Journal articles on these topics were submitted for publication. In addition, a journal article describing the history of cultural resources management activities on the Hanford Site was submitted for publication and a paper on the significance of ancestral human remains to Native Americans was presented at a regional conference.

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# TABLES

# 1.0 INTRODUCTION

The Hanford Cultural Resources Laboratory (HCRL) was established by the U.S. Department of Energy, Richland Field Office (RL) in 1987 as part of Pacific Northwest Laboratory. The HCRL provides support for managing the archaeological, historical and cultural resources of the Hanford Site, Washington, in a manner consistent with the National Historic Preservation Act of 1966, the Archaeological Resources Protection Act of 1979 (ARPA) and the American Indian Religious Freedom Act of 1978.

In fiscal year 1989, the HCRL published the Hanford Cultural Resources Management Plan (HCRMP), which, among other things, established a prioritized list of tasks to be undertaken to bring the RL into compliance with federal statutes, regulations and guidelines. That list of tasks (Table 1.1) was used to guide cultural resources management activities during FY 1991.

This report is structured according to the priorities listing in Table 1.1. Each task is discussed in a separate section. Each section includes an explanation of the task and a description of the tactics used in performing it, as appropriate. Results of the task or the products of task performance are then described or presented in their entirety. Supporting data and descriptive detail for task 1 are presented in Appendices A through C.

TABLE 1.1. Priority Listing of Tasks Performed by the HCRL, FY 1991

| Priority | Task Description |
|---|---|
| 1 | Conduct NHPA Section 106 compliance reviews |
| 2 | Monitor the condition of historic properties on a 3-yr rotating schedule |
| 3 | Evaluate known cultural resources for eligibility to the National Register of Historic Places (3 identified, see Section 4) |
| 4 | Educate the public and Hanford staff about cultural resource protection and preservation |
| 5 | Evaluate current model of archaeological resource distributions by a sample inventory of 10% of site lands (initiated in this fiscal year) |
| 6 | Collect information on regional ethnohistory |

# 2.0 SECTION 106 COMPLIANCE REVIEWS

As required by Section 106 of the National Historic Preservation Act of 1966 (NHPA), the DOE reviews each proposed ground disturbing or building alteration/demolition project to determine if it may have an impact on any cultural property that is listed on or eligible for the National Register of Historic Places. This is accomplished through the cultural resources review process (Chatters 1989). Cultural resource reviews are classified according to four criteria: 1) whether the project entails maintenance, demolition, or new construction, 2) the existence of previous disturbance in the area to be reviewed, 3) the cultural resource sensitivity of the area in which the activity is planned, and 4) whether or not the project involves an existing structure or building. There are six classes: I) maintenance in a disturbed, low-sensitivity area; II) maintenance in a disturbed, high-sensitivity area; III) new construction in a disturbed low-sensitivity area; IV) new construction in a disturbed, high-sensitivity area; V) all projects involving undisturbed ground; and VI) projects involving demolition or remodeling of existing structures. Each class requires a different response, as specified in Section 3 of the HCRMP (Chatters 1989).

## 2.1 REVIEWS CONDUCTED

During this fiscal year, Hanford contractors requested 102 cultural resource reviews (Appendix A: Table A.1). Most cases initiated in FY 1991 were Class III reviews (70), followed by Class V (18), Class VI (6), Class I (4) and Classes II and IV (2 each ). The largest numbers of reviews were requested for the 300, 100, and 600 areas (32, 27, and 25 respectively), followed by the 200 area (12). The remainder are divided among the 400, 700, 1100, and 3000 areas.

Following a policy established in FY 1991, new case numbers were not assigned to Class I projects occurring within industrialized areas that had previously been intensively surveyed and found to lack cultural resources or that were known to be intensively disturbed or filled. Telephone clearance with subsequent permit signatures were provided, along with reference to PNL-7264. This pertained to the 200 Areas, the 100-N protected area, the 400 area, and portions of the 300, 700 and 1100 areas. A total of 102 clearances of this type were provided, three-fourths of them for the 200 Areas.

Eighteen cases requiring surveys and 7 cases requiring monitoring were initiated in fiscal year 1991 (Tables 2.1, 2.2). Two additional surveys begun in previous years were completed.

TABLE 2.1. Cultural Resource Surveys Requested in FY 1991

| Case # | Project Name | Area (ha) | Cultural Resources |
|---|---|---|---|
| 90-200-017 | US Ecology Diversion Channel | 2.5 | |
| 90-300-025 | New site, Environmental and Molecular Science Lab, (EMSL) | 8 | |
| 90-300-026 | 300-FF-5 Operable Unit, Phase I monitor boreholes | 1.75 | yes |
| 90-600-029 | Rattlesnake Mountain anemometer tower | 0.25 | HT-90-023 |
| 91-100-CERCLA | 100 Area operable units | 770.2 | yes |
| 91-100-010 | 100-B Shoreline tree planting/Habitat Replacement | 1 | HI-91-006 |
| 91-100-017 | 100-N wells | 0.25 | |
| 91-100-022 | 100-D RCRA wells | 0.25 | |
| 91-300-004 | Horticultural Research Facility | 0.25 | |
| 91-300-011 | Wells 91E-EWW-212, 300 FF-5 | 0.25 | 45BN32 |
| 91-600-005 | Soil Corrosion Test Facility | 1.25 | WB Rd. to N |
| 91-600-006 | Privatization Steam Plant | 12 | |
| 91-600-009 | 200- A TEDB, fresh water pond. | 15 | |
| 91-600-012 | Soil characterization for McGee Ranch | 827 | yes |
| 91-600-015 | Site-wide background soil sampling plan | 1 | |
| 91-600-017 | USGS Grass Research Drill Site | 0.25 | |
| 91-600-021 | #53-55c Well Site Testing | 9 | |
| 91-1100-002 | W-119 CERCLA wells, 1100EM1 | 0.25 | HT-91-008 |

Seventeen surveys were completed totaling 820 ha, more than twice the area surveyed in the previous year. The largest project (90-100-CERCLA) covered 770.2 ha. Because of its size and the large number of cultural resources it contained, this project is discussed separately. Of the remaining surveys, only four cases covered more than 5 ha, while most surveys covered less than 1 ha. The vast majority of surveys occurred in the 600 Area (15), followed in descending order by the 100 and 300 areas (4 each), 200 Areas (3), and the 400 and 1100 areas (1 each). One survey (91-600-012), the inspection of 827 ha in the McGee Ranch area of the Hanford Site, was scheduled early FY 1992.

## 2.2 CULTURAL RESOURCES IDENTIFIED

Exclusive of finds made in the 100 areas, two new archaeological sites and one isolate were recorded during the course of the Section 106 clearance process. One site, HT-09-023, is a cairn and associated projectile point fragment located atop Rattlesnake Mountain in an area designated for an anemometer tower. The other site, HT-91-008, is a group of cans, bottles and other trash from the 1930s and 1940s scattered around the edges of an old field. A well site and access road threatened this site. Both projects were relocated to avoid the sites. The isolate, a Cascade style

TABLE 2.2. Section 106 Reviews Requiring Monitoring in FY 1991

| Monitoring Case # | Project Name | Cultural Resources | Impacts |
|---|---|---|---|
| 90-300-028 | River sign post installation | 45BN164 | none |
| 90-600-026 | Island clean-up adjacent to 100-D Area | unknown, ongoing | |
| 91-100-001 | 100-K soil washing sample collection | | |
| 91-300-001 | 331 Building electrical improvement | | |
| 91-300-003 | Sanitary sewer repair | | |
| 91-300-019 | 300 Area process sewer replacement | | |
| 91-600-008 | Power pole changeover, Gable Mountain | Gable Mountain | none |

projectile point (dated ca. 8000 to 4500 B.P.) found near the Columbia River, was collected. Two other projects were located near sites recognized as eligible for the National Register of Historic Places (White Bluffs Road and 45BN32) but neither site was threatened by the projects.

Two projects required monitoring. Replacement of power poles on Gable Mountain, a part of the proposed Gable Mountain Gable Butte Cultural District, had no effect on the historic property. The driving of gate posts into an inland location of site 45BN164 of the proposed Tri-Cities Archaeological District, was expected to have little or no impact, but construction personnel neglected to notify the HCRL when work commenced. Inspection after the fact found no visible impacts to the site.

## 2.3 SURVEY OF THE 100 AREAS

At the request of Westinghouse Hanford Company staff, the HCRL conducted an archaeological survey of the 100 Area reactor compounds and adjacent portions of river bank. This was undertaken as part of a full cultural resource review of 100 Area Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) operable units conducted in support of CERCLA characterization activities. These areas had been omitted from earlier survey efforts for security reasons (Rice 1968). The work included a literature and records review and a pedestrian survey of the project area following procedures set forth in the HCRMP.

The 100-B/C, 100-D, 100-F, 100-H, 100-K, and 100-N areas cover a total of 1834 ha, of which 770.2 ha remained undisturbed enough to warrant archaeological survey (Appendix C). All areas are sited along the Columbia River bank and include low floodplain terraces dating to the last 10,000 years and higher gravel terraces of Pleistocene age. Low, rounded, gravel mounds also occur on the older terrace around the 100-D and 100-N areas. Vegetation consists of low shrubs

and grasses. Thirty cultural resource sites were found, three in 100-B/C, four in 100-D, eight each in 100-F and 100-K, one in 100-H, and five in 100-N (Table 2.3). Twenty-four of the sites were attributable to Native-American activity and range in age from an estimated 7000 years to less than 50 years. Five of these--45BN149, 45BN150, 45BN151, 45BN176, 45BN179, and 45BN180--are currently included in or assignable to archaeological districts that are listed on the National Register of Historic Places. The most intriguing site is a recently occupied village containing a longhouse depression and depressions of several pithouses. Ethnographic literature indicates this may be the location where the religious leader Smowhala held his first winter dance (Relander 1956). Six sites are the result of twentieth-century Euro-American activity and consist of the remains of homesteads and fields. Numerous pieces of farm equipment and parts of old automobiles surrounded one site near the 100-K reactors. A separate report on this survey will be published in 1992; evaluation of the archaeological sites will be conducted in 1992 and 1993.

TABLE 2.3. Archaeological Sites Discovered during the FY 1991 Survey of the Hanford Site 100 Areas

| Operable Unit | Washington No. | Site Type |
|---|---|---|
| 100-B/C | 45BN430 | Prehistoric isolate |
| 100-B/C | 45BN446 | Cascade Phase camp (ca 4500 to 7000 B.P.) |
| 100-B/C | H3-17 | Farm complex |
| 100-D | 45BN439 | Cascade Phase camp (ca 4500 to 7000 B.P.) |
| 100-D | 45BN459 | Frenchman Springs Phase camp (2500-4500 B.P.) |
| 100-D | 45BN442 | Prehistoric cairn |
| 100-D | 45BN444 | Prehistoric cairn |
| 100-D | 45BN416 | Late prehistoric camp (<2500 years) |
| 100-F | H3-11 | Homestead debris |
| 100-F | 45BN435 | Cascade Phase camp (ca 4500 to 7000 B.P.) |
| 100-F | 45BN433 | Prehistoric campsite (age unknown) |
| 100-F | 45BN432 | Prehistoric campsite (age unknown) |
| 100-F | 45BN431 | Prehistoric campsite |
| 100-F | H3-12 | Homestead |
| 100-F | H3-13 | Homestead |
| 100-F | H3-14 | Homestead |
| 100-H | 45BN176(a) | Historic Wanapum fishing camp |
| 100-K | 45BN423 | Cascade Phase camp (ca 5000 to 7000 B.P.) |
| 100-K | 45BN424 | Possible historic Wanapum village |
| 100-K | not yet assigned | Fishing camp (extensive age range) |
| 100-K | 45BN115 | Cascade Phase camp (ca 4500 to 7000 B.P.) |
| 100-K | H3-10 | Farmstead |
| 100-K | 45BN434 | Cascade Phase camp (ca 4500 to 7000 B.P.) |
| 100-K | 45BN150(a) | Prehistoric campsite (age unknown) |
| 100-K | 45BN151(a) | Wanapum cemetery |
| 100-N | 45BN438 | Prehistoric cairn |
| 100-N | 45BN149(a) | Prehistoric camp (age unknown) |
| 100-N | 45BN179(a) | Prehistoric camp and village 7000 B.P to historic Wanapum |
| 100-N | 45BN180(a) | Late prehistoric village (>1000 B.P.) |

(a) Sites listed on or considered eligible for listing on the National Register of Historic Places.

# 3.0 THE MONITORING PROGRAM

As manager of the Hanford Site, the U.S. Department of Energy - Richland Field Office (RL) is assigned the stewardship of all archaeological resources, traditional use areas, paleontological deposits, and historic properties on the site. RL therefore has the responsibility for determining whether its management and protection policies are effective and when they are inadequate. A monitoring program, maintained by HCRL, is intended to determine the impact of DOE policies and to safeguard cultural resources from destruction by natural processes or unauthorized excavation and collection. That monitoring program is designed to inspect each cemetery site once a year, to inspect each site listed on the National Register of Historic Places at least every three years, and to inspect each non-listed site every five years (Chatters 1989). Sites that are found through monitoring to be negatively impacted, particularly as a result of DOE actions and unauthorized collection activity, will be reinspected annually, at a minimum. Results of monitoring are used in planning cultural resource site management and protection.

According to the HCRMP, 125 sites were to be monitored during the first three years of the plan's implementation. Sixty-nine sites were examined in 1989 and 1990, leaving 56. To select the sample of sites for inspection in FY 1991, laboratory staff first identified the known cemeteries on site, then selected those National Register sites that, had not been visited during previous monitoring cycles. Other sites, both on the National Register and not, were selected because of recently received impacts, particularly from looters. The remaining sites monitored were sites not on the National Register, bringing the total number of sites monitored during this year to 41 (Table 3.1). Monitoring results are presented below on a site-by-site basis and the findings are summarized in Table 3.1.

A new form was used for recording the results of monitoring activities and a file containing records and monitoring results for each site was developed so the history of each site can be tracked from initial discovery through future monitoring cycles. Observations included on monitoring forms typically increase knowledge of site contents over that found on original site record forms. The resultant database can be used for management planning. It also has research uses, both as a source of geographic information about settlement and land use patterns and as a basis for selecting sites for intensive scientific study.

## 3.1 CEMETERY SITES

The purpose of inspecting cemetery sites is to evaluate their condition and document any erosion, vandalism, looting, or unintentional disturbance. The inspection also serves as a check on the effectiveness of protective measures. It is not intended as a means of collecting data to verify the site's existence or its identification as a cemetery, nor to justify its eligibility for the National Register of Historic Places.

Eight cemeteries were originally identified on the Hanford Site by information from Wanapum Indian leaders, archaeological evidence of burials, or both. Additional fieldwork and literature searches have brought the total number of cemeteries to twelve (Gard et al. 1990). All of these, except 45BN129, were monitored in FY 1991. Based upon previous years' monitoring results, sites 45BN139 and 45BN140 are considered a single site and are monitored as such (Gard et al. 1990).

Damage to cemeteries varies, but in general, sites in this category are undisturbed by modern human activity. Wind erosion continues to be the most severe type of damage observed. Sites 45BN142, 45BN151, and 45GR302c are in stabilized dunes, and exhibit no erosion. Erosion at 45BN128 is severe enough to expose human remains. Looting is still evident around the outside of the cyclone security fence at 45BN157b. The fence was erected two years ago to curtail trespassing. However, there is no evidence of looting inside the fence or at any other cemetery sites.

## 3.2 SITES LISTED ON THE NATIONAL REGISTER

Twelve of the monitored sites, excluding the cemeteries, are listed on the National Register of Historic Places. This completes the first three-year cycle of National register site monitoring. The sites are included in the Savage Island (45BN117, 45BN118, 45BN119, 45FR258, 45FR263), Hanford North (45BN122), Locke Island (45GR302a), Wooded Island (45BN107, 45BN109), Snively Canyon (45BN172), and Rattlesnake Springs Archaeological Districts (45BN170, 45BN171). The Paris Archaeological Site is on the National Register as an individual site. Last year, this site was monitored as a cemetery due to reports of graves being discovered at the site; however, the presence of housepits, shoreline fishing features, and the absence of any grave-related features make that designation doubtful.

Concerns are slightly different in the case of National Register listings. Evidence of damage, looting or erosion were again of primary importance, but whether or not the site could be found and actually appeared to contain data of scientific significance were also important.

Observations made by HCRL staff are presented in Appendix B. Two sites (45BN170 and 45BN171) were determined to be one contiguous site and should be placed under one designator. 45BN172 was located this year after previous efforts had failed. Testing would aid in establishing finer site boundaries for sites 45BN122 and 45BN172, which are largely buried. Site boundaries for 45BN117 could be clarified by visiting the site during periods of reduced vegetation. Only one of the sites on the National Register (45FR258) was found to be receiving significant impacts from unauthorized collecting or vandalism. Wind, water, and bioturbation were, as usual, the principal agents of impact. The test pits on 45GR302a continue to slump and contribute to the eolian erosion problem. Site 45GR317, which has been on an increased visitation cycle due to past vandalism, has remained untouched, and many of the exposed deposits are covered by shoreline vegetation. It is recommended that monitoring be returned to a three-year cycle.

In general, the majority of National Register sites within the Hanford security fence are experiencing only natural degradation. Damage to these sites by looters tends to be more severe on the Franklin County and Grant County sides of the Columbia and on the back sides of the islands. Many of the island sites exhibit signs of past looting and surface artifact finds are extremely rare, indicating extensive past surface collecting. Yet, with the exception of 45FR258, evidence of recent looting is quite rare. One potential problem, however, is off-road vehicle damage, which was noted on sites inside and outside of the security fence. Vehicle tracks created by driving off of established roadways promote wind erosion, thus accelerating natural processes.

## 3.3 SITES NOT LISTED ON THE NATIONAL REGISTER

Seventeen sites that have not been nominated to the National Register were also reviewed this year (Table 3.1). These sites were inspected to determine if they did in fact exist, to determine what damage, if any, they had received, and to screen them for their potential eligibility for the National Register. Sites found to have potential will be evaluated in more detail. Three additional sites containing shoreline features were recognized this year (45BN035, 45BN167, and 45GR314). This brings the total of Hanford Reach shoreline features to six. A research project to accurately describe, map, and evaluate these previously unrecognized features is currently being developed. Appendix A presents the results of monitoring.

All of the selected sites that were not on the National Register could be located during this monitoring cycle. Seven of these (45BN035, 45BN167, 45GR309, 45GR310, 45GR311, 45GR315, and 45GR316) should undergo further evaluation to determine if they should be nominated to the National Register. Sites 45BN28 and 45BN104 should be combined as one site,

as should sites 45BN33 and 45BN165. Only one site not on the National Register (45BN157a) received significant damage and vandalism. Posting of new signage is warranted if we are to mitigate intrusion. A combination of illegal stock grazing, vehicle traffic, and collector digging has left deep ruts across the site, which are being further scoured by wind. If action is not taken to reverse this trend, the information contained in this potentially significant site will soon be lost.

In general, damage to this group of sites is similar in kind and geographic distribution to damage to the National Register sites. One means of reducing natural erosion on all of these sites is to promote or actively engage in re-vegetation, both within the dune sites and along the shoreline.

## 3.4 CONCLUSIONS AND RECOMMENDATIONS

The conclusions from this year's monitoring are very similar to those of previous years. Natural erosive processes are the most significant factors impacting the majority of sites within the reservation boundaries. These can be reduced to some degree by re-vegetation programs (Sisson 1983, 1985, 1990; Conca 1990).

Sites outside the reservation security fence continue to receive the heaviest impacts from looters and vandalism. It appears that this damage can only be alleviated by stepped-up security and a well-publicized ARPA conviction. Many of the old Antiquities Act signs on sites outside the security area, warning the public not to collect artifacts on public lands, have been vandalized to the point where they are unreadable. For those areas that are consistently looted, new signs that clearly spell out the consequences of illegal collecting should be installed. A more recently recognized impact on sites inside and outside the security perimeter is wind erosion enhanced by off-road vehicle tracks. A policy should be implemented (and enforced) severely restricts the off-road use of vehicles to only essential tasks. Many old dirt roads also bisect archaeological sites. Travel on these tracks should be limited as well.

All National Register properties and over 60% of sites that had been recorded when the HCRMP was developed have been inspected. In 1992, a second inspection cycle will begin for listed sites and archaeological sites. Also, sites discovered since the HCRL was created will come due for inspection on a five-year rotating schedule.

TABLE 3.1 Observations and Recommendations from FY 1991 Archaeological Site Monitoring

| Site No. | Monitoring Group | Disturbance type[a] | Recommendation[b] |
|---|---|---|---|
| 45BN28/104 | Unevaluated | WE, WA, PR, VT | Combine as one site, limit access, evaluate |
| 45BN32 | Unevaluated | WE[b] | |
| 45BN33/165 | Unevaluated | WA, VT | Combine as one site[b] |
| 45BN35 | Unevaluated | WA | Evaluate, re-vegetate shoreline |
| 45BN107 | Register | WA, WE, VT | (b) |
| 45BN109 | Register | WE, VT | (b) |
| 45BN117 | Register | WA, WE, BT | Revisit at time of reduced vegetation |
| 45BN118 | Register | WE | (b) |
| 45BN119 | Register | WE, C | (b) |
| 45BN122 | Register | C | Testing to define boundaries |
| 45BN124 | Register/Cemetery | VT | (b) |
| 45BN128 | Register/Cemetery | WE | Re-vegetate dunes |
| 45BN129 | Register/Cemetery | | Not visited at time of report |
| 45BN139/140 | Register/Cemetery | WE | (b) |
| 45BN142 | Register/Cemetery | None | (b) |
| 45BN143 | Register/Cemetery | WE | (b) |
| 45BN151 | Register/Cemetery N | one | (b) |
| 45BN157a | Unevaluated | WE, SD, VT, VD, CD | Increase surveillance, limit access, evaluate |
| 45BN157b | Unevaluated/Cemetery | WE, WA, SC | Increase surveillance, limit access, re-sign |
| 45BN167 | Unevaluated | None | Evaluate |
| 45BN170/171 | Register | WE, VT, C | Combine as one site, limit access, evaluate |
| 45BN172 | Register | WE, WA, SC, RS | Test to ascertain depth of deposit |
| 45FR258 | Register | WE, TR, CD, SC, VD | Increase surveillance, install signs |
| 45FR263 | Register | WE, WA, BT | Replace lock for the gate |
| 45GR302a | Register | WE | Backfill open test pits |
| 45GR302c | Register/Cemetery | None | Further evaluation |
| 45GR306c | Cemetery | WE, WA | Increase surveillance |
| 45GR308 | Unevaluated | WE, BT | (b) |
| 45GR309 | Unevaluated | WE, BT | Evaluate |
| 45GR310 | Unevaluated | WE, WA, BT | Evaluate |
| 45GR311 | Unevaluated | WE, WA, BT | Evaluate |
| 45GR312 | Unevaluated | WA | (b) |
| 45GR313 | Nominated/Rejected | WE | re-evaluate, revisit at time of reduced vegetation |
| 45GR314 | Nominated/Rejected | WA, WE | re-evaluate, additional material located |
| 45GR315 | Unevaluated | WA | Evaluate |
| 45GR316 | Unevaluated | None | Evaluate |
| 45GR317 | Register | None | Reduce monitoring from annual schedule |

(a) Disturbance type abbreviations are WE, wind erosion; WA, water erosion; PR, public recreation; VT, vehicle traffic; TR, trespassing; CD, collector digging; SC, surface collecting; VD, vandalism; C, construction; D, non-collector digging; TP, open test pits, BT, bioturbation; SD, stock damage; RS, site research.

(b) No recommendation.

# 4.0 EVALUATION OF KNOWN CULTURAL RESOURCE SITES FOR ELIGIBILITY TO THE NATIONAL REGISTER OF HISTORIC PLACES

Section 110 of the NHPA and Executive Order 11593 require RL to evaluate all cultural resources under its management for their eligibility to the National Register of Historic Places. Evaluation procedures were conducted for two properties during FY 1991. This entailed documentary research and preparation of a Request for Determination of Eligibility on the White Bluffs Road, and test excavations at site 45BN447, an apparent hunting trap and butchering site.

## 4.1 DETERMINATION OF ELIGIBILITY FOR THE WHITE BLUFFS ROAD

In 1984, Rice (1984) evaluated the White Bluffs Road for potential nomination to the National Register of Historic Places and determined it did not have significance under the criteria of 36 CFR 40.4; the Washington State Historic Preservation Officer (SHPO) concurred. After frequent encounters with the road during routine cultural resources surveys, HCRL staff concluded that a second review was warranted.

White Bluffs Road is a former Indian trail and freight road extending between the White Bluffs Ferry landing on the Columbia River and Rattlesnake Springs in the western part of the Hanford Site (Parker 1979; Preston 1981).. To the south and west of Rattlesnake Springs, the road wound through the Rattlesnake Hills to the Yakima River at a point near Sunnyside, Washington, where it connected with routes to The Dalles, Oregon. On the north side of the Columbia River, the road continued north to Fort Colville and British Columbia. After being used a trail by generations of Indian people, the route was reportedly used by the Longmire Party of settlers in 1853, and by 1860 had become well enough traveled by freight haulers and cattlemen that a ferry was supported at White Bluffs, an important loading and transshipment point for river steamers. Completion of the Mullan Road in the late 1860s reduced traffic on the White Bluffs Road, but large portions of it continued to be used into the 1920s and short segments, now paved, serve the Hanford Site still.

Approximately 25.2 km of the original 26.9 km of road on the Hanford site is still intact and 10.8 km is unaltered. About 1.7 km of the road has been obliterated by the town of White Bluffs; field and orchard plowing; construction of roads, railroads, and utility lines; and construction of facilities in the 200 West Area. Another 14.4 km of the road, 4.3 km of which has been paved, are still in use. Intact segments of the road typically consist of a double track approximately 3.0 m

wide, and sunk up to 1.0 m below grade. Although the road passes through an area largely devoid of cultural resource sites, historic and aboriginal artifacts litter its edges, attesting to both the duration and intensity of use.

HCRL staff reviewed the White Bluffs Road's history and condition and found that this property meets the criteria for nomination to the National Register of Historic Places. A property is eligible for nomination if it is "associated with events that have made a significant contribution to the broad patterns of our history" (36 CFR Part 60.4, criterion A). The White Bluffs Road was an important transportation route during the prehistoric era and during settlement, mining, and cattle-ranching eras in the Washington Territory (see Rice 1984). The road within the Hanford Site connected an important inland water source, Rattlesnake Springs, with a commonly used ford across the Columbia River at White Bluffs.

These observations and conclusion were forwarded to the SHPO, who concurred with the determination of eligibility. However, the SHPO requested the inclusion of additional information on the road's condition in a nomination of the road to the National Register. Pending completion of that nomination, the White Bluffs road will be afforded the same consideration as a listed property.

## 4.2 ARCHAEOLOGICAL SITE 45BN447

Archaeological site 45BN447 is located between two limbs of the anticline that constitutes Gable Butte. Subsurface testing was required to obtain data for an assessment of the site's scientific significance to comply with stipulations of Section 106 of the National Historic Preservation Act. Testing was conducted by HCRL staff in August 1991.

### 4.2.1 Site Description

The site consists of an extensive surface scatter of fragmentary burned and unburned large mammal bone (sheep and deer), CCS tertiary debitage, FCR, and whole and fragmentary projectile points. It is situated within a box canyon between two basalt ridges. The site is confined to a depression along the northern margin of the cannon, principally along the edge of the talus slope. Eight or more hunting blinds, which are 50 cm to 70 cm deep depressions averaging 1.5 m in diameter, are situated within the talus overlooking the artifact scatter. The blinds were formed by removing stones from an area and piling them towards the downhill slope thus forming a walled

depression. An intermittent spring is located at the eastern terminus of the canyon. Site dimensions are 142 m E/W by 50 m N/S, for an area of 7100 $m^2$. Cultural material extends to 30 cm below the surface.

4.2.2 Subsurface Testing

Testing of 45BN90 entailed a survey to produce a topographic map and excavation of four 1-m x 1-m test pits placed on either side of a reference line that bisected the long axis of the site. Excavations were conducted in accordance with procedures specified in the HCRMP (Section 3). Vertical control was by 10-cm levels and all matrix was screened. Pits have been backfilled.

The soils were massive eolian sands overlying angular basalt colluvium. A single test pit was excavated to 70 cm below the surface, although all cultural material was restricted to the upper 30 cm. The remaining test pits had shallow deposits ending at basalt talus around 30 cm deep.

Artifacts were most abundant in the uppermost 10 cm. A total of 48 (89.0 g) pieces of chipped stone, 1194 (433.0g) fragments of mammal bone and tooth, and a small quantity of charcoal were recovered. Preservation of bone is excellent, although nearly all pieces are fragmented and many have been partially burned. All bones are from ungulates; teeth of deer and mountain sheep are distinguishable among the fragments. Stone artifacts include four fragmentary projectile points. Flakes of CCS represent the initial stages of reduction. The projectile points are small, narrow-necked specimens of the Columbia River Corner-Notched style, which post-dates 2400 B.P. The lack of dart points indicates the site is probably younger than around 1000 B.P., belonging to the middle and/or late Cayuse Phase of the local chronology.

One test pit intersected the edge of a fire hearth (Feature 1). Feature 1 consisted of a concentration of heat- modified rock and wood charcoal; however, only a 30-$cm^2$ area of the hearth was exposed. Charcoal from this feature will be submitted to obtain a radiocarbon date for the site.

Results of the test excavations are consistent with the interpretation of this site as the location of the killing and butchering of large mammals. This observation will be incorporated into revisions to the National Register nomination of the Gable Mountain/Gable Butte Cultural District, of which this site is a part. The Gable Mountain/Gable Butte Archaeological District has already been determined eligible for the National Register.

# 5.0 THE PUBLIC EDUCATION PROGRAM

This activity is designed to disseminate information on cultural resource laws and regulations and on the cultural resources of the Hanford vicinity. During this fiscal year, the effort had two primary components: a series of lectures presented to schools and lay organizations, and the initial development of a series of informational displays targeting the Hanford Site work force. In addition, HCRL activities attracted media attention, resulting in a small amount of television exposure.

Lectures were presented on 14 occasions to groups of all ages (Table 5.1). One group of elementary students was addressed on what archaeology is and the importance of leaving artifacts where they are found. Five similar presentations were given to middle school and high school students, attended by numerous classes. Most students were from minority or disadvantaged backgrounds, including two classes from Indian reservations. Two of the occasions were part of the DOE Options in Science program. Additional lectures, primarily on archaeology of the Columbia Basin and Native American resource usage, were presented to three college classes, four service organizations, and two general audiences.

Work was begun on a series of traveling displays to educate the Hanford Site workforce about the area's history, the regulations governing the protection of cultural resources, and how the HCRL is managing this legacy. The display is envisioned as four independent sets of panels addressing separately the prehistory, Native American cultures, pre-World War II history, and the atomic era. These panels will stand in lobbies and foyers of the larger Hanford Site buildings. The tone is "here is what we have and here's how you can help protect it."

Interviews were requested by local television stations on two occasions. The first was when human remains, discovered near the town of Pasco, were analyzed by HCRL staff and the public was interested in details about the deceased. The second was when a group of high school students visited the Hanford Site, which had been used by their ancestors in the distant past. The reporter was interested in their reaction to the wild lands they saw in their people's former homeland.

TABLE 5.1. Public Presentations Made by HCRL Staff During FY 1991

| Date | Topic | Location/Audience | City/State |
|---|---|---|---|
| 01/02 | Archaeology | Lakeside Junior Gem & Mineral Club | Kennewick, Washington |
| 02/03 | Cultural Resources | Visiting USSR resource managers | Richland, Washington |
| 02/05 | Human Remains, Sacajawea State Park | Tri-Cities TV audience | Tri-Cities, Washington |
| 03/13 | Columbia Basin Archaeology | Westinghouse National Management Association | Richland, Washington |
| 04/03 | Cultural Resources | Environmental sciences seminar, WSU-TC | Richland, Washington |
| 04/11 | Columbia Basin Archaeology | Kennewick High School, 3 classes | Kennewick, Washington |
| 04/15 | Archaeology | Wellpinit Indian School | Wellpinit, Washington |
| 04/17 | Archaeology | Art history classes, Columbia Basin College , 2 classes | Richland, Washington |
| 05/14 | Columbia Basin Archaeology | WPPSS Natl Mgt Assn | Richland, Washington |
| 05/15,16 | Archaeology | Harriet Tubman High School, Portland Oregon | Warm Springs, Oregon |
| 05/20 | Columbia Basin Archaeology | East Benton County Historical Society Kennewick, Washington | |
| 05/21 | Archaeology | Toppenish Middle School | Toppenish, Washington |
| 05/23 | Cultural Resources | Wapato High School (plus TV coverage) | Hanford Site, Washington |
| 05/23 | Native American Resources | North Central Washington Museum | Wenatchee, Washington |
| 06/06 | Native American Resources | Kennewick Rotary Club | Kennewick, Washington |

# 6.0 SECTION 110 SURVEYS

The HCRMP specifies that the HCRL will conduct a 10% survey of Site lands, the results of which will be used to devise a predictive model of archaeological site locations. This is an acceptable means of satisfying the requirement in Section 110 of the National Historic Preservation Act of 1966, which directs federal agencies to inventory the historic properties on their land holdings. This work was originally to be conducted over a period of 6 years, beginning in FY 1989, but this is a low-priority effort; only 784 ha or 0.55% has been surveyed in three years.

A stratified random sampling strategy has been used to select 10% (143 square kilometers) of Hanford Site lands for survey. Stratification was based on topography, surface hydrology, soils, and known distributions of archaeological resources; the strata are referred to as environmental zones. Once these zones had been defined, the entire site was divided into sample units of 16 hectares (1/16 $mi^2$), which were then numbered and sampled randomly for each environmental zone(a).

In FY 1991, 20 plots were surveyed, amounting to 320 hectares, or 0.21% of the entire Hanford Site (Table 6.1). nearly half of the plots were in the Inland Flat environmental zone, with a few each in the Steep Slope, Stabilized Dune, Snively Basin, and Escarpment zones. One was in the Butte zone. The results were surprising.

Prior to this year, few prehistoric sites have been found in the Inland Flat environmental zone (e.g., Chatters et al. 1990, 1991); yet 7 of the 11 sites found in 1991 and 3 of 5 isolated artifacts and features in that zone. These included five cairn sites and one isolated cairn, a hunting blind, a kill site, a concentration of chipped stone and fire-broken rock identified as an encampment, and isolated stone flakes. The kill site resembles the Tsulim Site (see Section 9), containing tooth enamel, stone chips, and fire-broken rock. Hunting-related sites typically occur in broken terrain, where animals can more easily be approached without the hunter being seen, rather than in the open. Cairns are most common on promontories, where they serve as markers or represent the spirit quests of Indian youths, or near village sites or major encampments, where they mark graves.

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(a) The stratification and sampling procedures are documented in: Hanford Cultural Resources Laboratory (HCRL). 1988. "Basalt Waste Isolation Project Archaeological and Cultural Resource Surveys." Letter Report from Hanford Cultural Resources Laboratory, Pacific Northwest Laboratory to U.S. Department of Energy, Richland, Washington.

TABLE 6.1. Sample Plots Surveyed by the HCRL as Part of Compliance with Section 110 of the National Historic Preservation Act

| Plot No. | Environment | Isolated Finds | Archaeological Sites |
|---|---|---|---|
| 13/23 STL | Steep Slope | HI-91-016, Cairn | 45BN457, Lithic Scatter<br>HT-91-002, Quarry<br>HT-91-003, Lithic Scatter<br>HT-91-004, Lithic Scatter |
| 54 SD | Stable Dune | | H3-9, Historic Can Dump |
| 106 B | Butte | HI-91-001, CCS Flake | |
| 106 SB | Snively Basin | | |
| 107 SB | Snively Basin | | |
| 126 SB | Snively Basin | | |
| 148 IF | Inland Flat | | 45BN440, Cairn<br>45BN441, Cairn |
| 152 E | Escarpment | | |
| 154 E | Escarpment | | |
| 185 SD | Stable Dune | | |
| 315 IF | Inland Flat | HI-91-007, Evap. milk can | HT-91-011, Historic Can Scatter |
| 778 IF | Inland Flat | HI-91-014, Cairn<br>HI-91-015, Hunting Blind | HT-91-041, Interior Kill Site |
| 792 IF | Inland Flat | | HT-91-038, Cairn<br>HT-91-040, Cairn |
| 793 IF | Inland Flat | HI-91-012, 2 CCS Flakes.<br>HI-91-013, Tobacco Tin | HT-91-039, Cairn |
| 793 SD | Stable Dune | | |
| 856 SL | Slope | | HT-91-047, Historic-Scatter Domestic Debris |
| 1567 IF | Inland Flat | HI-91-017, Hole-in-Cap Can<br>HI-91-018, Hole-in-Cap Can | HT-91-045, Encampment |
| 1629 IF | Inland Flat | | |
| 1637 IF | Inland Flat | HI-91-019, Hole-in-Cap Can | |
| 1753 IF | Inland Flat | | |

# 7.0 ETHNOHISTORY

An important goal set by the HCRMP, following guidelines of the American Indian Religious Freedom Act of 1978 (AIRFA), the National Historic Preservation Act, and the Archaeological Resources Protection Act, is to establish procedures for gathering ethnographic and ethnohistorical data. This information would be utilized to augment RL efforts towards the protection of properties pertaining to the history and cultures of the Hanford region.

During FY 1991, HCRL staff accompanied two groups from the Wapato Longhouse (the rough equivalent of a church congregation) of the Yakima Indian Nation on visits to sites along the Columbia River. One large group visited Locke Island and cemeteries in its vicinity. The other group, of two individuals, collected tules from which to make the mats now used to line longhouse walls. Another tour by two elders who had grown up along the Hanford Reach was planned, but the participants' fear of radiation caused indefinite postponement.

Collecting ethnohistorical data, particularly data on religious and resource-use sites proved to be more difficult than anticipated, and procedures for arranging interviews will need to be revised. Staff member Phil Minthorn, a member of the Confederated Tribes of the Umatilla Indian Reservation, had been arranging to talk with elders through personal and family contacts. A member of the Yakima Indian Nation indicated that this informal practice may be inappropriate. It was suggested we hold public meetings at reservation locations to identify potential informants. This suggestion will be implemented in the future, both because it is more appropriate from a programmatic standpoint and because it will bring us into contact with a larger pool of potential informants. It will also help us better understand and respond to the concerns of tribal members about the purpose, planned use, and disposition of the information we collect.

# 8.0 RESEARCH ACTIVITIES

To advance the state of knowledge about archaeology in general, and the Columbia Basin in particular, and to maintain professional credibility, the HCRL staff engage in small-scale research activities when time allows. Data for this research is routinely gathered as part of the historic preservation efforts of the laboratory, and results are presented in conference papers and journal articles. During this fiscal year, staff members conducted research on the Tsulim Bison Kill, the first site of its kind found in the state of Washington, and on the prediction of fishing site locations on the basis of salmon behavior and river channel morphology. Articles were prepared on both of these activities. In addition, an article was completed on the history of cultural resources management at the Hanford Site, and a paper was presented at the Northwest Anthropological Conference on the attitudes of Native Americans toward the graves of their ancestors. Abstracts of these articles and papers are provided in Appendix D.

## 8.1 THE TSULIM BISON KILL

In 1990, a field school from Western Washington University made an extensive controlled surface collection from the Tsulim Site (45BN412), a kill site consisting of fragments of bison tooth enamel, weathered bits of bone, fire-broken rock, chips of various types of stone and projectile points. The presence of both arrow and dart points in the collection placed the age of the site between 2000 and 1600 B.P. In 1991, animal remains were analyzed to determine the ages and number of killed animals, and the season of year, and the date of the event. Results of analysis of mussel shells indicated a kill between November and March; ages of the eight bison represented by teeth refined that estimate to December or January. Radiocarbon dating of tooth fragments provided an age of 2100±90 years (Beta 44112).

During the winter of 1990/1991, high winds continued to erode the sand blowout in which the Tsulim Site is located, exposing large numbers of tooth fragments and a concentration of shell and fire-broken rock. Wind appeared to be blowing these vestiges of the already minimal site out of context, destroying any information the site contained. To salvage what remained of the site, a second round of surface collection was conducted, this time with the aid of students in the DOE High School Student Honors Research Symposium, who also participated in the analysis of

materials they recovered. The 5-m-interval grid was reestablished and artifacts and animal remains were collected by grid unit. Tools, such as projectile points and hammer stones, and concentrations of fire-cracked rock were mapped individually.

During this second season of work, nine additional projectile point fragments, numerous resharpening flakes from the edges of tools, over 4 kg of fire-cracked rock, and hundreds of tooth fragments were recovered. The horizontal distributions of both seasons' finds indicated two concentrations of activity surrounding clusters of fire-cracked rocks. One area contained all the large smashing and chopping implements and most of the tips from projectile points; the other contained primarily the bases of projectile points and resharpening flakes. It appears that heavy butchering took place in the first area, where the weapon tips broken on impact with bones remained with what was left of the carcasses. At the second location, finer butchering tasks were performed, and the bases of broken weapon tips were removed from dart and arrow shafts.

After reviewing the local topography and the wind patterns typical of winter, HCRL staff concluded that people probably drove the bison from the westward, between the arms of a long parabolic dune and up a steep slope into the apex of the dune, where waiting hunters killed them. They then butchered the animals, repaired equipment, and probably proceeded back to a nearby village with the boned meat.

An article, "Bison Procurement at Tsulim, A 2100 Year-Old Bison Kill on the Columbia Plateau," that describes the site and its contents was submitted to an archaeological journal and is currently being reviewed.

## 8.2 PREDICTING FISHING SITE LOCATIONS

During routine monitoring of riverine archaeological sites along the Hanford Reach, an idea began to crystalize for a means of predicting the locations of Native American fishing sites. Due to the Hanford Reach's intact morphology (unaltered by dams), relatively abundant runs of anadromous fish, and numerous pristine archaeological sites, the opportunity was available for testing a hypothesis that focused on how the fish use the river and extrapolating from that information where people went to exploit them. By identifying those factors that make fish most accessible at a particular time and place, site location and means of harvest could be inferred.

Aside from basic factors such as minimum water flow, food sources, and water quality, anadromous fish require three morphological river conditions: 1) well-delineated channels of fast water for travel; 2) sheltered pools or eddies for resting; and 3) expanses of well-aerated gravel that

remain inundated, silt free, and oxygenated year-round for spawning To analyze prehistoric human exploitation patterns in relation to fish behavior and river morphology, it was assumed that the aboriginal inhabitants along the Hanford Reach were well aware of the behavior of anadromous fish given their considerable dependence upon fish as a staple food resource. Migration channels, resting pools, and spawning areas would have been known and exploited in the most productive/ efficient manner, with equipment and techniques developed for each area. To identify types of fishing areas it was necessary first to identify the locations of the habitat types utilized by salmon along the reach and then to correlate the distribution of classes of archaeological sites with these areas. When the location of archaeological sites containing net weights was compared with restricted channels of fast water, a 98% fit resulted. The majority of net fishing sites are distributed along the section of the reach that is braided by numerous islands. In instances where an island has a fast channel on one side and a shallow or slower channel on the other, the net weight sites are always found on the fast-water side. For that section of river with no islands, the fast-water channel migrates with the outside curve of the meander. The net weight sites tend to be distributed along the shore adjacent to the fast-water channel, particularly in areas where the entire channel is somewhat constricted.

The locations of spawning areas were then correlated against the distribution of three categories of sites: sites containing net weights, sites with house pits, and other sites (the remaining sites lacking either of those features). Seventy-two percent of house pit sites were found to be adjacent to spawning areas. Net-weight sites and all other sites (those lacking evidence of houses or net weights) occurred within spawning areas in only a slightly higher frequency, 56% and 54% respectively, than in other areas, which is not a significant difference. The correlation between house pit sites and the distribution of spawning areas might be explained by the fact that spawning areas are places where large numbers of fish congregate within a restricted area at predictable times. From a logistical standpoint, it is only reasonable that winter villages would be placed in areas where the storable winter staple food is most readily available.

The next step in this research is to identify resting pools and to distinguish between fishing sites lacking net weights and non-fishing sites. This will be completed in FY 1992.

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# APPENDIX A

## SECTION 106 REVIEWS CONDUCTED IN FY 1991

# APPENDIX A

## SECTION 106 REVIEWS CONDUCTED IN FY 1991

This appendix presents a complete listing of Section 106 cultural resource reviews requested of the HCRL by Hanford Site contractors and the RL during FY 1991 (Table A.1).

TABLE A.1. Cultural Resource Reviews Requested of the HCRL in FY 1991

| Case # | Name | Class | Date Received | Survey | Monitoring | Date Completed | Requesting Organization | Cultural Resources |
|---|---|---|---|---|---|---|---|---|
| 90-100-019 | Hydrant #17 Repair, 100-B | III | 10/9/90 | NA | NA | 10/10/90 | WHC | |
| 90-200-016 | Tank Farms Complex (WHC-SD-WM-SE-017) | I | 10/12/90 | NA | NA | 10/17/90 | WHC | |
| 90-200-017 | US Ecology Diversion Channel | III/V | 11/16/90 | 11/21/90 | NA | 11/29/90 | USE | Pos. Road |
| 90-200-017A | Mobile Office Installation at 272WA | V | 11/16/90 | NA | NA | 11/20/90 | WHC | W. Bluffs Rd. |
| 90-200-018 | 272-AW Addition and 200 E Tank Farm Support Fac. | III/VI | 12/10/90 | NA | NA | 12/13/90 | WHC | |
| 90-300-020 | D-387 Laboratory addition | III | 10/16/90 | NA | NA | 10/16/90 | PNL | |
| 90-300-021 | SP-100 Ground Engineering System Test Site | I | 10/5/90 | NA | NA | 11/6/90 | WHC | |
| 90-300-022 | 300 Area Process Sewer Waste Minimization | III | 11/20/90 | NA | NA | 11/26/90 | WHC | |
| 90-300-023 | 300 Area NERP Sign | III | 11/26/90 | NA | NA | 12/5/90 | PNL | |
| 90-300-024 | 618-9 Burial Ground Immediate Response Action | III | 11/29/90 | NA | NA | 12/3/90 | WHC | |
| 90-300-025 | Site 2, Environmental & Molecular Sci. Res. Lab, (EMSL) | V | 11/8/90 | 11/30/90 | NA | 12/3/90 | PNL | |
| 90-300-026 | 300-FF-5 Operable Unit, Phase I Monitor Boreholes | V | 12/1/90 | 1/3/91 | yes | 1/9-15/91 | WHC | yes |
| 90-300-027 | 325 Building Basement Stairwell Addition | III | 11/29/90 | NA | NA | 12/5/90 | PNL | |
| 90-300-028 | River Sign Post Installation | V | 12/10/90 | no | yes | 12/12/90 | WHC | yes |
| 90-600-026 | Island Clean-up adjacent to 100-D Area | IV | 10/29/90 | NA | yes | 10/31/90 | WHC | |
| 90-600-027 | ALE NERP sign | III | 11/26/90 | NA | NA | 12/5/90 | PNL | |
| 90-600-028 | Laser Interferometer Gravitational Wave Observatory | V | 12/1/90 | YES | NA | | WHC | |
| 90-600-029 | Rattlesnake Mountain Anemometer Tower | V | 12/12/90 | 12/12/90 | NA | 12/12/90 | DOE | HT-90-023 |
| 90-1100-006 | MW-18 CERCLA Groundwater Well, 1100-EM-1 | III | 11/8/90 | NA | NA | 11/21/90 | WHC | |
| 91-100-CERCLA | 100 Area Operable Units | III/V | 4/1/91 | yes | ? | N/A | WHC | yes |
| 91-100-001 | 100-K Soil Washing Sample Collection | IV | 1/21/91 | N/A | 1/26/91 | 1/21/91 | WHC | |
| 91-100-002 | 183-K Solar Basin Vadose Sampling and Demolition | III/V | 1/25/91 | N/A | N/A | 1/25/91 | WHC | |
| 91-100-003 | Fire Hydrant #2 Repair. | III | 2/22/91 | N/A | N/A | 2/22/91 | WHC | |
| 91-100-004 | Drain Line Repair RDRU 803 | III | 2/28/91 | N/A | N/A | 3/1/91 | WHC | |
| 91-100-005 | 100-K Mobile Office Relocation | III | 3/26/91 | N/A | N/A | 3/26/91 | WHC | |
| 91-100-006 | 100-H Manhole Repair | III | 3/26/91 | N/A | N/A | 4/1/91 | WHC | |
| 91-100-007 | Mobile Office Relocation | II | 4/4/91 | N/A | N/A | 4/17/91 | WHC | |
| 91-100-008 | 100-F Fuel Storage Basin | III | 5/17/91 | N/A | N/A | 5/28/91 | WHC | |
| 91-100-009 | 100-N Electrical Repair (emergency) | III | 5/30/91 | N/A | N/A | 5/31/91 | WHC | |

TABLE A.1. (contd)

| Case # | Name | Class | Date Received | Survey | Monitoring | Date Completed | Requesting Organization | Cultural Resources |
|---|---|---|---|---|---|---|---|---|
| 91-100-010 | 100-B Shoreline Tree Planting/Habitat Replacement | V | 5/30/91 | 5/31/91 | yes | 6/3/91 | WHC | HI-91-006 |
| 91-100-011 | 100-N Soil Monitoring Probes | III | 6/5/91 | N/A | N/A | 6/18/91 | WHC | |
| 91-100-012 | 100-N Battery Shop Drain Line | III | 6/12/91 | N/A | N/A | 6/13/91 | WHC | |
| 91-100-013 | Fire Protection Removal, 1734 N Building | III | 6/13/91 | N/A | N/A | 6/13/91 | WHC | |
| 91-100-014 | Hydrant #19 Repair, 100-N | III | 6/17/91 | N/A | N/A | 6/17/91 | WHC | |
| 91-100-015 | 100-D Area soil gas probes | III | 6/21/91 | N/A | N/A | 6/24/91 | WHC | |
| 91-100-016 | 100-K Oil Spill Clean-up | III | 6/26/91 | N/A | N/A | 6/26/91 | WHC | |
| 91-100-017 | 100-N Wells | V | 7/2/91 | 7/2/91 | N/A | 7/3/91 | WHC | |
| 91-100-018 | 100-N Sink Holes | I | 8/1/91 | N/A | N/A | 8/5/91 | WHC | |
| 91-100-019 | 100-K Utilities Trench, Trailers 1722K and 1701k | III | 8/21/91 | N/A | N/A | 8/22/91 | WHC | |
| 91-100-020 | 100-N Sink Hole Repair | I | 8/27/91 | N/A | N/A | 8/27/91 | WHC | |
| 91-100-021 | 100-N LAN Installation from 1101N to 1112N | III | 8/27/91 | N/A | N/A | 8/27/91 | WHC | |
| 91-100-022 | 100-D RCRA wells | III | 8/29/91 | 8/29/91 | N/A | 8/29/91 | WHC | |
| 91-100-023 | 100-H Change Trailer | II | 9/3/91 | N/A | N/A | 9/3/91 | WHC | |
| 91-100-024 | 100-N Fire Systems Deactivation, Bldg 181N | III | 9/16/91 | N/A | N/A | 9/3/91 | WHC | |
| 91-100-025 | 100-N Fire Systems Deactivation, Bldg 1101N | III | 9/16/91 | N/A | N/A | 9/3/91 | WHC | |
| 91-200-001 | 272-AW Septic and Drainfield Replacement | III | 1/16/91 | N/A | N/A | 1/17/91 | WHC | |
| 91-200-002 | 200-W Carbon Tetrachloride Interim Response Action | III | 1/16/91 | N/A | N/A | 1/17/91 | WHC | |
| 91-200-003 | Mobile Office Complex 200 W | V | 2/8/91 | N/A | N/A | 2/12/91 | WHC | White Bluffs |
| 91-200-004 | 200E Training Facility, Laboratory Addition | III | 2/15/91 | N/A | N/A | 2/19/91 | WHC | |
| 91-200-005 | Revised location of project W-116 (90-200-018) | III | 4/29/91 | N/A | N/A | N/A | WHC | |
| 91-200-006 | Demolition of Building 2727-S | VI | 5/1/91 | N/A | N/A | 5/6/91 | WHC | |
| 91-200-007 | 216B-3 Groundwater Monitoring Wells, B Pond | III | 6/5/91 | N/A | N/A | 6/5/91 | WHC | |
| 91-200-008 | 622-1 Asbestos Dump Site - 200W | III | 8/2/91 | N/A | N/A | 8/5/91 | WHC | |
| 91-300-001 | 331 Building Electrical Improvements | IV | 1/4/91 | N/A | Yes | 1/8/91 | PNL | |
| 91-300-002 | 300FF1 North Process Pond Soil Samples | III | 1/14/91 | N/A | N/A | 1/15/91 | PNL | |
| 91-300-003 | Sanitary Sewer Repair | IV | 1/21/91 | N/A | 3/6/91 | 1/21/91 | PNL | |
| 91-300-004 | Horticultural Research Facility | III | 1/23/91 | 2/22/91 | Yes | 2/12/91 | PNL | |
| 91-300-005 | 300 Area Light Pole Installation | III | 1/30/91 | N/A | N/A | 1/30/91 | WHC | |
| 91-300-006 | 316-5 Process Trench | III | 1/31/91 | N/A | N/A | 1/31/91 | WHC | |
| 91-300-007 | 3732 Building Demolition | VI | 2/8/91 | N/A | N/A | 2/11/91 | WHC | |

# TABLE A.1. (contd)

| Case # | Name | Class | Date Received | Survey | Monitoring | Date Completed | Requesting Organization | Cultural Resources |
|---|---|---|---|---|---|---|---|---|
| 91-300-008 | 300-FF-5 Central Site Preparation | III | 3/21/91 | N/A | N/A | 3/22/91 | WHC | |
| 91-300-009 | Mag card Reader at 3746-A Building | III | 5/2/91 | N/A | N/A | 5/7/91 | PNL | |
| 91-300-010 | 300-FF-1 Characterization Samples | III | 5/2/91 | N/A | N/A | 5/7/91 | WHC | |
| 91-300-011 | Wells, 9iE-EWW-212, 300-55-5 | III/V | 5/7/91 | 5/8/91 | yes | 5/9/91 | WHC | 45BN32 |
| 91-300-012 | 300 Area French Drain Installation | III | 5/8/91 | N/A | N/A | 5/9/91 | WHC | |
| 91-300-013 | Condensate line exposure | III | 5/8/91 | N/A | N/A | 5/9/91 | WHC | |
| 91-300-014 | 91S-AFF-017, 306-E Building Cooling Equipment. | III | 5/31/91 | N/A | N/A | 5/31/91 | WHC | |
| 91-300-015 | 91G-AFF-020, 306E Building HVAC Upgrade | III | 5/31/91 | N/A | N/A | 5/31/91 | WHC | |
| 91-300-016 | Alcohol Tank Structure | III | 6/3/91 | N/A | N/A | 6/5/91 | PNL | |
| 91-300-017 | 305 B Building Waste Storage Pad | III | 7/8/91 | N/A | N/A | 7/8/91 | PNL | |
| 91-300-018 | 3765 Building Fire Sprinkler Installation | III | 8/2/91 | N/A | N/A | 8/2/91 | WHC | |
| 91-300-019 | 300 Area Process Sewer Replacement | IV | 8/5/91 | N/A | yes | 8/5/91 | WHC | ? |
| 91-300-020 | 324 Trailer 1&2 installation | III | 8/22/91 | N/A | N/A | 8/22/91 | PNL | |
| 91-300-021 | 350B Trailer installation | III | 8/22/91 | N/A | N/A | 8/22/91 | PNL | |
| 91-300-022 | Air Conditioning Improvements to the 320 Building | III | 8/22/91 | N/A | N/A | 8/22/91 | PNL | |
| 91-300-023 | 309 Building Chiller Installation | III | 9/9/91 | N/A | N/A | 9/12/91 | WHC | |
| 91-400-001 | Solid waste Transfer Station Complex | V | 1/15/91 | Done in 87 | N/A | 1/17/91 | WHC | |
| 91-600-001 | 216 B/C Crib Spot Clean-up | III | 1/21/91 | N/A | N/A | 1/21/91 | WHC | |
| 91-600-002 | Tank Waste Equipment and Operations Facility | III | 1/21/91 | Done in 89 | N/A | 1/22/91 | WHC | |
| 91-600-003 | USGS Cold and Dry Creek H2O Investigation | V | 2/5/91 | Dec-89 | N/A | 2/8/91 | USGS | |
| 91-600-004 | Project X-009, 1st Lobe B Pond Bypass | III/V | 2/5/91 | Oct-88 | N/A | 2/12/91 | WHC | |
| 91-600-005 | Soil Corrosion Test Facility | V | 2/5/91 | 2/13/91 | N/A | 2/19/91 | WHC | WB Rd. to N |
| 91-600-006 | Privatization Steam Plant | III | 2/20/91 | 2/28/91 | N/A | 3/4/91 | WHC | |
| 91-600-007 | Saddle Mountain Waterline | V | 3/4/91 | N/A | N/A | 3/14/91 | WHC | |
| 91-600-008 | Power pole changeover, Gable Mountain | IV | 4/5/91 | N/A | Yes | 4/11/91 | WHC | Gable Mt. |
| 91-600-009 | 200 A TEDB, fresh water pond | V | 4/11/91 | 8/20/91 | no | 4/11/91 | WHC | |
| 91-600-010 | MO-714 Trailer Relocation | III | 5/1/91 | N/A | N/A | 5/1/91 | WHC | |
| 91-600-011 | Rigging Services Facility Trees (6290 Building) | III | 5/8/91 | 3/9/89 | N/A | 5/9/91 | WHC | |
| 91-600-012 | Soil Characterization for McGee Ranch | V | 6/14/91 | 11/19/91 | ? | 11/19/91 | WHC | yes |
| 91-600-013 | Central Landfill Gas Monitoring Wells (project L-081) | III/V | 6/21/91 | 4/4/89 | N/A | 6/24.91 | WHC | HT89-002 |
| 91-600-014 | Plant Condensate Effluent Treatment Facility | III/V | 7/10/91 | 12/1/89 | yes | 7/15/91 | WHC | HT89-030 |

TABLE A.1. (contd)

| Case # | Name | Class | Date Received | Survey | Monitoring | Date Completed | Requesting Organization | Cultural Resources |
|---|---|---|---|---|---|---|---|---|
| 91-600-015 | Site-wide Background soil sampling plan | III/V | 7/24/91 | yes | | | WHC | |
| 91-600-016 | Geneva Sandfence Installation | III/V | 7/26/91 | 7/25/90 | no | 7/26/91 | WHC | |
| 91-600-017 | USGS Grass Research Drill Site | V | 8/15/91 | 10/3/91 | no | 8/22/91 | USGS | |
| 91-600-018 | 200 Area Borrow Pit | III | 8/28/91 | N/A | N/A | N/A | WHC | |
| 91-600-019 | Gable Mountain Cellular Facility | V | 8/29/91 | | | | WHC | yes |
| 91-600-020 | Soil Gas Surveys | III | 9/17/91 | N/A | N/A | 9/17/91 | WHC | |
| 91-600-021 | #53-55c Well Site Testing | V | 9/19/91 | 9/19/91 | N/A | | WHC | |
| 91-700-001 | 703 Site Characterization | III | 3/7/91 | N/A | N/A | 3/7/91 | WHC | |
| 91-1100-001 | Solid Waste Transfer Station (new location) | III | 2/13/91 | N/A | N/A | 2/21/91 | WHC | |
| 91-1100-002 | W-119 CERCLA wells, 1100EM1 | III/V | 5/7/91 | 5/10/91 | no | 5/13/91 | WHC | HT91-008 |
| 91-1100-003 | 1100EM1 Trench Excavation | III | 7/23/91 | N/A | N/A | 8/1/91 | WHC | |
| 91-3000-001 | Pesticide/Herbicide Storage Addition | III | 2/20/91 | N/A | N/A | 2/21/91 | PNL | |

# APPENDIX B

## CLASS V SECTION 106 REVIEWS

# APPENDIX B

## CLASS V SECTION 106 REVIEWS

The Class V Section 106 reviews conducted by the HCRL during FY 1990 are set forth in numerical order. For each case, descriptions are provided for the project, surveyed area, techniques used in the survey, and survey findings. A map of the survey area is provided in those cases involving areas greater than 2 ha.

**HCRC #90-200-017**

**U.S. ECOLOGY DIVERSION CHANNEL**

**Requester:** Mr. Bob Bidstrup
U.S. Ecology, Inc.
P. O. Box 638
Richland, WA 99352

**Project Description**: This project entails construction of a diversion channel east of the low-level waste facility in order to control run-off onto the disposal site in the event of a major storm or snow melt. The channel measures approximately 3000 feet long and will have a variable width and depth. The channel runs parallel to the access road along the eastern fence of the facility (Figure B1).

Our literature and records review revealed no cultural properties at the project site. An inspection of aerial photographs reveal that the project site is situated in an area that has been partially disturbed by past development; however, a strip of undisturbed land parallel to the channel would be impacted by construction. Therefore, an archaeological survey was required prior to the commencement of construction activities.

On 21 November 1990, H. A. Gard and P. E. Minthorn of the HCRL surveyed the undisturbed portion of the marked area east of the disposal facility. Standard 10-m transects were employed to cover the entire area.

**Cultural Resources**: No cultural resources were located within the marked area; however, the remnant of a historical road or trail was visible to the east of the construction area (Figure B1). The road is recognizable as a shallow depression with sparse vegetation running in a south-southwest / north-northeast line tangential to the marked area. No chronologically sensitive artifacts were located in proximity to the trail. Government Land Office maps dating from 1880 were consulted, but no marked trail appeared in the area of concern. Given the lack of associated artifacts and supporting documentation, it is doubtful this trail is eligible for nomination to the National Register of Historic Places.

It is the finding of the Hanford Cultural Resources Laboratory (HCRL) staff that there are no cultural or historic properties in the proposed project area. It is requested, however, that the trail to the east of the project area be avoided by construction activities in order to prevent unnecessary damage to the feature. This is a Class III and V case, involving both new construction in a disturbed low-sensitivity area, and new construction in undisturbed ground.

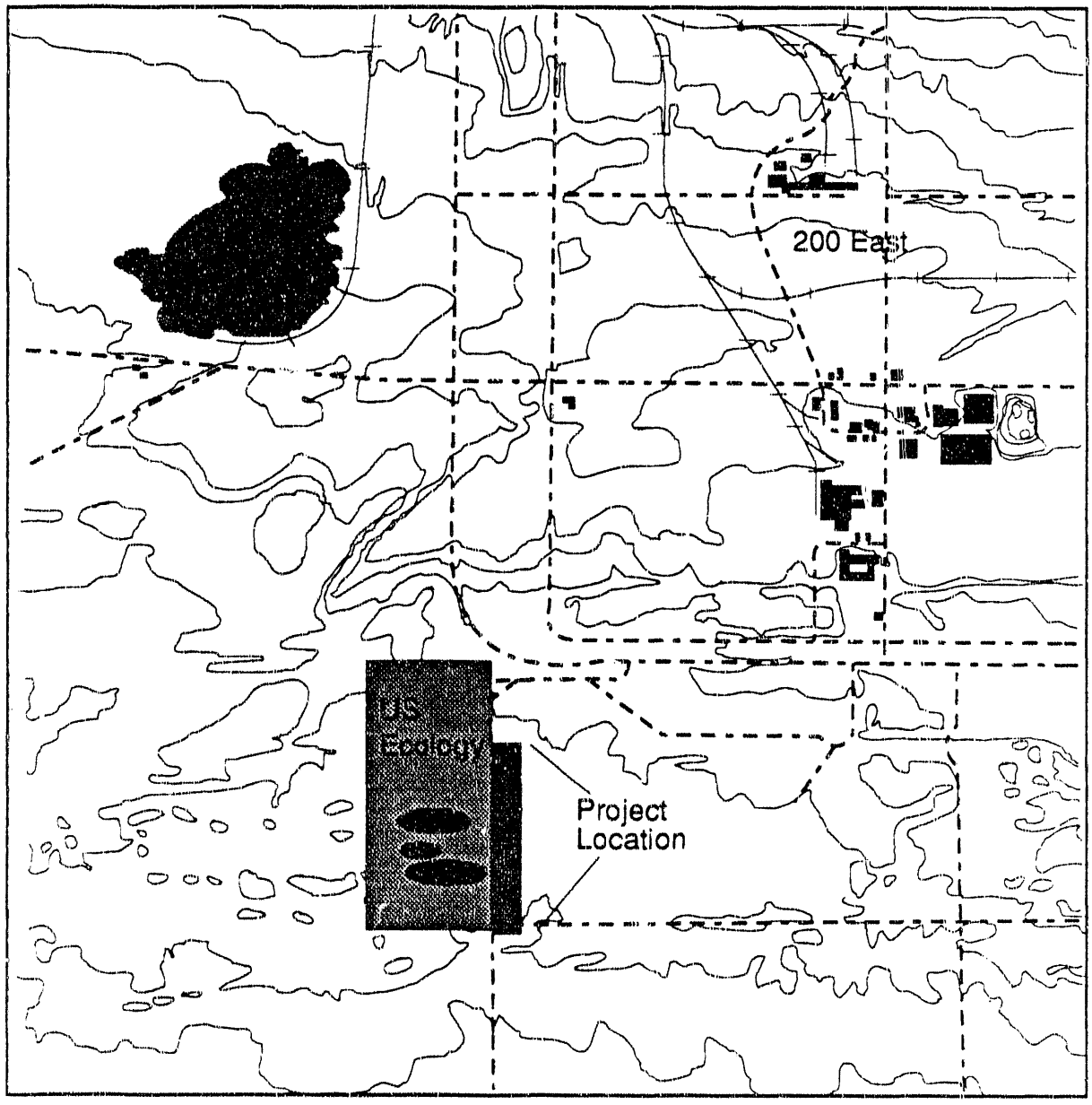


Figure B1. US Ecology, Inc. Diversion Channel. HCRC#90-200-017. Southeast 1/4, Section 9, T12N/R26E. Scale is 1: 24000.

**HCRC #90-300-025**

## THE MOLECULAR SCIENCE RESEARCH LABORATORY: SITE SELECTION

**Requester:** M. Tom Thomas
Molecular Science Research Laboratory
Pacific Northwest Laboratories
Richland, WA 99352

**Project Description**: This project was part of the ongoing site selection process for the proposed Molecular Science Research Laboratory. Proposed site 6 covers the open field due north of Battelle's Research Operations Building (Figure B2).

Our literature and records review showed that no cultural properties were known to be located at the project site. An inspection of aerial photographs revealed that the project site is situated in an area that has been subject to extensive agricultural planting; however, this type of disturbance generally has a minimal impact on the integrity of archaeological sites. Therefore, an archaeological survey was required before the area could be cleared of cultural resource concerns.

On 30 November 1990, H. A. Gard of the HCRL surveyed an area measuring 200 m N/S and 400 m E/W north of the Research Operations Building (Figure B2). Standard 20-m transects were employed with 30-$cm^3$ shovel probes placed every 50 m along the transect in order to inspect subsurface sediments. No cultural resources were located within this area.

**Cultural Resources**: It was the finding of the Hanford Cultural Resources Laboratory (HCRL) staff that there are no cultural or historic properties in the proposed project area. This was a class V case, new construction involving undisturbed ground.

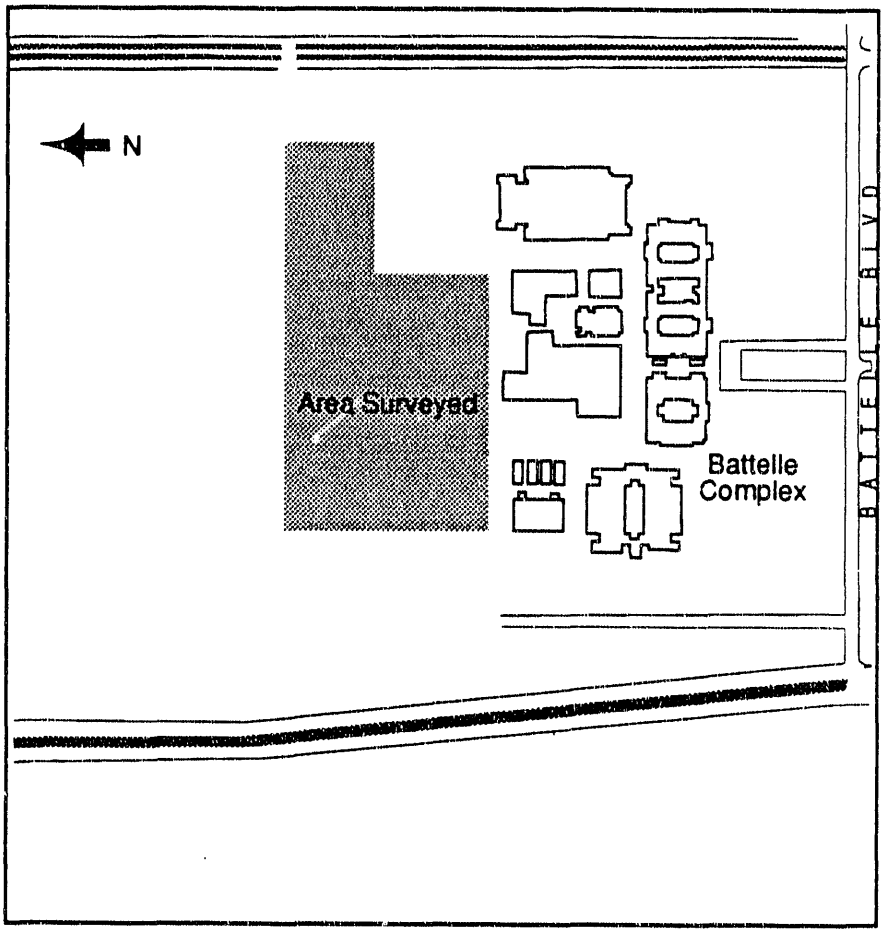


Figure B2. EMSL Site "A" Selection Study. HCRC# 90-300-025. Southwest 1/4, Section 14, T10N/R28E. Scale is 1 in. = 200 ft.

**HCRC #90-300-026**

**300-FF-5 OPERABLE UNIT PHASE I MONITORING WELLS**

**Requester:** K. L. Petersen
Environmental Technology Group
Environmental Division
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: As part of CERCLA operable unit waste site characterization studies, seven groups of three ground-water monitoring boreholes were to be constructed around the perimeter of the 300 Area (Figure B3). Each hole would exceed 40 ft. (12.30 m) in depth, and a 150-ft (46 m) by 150 ft. safety zone and staging area was to be established around each area. We were initially told that ground disturbance would be limited to a 16-in.-(41-cm-) diameter area for each bore; however, upon inspection of the project areas we discovered that the entire safety zone and staging area was bladed to bare ground, and that access roads were either constructed or considerably upgraded through blading and leveling.

Our literature and records review indicated that two previously recorded archaeological sites were situated within 150 m of borehole sites 1 ABC (45BN105) and 3 ABC (HT-89-015) which necessitated monitoring of any ground-disturbing activities to ensure subsurface deposits are not impacted. An inspection of aerial photographs revealed that the other borehole locations were situated in undisturbed areas. Therefore, an archaeological survey was required before those areas could be cleared of cultural resource concerns.

Between 3 and 15 January 1991, H. A. Gard of the HCRL surveyed each borehole site. A 2500-$m^2$ area was walked in 10-m-spaced parallel transects centered around the stake marking each well location. Surface visibility ranged between 70% and 30% and averaged 50%. No cultural resources were located in the vicinity of well sites 2 ABC, 4 ABC, and 5 ABC, 7 ABC, and 8 ABC, and these areas were cleared of cultural resource concerns.

**Cultural Resources**: No cultural remains were located in the 2500-$m^2$ area around well number 1 ABC; however, abundant cultural material was located within 100 m of the marking stake. Drilling at the marked location was not

expected to impact any cultural material, yet the potential for encountering buried cultural strata did exist. Therefore, an archaeological monitor was required at the well site while drilling within the upper 4 m of sediments. On 30 May 1991, H. A. Gard monitored the pad grubbing and road grading into well #1 for the presence of subsurface cultural materials. A 50-$ft^2$ ( 15.40-$m^2$ ) area was cleared by a grader for the well pad. At its deepest point in the northwest corner, grubbing reached 70 cm below surface. Soils consisted of fine homogeneous eolian sands. No cultural resources were exposed by this process. The road into the well pad extended approximately 200 m from an existing road to the south into the well pad. Again, no cultural resources were noted. On 13 June 1991, backhoe excavations for the placement of the well casing were monitored: The backhoe removed approximately 10 ft of soil in 1-ft bites. Soils were the same homogeneous eolian sands noted during the grubbing, until Pasco gravels were encountered at a depth of 2.5 m below surface. No cultural materials were exposed. Although no cultural material was exposed by this process, the areal extent and the depth of the impact created by pad construction was unexpected. The requesting contractor was notified that that degree of ground disturbance around Borehole 3 ABC was unacceptable. If they were unable to limit the extent and depth of pad construction, then a Section 106 Finding of Effect would need to be prepared. No work could continue around that well until the finding had undergone review by the State Historic Preservation Office. The contractor agreed to keep disturbance to a minimum.

No cultural remains were located within 900 $m^2$ around well number 3 ABC; however, abundant cultural material was located within 35 m of the marking stake. Eolian erosion is evident on the site, possibly obscuring surface features. Although the well site is situated in an area free of cultural detritus, it is topographically higher than the archaeological site, which is exposed by a dune blow-out. This increased the possibility that subsurface cultural material may be encountered while drilling.

On 14 June 1991, H. A. Gard surveyed the proposed access corridor into well site #3. The corridor was walked in parallel 20-m-spaced east/west transects and extended 425 m. The terrain is stabilized dunes, which trend in a

north/south direction. Dominate vegetation is cheatgrass and big sage. No cultural material was noted within this corridor.

On 20 June 1991, H. A. Gard monitored the preparation of the well pad surface. Extreme care was exercised by the equipment operator, removing only the grass and a maximum of 1 to 3 cm of soil. No cultural material was revealed by this process.

On 14 August 1991, H. A. Gard monitored backhoe excavations for the placement of the well casing for well 3A. The backhoe removed approximately 10 ft of soil in 1 ft bites. Soils were finely bedded homogeneous eolian sands. No cultural materials were exposed.

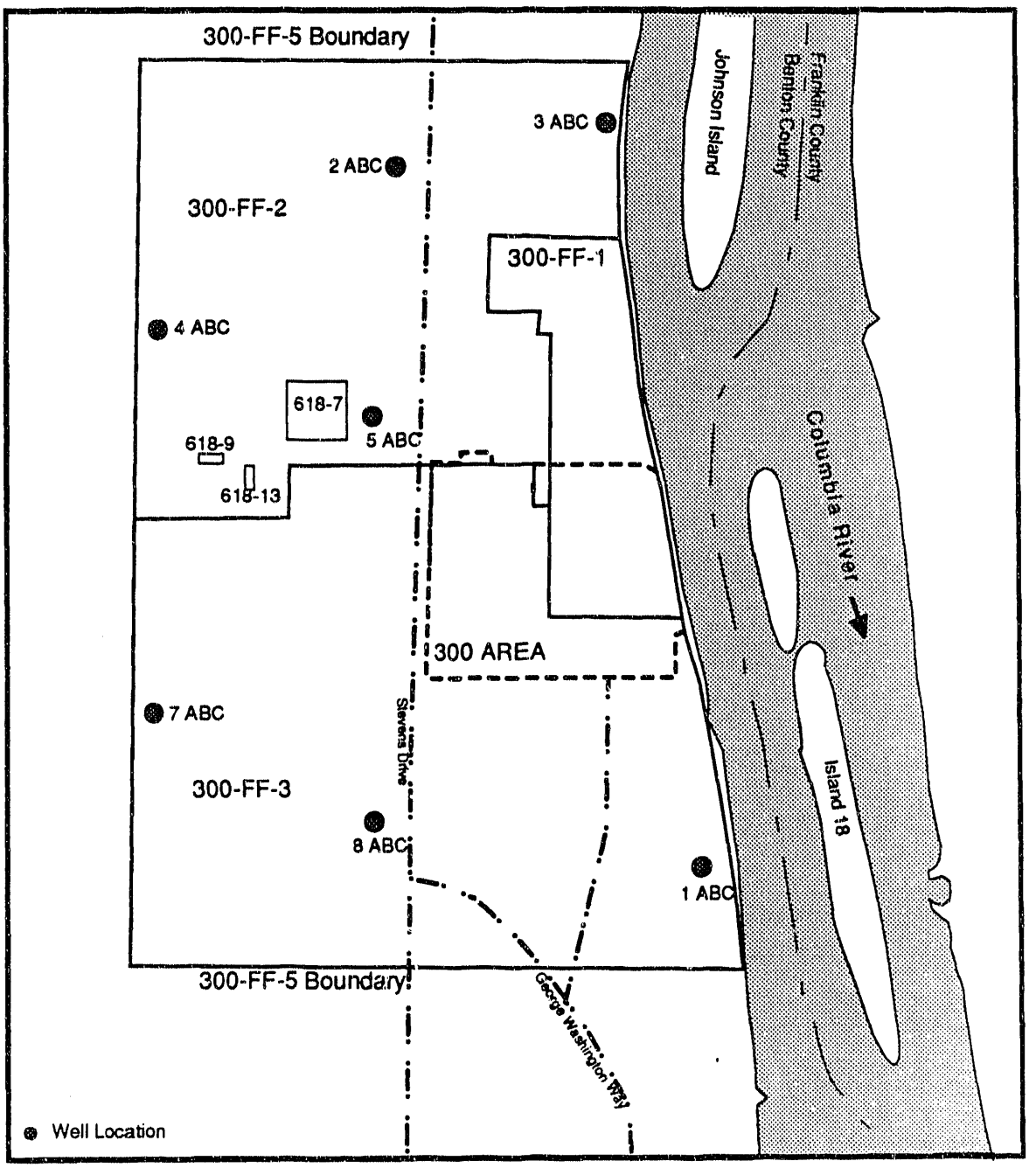


Figure B3. 300-FF-5 Operable Unit Borehole locations. HCRC#90-300-026. West 1/2, Sections 2 and 11, T10N/R28E. Scale is 1 cm = 256 m.

**HCRC #90-300-028**

**300 AREA SIGN POST INSTALLATION**

**Requester:** Owen W. Asay
200/300 Area
Environmental Engineering Section
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entailed installation of eighteen signs along the western bank of the Columbia River. The signs would be attached to metal posts which would be impact driven into the ground to a depth of two feet. Our literature and records review showed that there are cultural properties distributed along the entire project area. The method of installation, however, would cause minimal disturbance to buried cultural deposits. The primary concern of the HCRL revolved around unauthorized collection of surface artifacts, due to an increased number of people in proximity to archaeological sites. Workers were informed that there is a collecting ban that was to be taken seriously and that prosecution for violations was a real possibility. Monitoring of work by an HCRL archaeologist was required.

**Cultural Resources**: Work was performed before our requirements were received by the requester. All sign installation sites were subsequently inspected by HCRL staff. No cultural resources were impacted by these activities.

**HCRC #90-600-026**

**THE 100-D ISLAND CLEAN-UP**

**Requester:** J. F. Renken
Environmental Programs
Environmental and Waste Management
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entails removal of several pipes exposed on the ground, and several other items such as a battery and a 55-gallon drum from the island directly north of the 100-D reactor complex. Only the exposed pipes required excavation in order to cut them off below the ground surface. Excavations were not expected to exceed 6 in. (15 cm) in depth. Our literature and records review indicated that there are cultural properties on the downstream end of the island, but not directly within the project area. Due to the extreme sensitivity of all Columbia River islands, monitoring of work by an HCRL archaeologist was required. On 8 March 1991, P. E. Minthorn of the Hanford Cultural Resources Laboratory provided workers transportation to the island to collect the 55-gallon drum and fiberglass from the island. All materials taken from the island were first surveyed for radioactivity by an RPT.

**Cultural Resources**: No cultural materials were disturbed by these activities. Approval for the excavations necessary for the removal of the exposed pipes is still pending from state regulatory agencies.

**HCRC #90-600-029**

**THE RATTLESNAKE MOUNTAIN ANEMOMETER TOWER**

**Requester:** Nadene M. Highland
Director of Site Management Division
Department of Energy
PO Box 550, A7-27
Richland, WA 99352

**Project Description**: This project entails erection of a 110-ft anemometer tower on the summit of Rattlesnake Mountain. The tower, intended to calibrate wind speed data, is to be erected adjacent to an existing instrument mast in an area previously disturbed by construction activity.

Our literature and records review disclosed no known cultural properties at the project site. Isolated artifacts and aboriginal cairns are, however, commonly found across the entire crest of the mountain. An inspection of aerial photographs revealed that the project site is situated in an area that has been previously disturbed, but given the prevalence of archaeological remains on this ridge and the religious importance of the area to local native American groups, an archaeological survey was required before the area could be cleared of cultural resource concerns. P. E. Minthorn of the HCRL staff surveyed the proposed tower site on 12 December 1990.

**Cultural Resources**: Approximately 80 meters east of the existing instrument tower, a low rock cairn, measuring 3 m by 4 m, was recorded as HT-90-023. The stones are heavily lichenated, which indicates considerable antiquity. Cairns such as these were erected by local Indians to mark or commemorate a vision quest or religious event. Additionally, a laterally fractured projectile point, designated HI-90-013, was found 20 m northeast of the cairn. These items are potentially significant cultural resources.
The preferred alternative of the HCRL regarding the disposition of archaeological sites within the area of potential effect of any project is avoidance. In this instance, this could be accomplished with relative ease. Since the cairn is a discrete feature, a clearly marked culturally sensitive zone was established around it. Workers erecting the tower are to be informed about the presence of this zone and directed to avoid the area. The isolated projectile

point was collected. An archaeological monitor is required to be present to ensure that the cairn is not inadvertently disturbed during tower construction. The HCRL has yet to receive notification that tower erection is to commence.

**HCRC #91-100-001**

**THE 100-K SOIL WASHING SAMPLE**

**Requester:** Harley D. Freeman
Chemical Sciences
Pacific Northwest Laboratories
Richland, WA 99352

**Project Description**: This project entailed collection of sufficient soil to fill four 55-gallon drums from selected locations north of 100-KW and 100-KE. Excavations were not expected to exceed 1 ft in depth. Soil samples were to be used in an experimental soil washing system designed to remove radioactive contaminants. Our literature and records review showed that no cultural properties were known to be located at the project site. An inspection of aerial photographs revealed that the project site was situated in an area that had been extensively disturbed by past building construction. The project, however, was located within 400 m of the Columbia River, which placed it within a high-sensitivity area. Monitoring of work by an HCRL archaeologist was required. On 26 January 1991, H. A. Gard of the HCRL conducted the archaeological monitoring. All work was preformed within a small (15 m x 25 m) radiation zone. This area had been previously cleared of contaminated soils and, therefore, the ground surface was extensively disturbed. The sediments consisted of eolian deposited sands over the majority of the site with some berg material along the western edge of the zone. The soil samples were collected from four 1.5-$m^2$ x 0.30-m deep areas.

**Cultural Resources**: No cultural resources were impacted by these activities.

**HCRC #91-100-010**

**THE 100 AREA HABITAT REPLACEMENT**

**Requester:** R. H. Griffin
100 Area Environmental Protection
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entails planting 15 to 20 trees along the river bank upstream from the 100-B pumphouse to replace contaminated trees removed from the shoreline adjacent to N springs. Each tree will require a 2-ft by 2-ft hole, 2 ft deep.

Our literature and records review disclosed no known cultural properties located at the project site, but no previous cultural resource surveys have been performed within the project boundaries. On 31 May 1991, P. E. Minthorn and H. A. Gard surveyed the area in question.

**Cultural Resources**: A single Frenchman Springs projectile point (circa 4500 B.P.) was recorded. The recovery of this artifact, coupled with the presence of fluvial sediments, indicates there is a high potential of encountering buried cultural deposits. Because no site was found in the project area, and all tree holes would be excavated by hand, thereby allowing easy identification of buried cultural deposits, an archaeological monitor was required to be present while the trees are being planted. Planting is scheduled to begin in the spring of 1992.

**HCRC #91-100-017**

**THE 100-N AREA WELLS**

**Requester:** John Keller
Environmental Projects
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entails the installation of 4 ground-water monitoring wells, each encompassing an area of 40 $ft^2$ (12 $m^2$) with access roads leading to the well locations. Two of the well sites are located inside the 100-N perimeter fence and the other two are located 300 m to the west and to the south of the entrance road to the compound.

Our literature and records review showed no known cultural properties were located at the project site. On 2 July 1991, HCRL staff member P. E. Minthorn conducted a pedestrian survey of the project locations outside the 100-N fenced area for archaeological resources.

**Cultural Resources**: No historic properties were encountered during the survey. The area appeared to be lightly disturbed by access roads and original topography was still intact.

**HCRC #91-100-022**

**THE 100-D AREA RCRA WELLS**

**Requester:** John Keller
Environmental Projects
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entails the installation of 4 ground-water monitoring wells (199-D5-13, 199-D8-4, 199-D8-6, and 199-D8-5), each requiring an area measuring approximately 40 $ft^2$ (12 $m^2$) with access roads leading to the site location. One of the well sites is located inside the 100-D perimeter fence and the other three are located at the northern end of the compound.

Our literature and records review showed that no cultural properties are known to be located at the project sites. On 29 August 1991, H. A. Gard of the HCRL conducted a pedestrian inspection of the well locations outside of the reactor compound.

**Cultural Resources**: No historic properties were encountered during the survey, and the entire project area is situated within a heavily disturbed area covered by at least 5 m of fill material.

**HCRC #91-300-001**

**331 BUILDING ELECTRICAL IMPROVEMENTS**

**Requester:** Perry Moore
Facilities Management Department
Pacific Northwest Laboratories
Richland, WA 99352

**Project Description**: This project entailed installation of a new building electrical substation and building electrical switchgear outside of the 331 building. Excavations approximately 3 ft deep were necessary for 400 $ft^2$ of concrete pads and 250 ft of electrical ductbanks. All excavations were to be confined to previously disturbed areas. Our literature and records review showed that no cultural properties were known to be located at the project site. An inspection of aerial photographs revealed that the project site is situated in an area that had been extensively disturbed by past building construction. The project, however, was located within 400 m of the Columbia River, which placed it within a high-sensitivity area. Throughout the construction process excavations were periodically monitored by H. A. Gard, J. C. Chatters, and P. E. Minthorn of the HCRL. All excavations were confined to fill material.

**Cultural Resources**: No cultural resources were exposed during construction.

**HCRC #91-300-003**

**331 BUILDING COMPLEX SANITARY SEWER REPAIR**

**Requester:** R. J. Jones
Facilities Engineering
Pacific Northwest Laboratories
Richland, WA 99352

**Project Description**: This project entailed excavation of 25 ft of sewer line located northwest of Trailer 5 within the 331 Building complex. Excavations approximately 3 ft deep were necessary to locate and repair the sewer line. All excavations were confined to previously disturbed areas.. Our literature and records review showed that no cultural properties were known to be located at the project site. An inspection of aerial photographs revealed that the project site was situated in an area which had been extensively disturbed by past building construction. The project, however, was located within 400 m of the Columbia River, which placed it within a high-sensitivity area. Monitoring of work by an HCRL archaeologist was required. On 6 March 1991 H. A. Gard conducted the archaeological monitoring. All excavation was performed by hand and reached approximately 1 m in depth. The overburden consisted of a fine sandy fill with cobble intrusions. Original soils were encountered at the base of the trench and were not disturbed.

**Cultural Resources**: No cultural materials were uncovered during the excavation and repair process.

**HCRC #91-300-004**

**THE 300 AREA HORTICULTURAL RESEARCH FACILITY.**

**Requester:** R. Scott Spencer
Facilities Engineering
Pacific Northwest Laboratories
Richland, WA 99352

**Project Description**: This project entailed construction of two pre-engineered greenhouses to be erected upon concrete slabs. A 141-ft (43-m) by 80-ft (25-m) area would be impacted to depth of 20 in. (50 cm). Additionally, underground facilities would be installed. Our literature and records review showed that no cultural properties were known to be located at the project site, but the project was located within 400 m of the Columbia River, which placed it within a high-sensitivity area, thereby raising the possibility for encountering buried cultural strata or even human remains. An inspection of aerial photographs revealed that the project site was situated in an area that had been previously plowed or cultivated; however, our experience has shown that this type of ground disturbance has little effect upon the spatial integrity of cultural resources. Therefore, ground survey of the project site by an HCRL archaeologist was required. On 12 and 22 February 1991, J. C. Chatters of HCRL inspected two possible sites for the proposed research greenhouses for the presence of cultural remains. The first area, measuring 43 m by 24 m, had been leveled by heavy equipment to basal Pleistocene gravels. The second area, measuring 30 m by 50 m, was covered by road aggregate.

**Cultural Resources**: No cultural material was encountered at either of the two proposed locations for the greenhouses. However, monitoring of excavations for construction is still required due to the sensitivity of the area. HCRL is to be notified when construction is to begin.

**HCRC #91-300-011**

**PROJECT 91E-EWW-212, CERCLA GROUNDWATER MONITORING WELLS 300-FF-5.**

**Requester:** B. A. Gilkeson
Waste Management
Environmental Projects
Westinghouse Hanford Company
Richland, WA 99352

**Reference:** Cultural Resources Review of the 300-FF-5 Operable Unit Phase I Monitoring Wells, HCRC# 90-300-026. H. A. Gard, 15 January 1991 to K. L. Petersen.

**Project Description**: This project entailed the installation of five groundwater monitoring wells as part of the CERCLA Remedial Investigation/Feasibility Study for the 300-FF-5 Operable Unit. The well sites were designated 5AB, 6AB, 1-10B, 1-13B and 1-14B (Figure B4). Each well site would impact a 150-ft by 150-ft area, with bore holes reaching depths between 65 and 190 ft. Additionally, access roads required improvement.

Our literature and records review showed that well 5AB had been previously cleared of cultural resource concerns, and that no cultural properties were known to be located at well sites 6AB, 1-13B, and 1-14B. An inspection of aerial photographs revealed that these three well sites were situated in areas that had been extensively disturbed by past construction, and, therefore, the chances of encountering buried cultural material were considered to be low. Our records indicated that an extensive prehistoric archaeological site was in the vicinity of well 1-10B. This was confirmed on 8 May 1991 by pedestrian survey performed by H. A Gard.

**Cultural Resources**: No known cultural or historic properties were found to be located adjacent to proposed well locations 5AB, 6AB, 1-13B, and 1-14B, and these well locations are cleared of cultural resource concerns. Cultural properties were present in the vicinity of well 1-10B and monitoring of excavations in that area by an archaeologist was required for all surface and subsurface disturbance within the first 4 m. Preparation of the well pad began on 8 August 1991 with P. E. Minthorn and H. A. Gard of the HCRL monitoring excavations. Soils appeared to be a mixed gravel fill over fine fluvial sands. No

cultural resources were noted. Drilling of this well began on 6 September 1991. Operations were monitored by H. A. Gard. The well casing was not set into a pre-dug hole, but driven into the earth. No cultural remains were exposed by this process. On 18 October 1991, the HCRL was contacted by Jim Holiday, Kaiser Engineers Hanford field foreman, about an artifact recovered in the vicinity of the well site. The object turned out to be the distal end of a basalt stone pestle with a zoomorphic motif resembling a bird head. Based upon the recovery of similar objects from datable contexts, the artifact appears to date from 2000 to 3000 B.P. The artifact was collected and assigned isolate number HI-91-033. The ground surface around the well was reinspected and no other cultural materials were located.

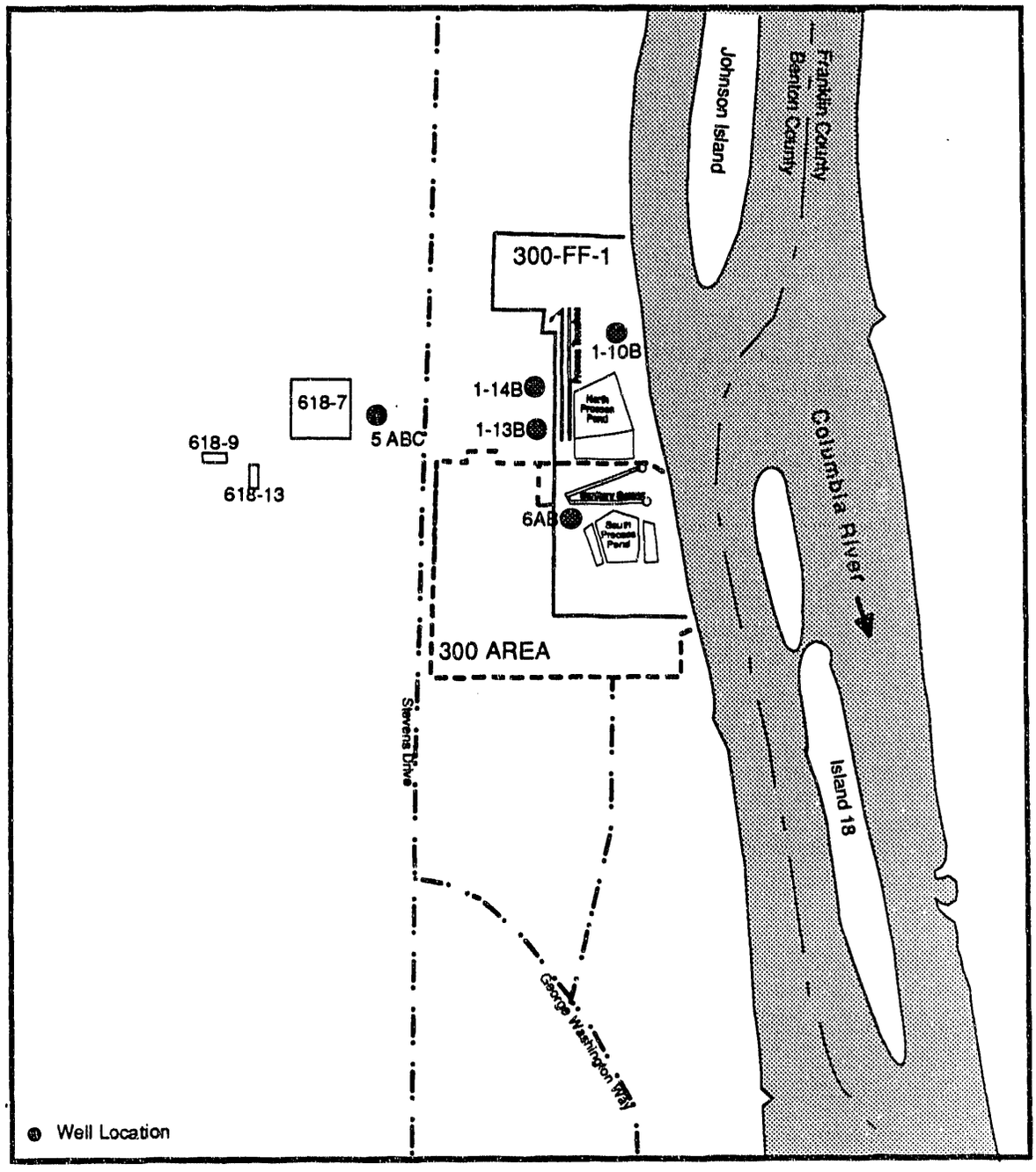


Figure B4. CERCLA Ground Water Monitoring Wells. HCRC# 91-300-011. West 1/2, Sections 2 and 11, T10N/R28E. Scale is 1 cm = 256 m.

**HCRC #91-300-019**

**THE 300 AREA PROCESS SEWER REPLACEMENT**

**Requester:** E. T. Trost
Site Planning
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entailed installation of a new process piping collection system. Excavations approximately 3 ft deep will be necessary for installation of the line. All excavations will be confined to previously disturbed areas. Our literature and records review showed that no cultural properties were known to be located at the project site. An inspection of aerial photographs revealed that the project site was situated in an area that had been extensively disturbed by past building construction. A portion of the project, however, was located within 400 m of the Columbia River, which places it within a high-sensitivity area; therefore, monitoring of work by an HCRL archaeologist was required.

**Cultural Resources**: To date our office has not been notified of work commencement.

**HCRC #91-600-005**

**THE SOIL CORROSION TEST FACILITY.**

**Requester:** Darrel Duncan
Solid/Liquid Waste Remediation
Technical Support and Applied Technology
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entails construction of an underground soil corrosion test facility. A 500-ft by 200-ft area at the northeast corner of the 200 West area will be impacted to a depth of 50 ft (Figure B5).

Our literature and records review showed that no cultural properties are known to be located at the project site, but no previous cultural resource surveys have been performed within the project boundaries. Furthermore, an inspection of aerial photographs revealed that the area in question is undisturbed, and a portion of the historic White Bluffs Road, which has been determined eligible for nomination to the National Register of Historic Places, is located due north of the project site. Given the undisturbed character of the project location, and its proximity to the White Bluffs Road, ground survey of the project site by an HCRL archaeologist was required. On 13 February 1991, H. A. Gard of the HCRL inspected the proposed location of the soil corrosion test facility, situated to the northeast of the 200 W area (Figure B5). The project area is on the east side and parallel to the road fronting the eastern edge of the 200 W area. The southern boundary is formed by a dead-end unimproved east/west-trending road, the entrance of which is 0.9 km north of the access road to the meteorological station. A 62-m east/west by 154-m north/south area was surveyed in 20-m-spaced north/south transects. Each transect was 200 m long to ensure complete ground coverage. Surface visibility ranged between 70% and 30% and averaged 50%. No cultural resources were located within this 30,000-$m^2$ area. Furthermore, geomorphological indicators and previous experience indicates that the chances of encountering buried cultural material within this area are low.

**Cultural Resources**: No known cultural or historic properties were found to be located within the project boundaries. The historic White Bluffs Road, which has been found to meet criteria for nomination to the National Register of

Historic Places, is located 200 m north of the northern edge of the project area. To ensure that no damage occurs to this feature from construction activities, a 100-m cultural sensitivity zone was established to either side of the road. White pin-flags spaced 10 m apart paralleling the road were used to delineate the zone boundaries. No vehicles, equipment, or materials are to enter this area.

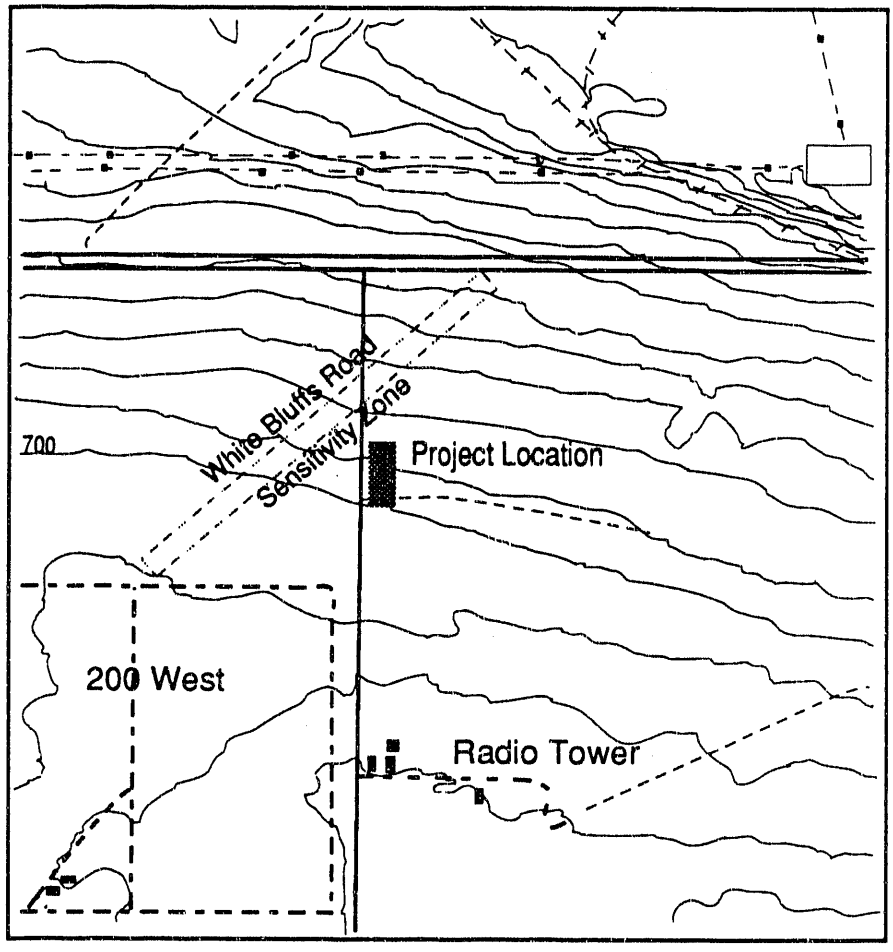


Figure B5. Soil Corrosion Test Facility. HCRC# 91-600-005. Southeast 1/4, Section 31, T13N/R26E. Contour Interval is 10 feet. Scale is 1: 24000.

**HCRC #91-600-006**

**THE PRIVATIZATION STEAM PLANT.**

**Requester:** E. T. Trost
Site Planning
Westinghouse Hanford Company
Richland, WA 99352

**Reference:** Cultural Resources Review of Project L-006, Route 3/4S Intersection Safety Improvements. HCRC# 89-600-010, P. E. Minthorn 9 March 1990 to E. M Koellermeier.

**Project Description**: This project entails construction of a new steam plant to supply the 200 Areas. The preferred site for this facility is located at the northwest corner of the junction between Route 3 and Route 4 South, and encompasses a 23-acre area measuring 900 ft north/south and 1100 ft east/west (Figure B6).

Our literature and records review showed that no cultural properties were known to be located at the project site. A cultural resources survey was performed below the southern margin of the project area and no cultural resources were located. However, no previous cultural resource surveys had been performed within the project boundaries. An inspection of aerial photographs revealed that the area in question was undisturbed. Given the undisturbed character of the project location, ground survey of the project site by an HCRL archaeologist was required. On 28 February 1991, P. E. Minthorn and H. A. Gard inspected the project site at the northwest corner of the junction between Route 3 and Route 4 South (Figure B6). A 300-m north/south by 400-m east/west area was surveyed in 20-m-spaced north/south transects. Surface visibility ranged from 30% to 70% and averaged 50%.

**Cultural Resources**: No cultural resources were located within this 120,000-$m^2$ area. Furthermore, geomorphological indicators and previous experience indicated that the chances of encountering buried cultural material within this area were low.

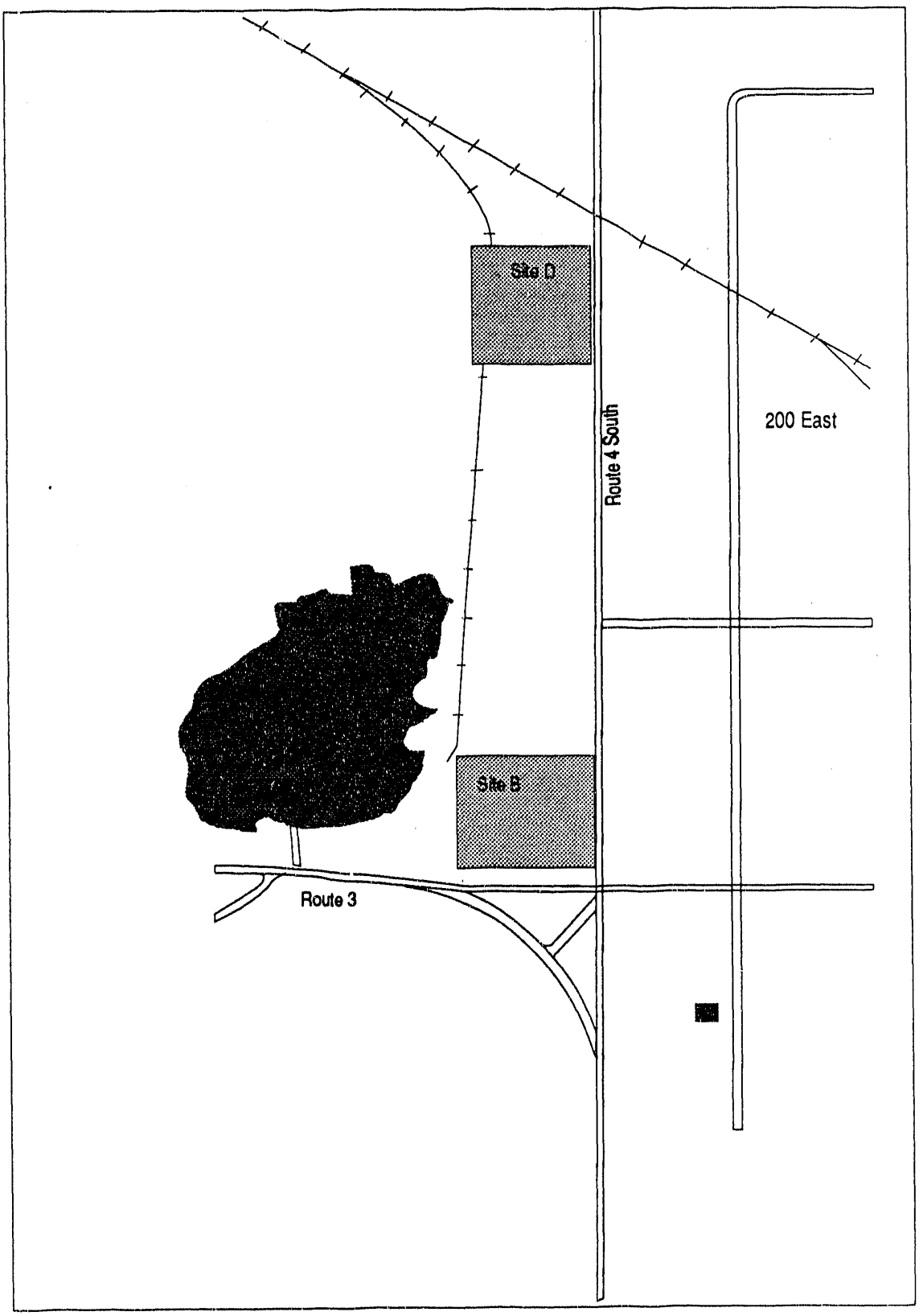


Figure B6. Privatization Steam Plant, HCRC# 91-600-006. West 1/2, Section 4, T12N/R26E. 1 cm = 150 m.

**HCRC #91-600-008**

**THE GABLE MOUNTAIN POWER POLE CHANGE OVER PROJECT**

**Requester:** Michael D. Borchers
Electrical Utilities Maintenance
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entailed replacement of power poles for a distance of 8 to 10 spans up the southern side of Gable Mountain. The actual number of poles to be replaced was to be determined by linemen in the field, however, the installation of new poles was to occur within 3 feet of existing poles. Excavations extended 4.5 ft in depth and work was preformed either by hand, backhoe, or auger truck depending upon terrain. Our literature and records review showed that the area in question has been previously surveyed for cultural resources and that cultural resources are common throughout the project area. Additionally, the entire mountain is held to be a scared locality by extant Indian groups and is still used by them for ceremonial purposes. Therefore, monitoring of work by an HCRL archaeologist was required. On 19 April 1991 P. E. Minthorn of the Hanford Cultural Resources staff monitored the entire transmission right-of-way slated for pole replacement.

**Cultural Resources**: No cultural materials were impacted by the pole replacement process.

**HCRC #91-600-009**

**THE 200A TREATED EFFLUENT DISPOSAL BASIN, FRESH WATER POND FACILITY.**

**Requester:** Kenneth L. Petersen
Environmental Programs
Westinghouse Hanford Company
Richland, WA 99352

**Reference:** Rice, D. G. 1968. Archaeological Reconnaissance of the Hanford Atomic Works. Washington State University Laboratory of Anthropology, Pullman, WA.

**Project Description**: This project entailed site selection for the development of a 5 to 50 acre pond to the northeast of the 200 East area (Figure B7.). Our literature and records review showed that no large coverage surveys had been completed within the areas identified for possible selection. The only cultural resource surveys conducted in the region were isolated drilling pad inspections (ref. 1). One historic archaeological site was recorded and is designated as HT-88-007. Field notes taken at the time suggest that this site is insignificant. Based partly upon information provided by the HCRL the TEDB site was narrowed to a 20 acre parcel southeast of the 200 east area liquid effluent disposal facility. On 20 August 1991, Hanford Cultural Resources Laboratory (HCRL) personnel preformed a cultural resources survey of the proposed location. A 750 m north/south by 200 m east/west area in Section 5, T12N, R27E (Hanford Quad.), was surveyed in 20 m spaced north/south transects. Surface visibility ranged from 30% to 70% and averaged 50%.

**Cultural Resources**: No cultural resources were located within this area. Furthermore, geomorphological indicators and previous experience indicates that the chances of encountering buried cultural material within this area are low.

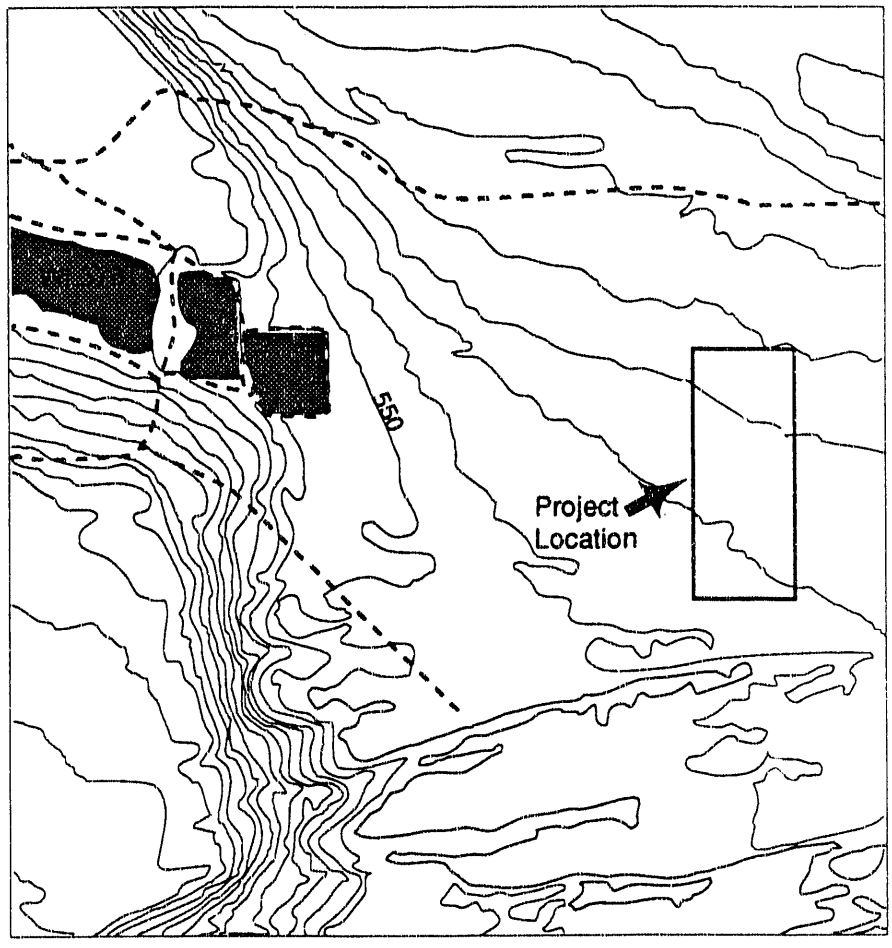


Figure B7. 200A TEDA-Clean Water Pond, HCRC# 91-600-009. Section 6, T12N/R27E. Contour interval 10 ft. Scale is 1: 24000.

**HCRC #91-600-015**

**THE SITE-WIDE BACKGROUND SOIL SAMPLING PLAN.**

**Requester:** Chris D. Kramer
Environmental Division
RCRA Closure Activities Section
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entailed collection of soil samples from 12 widely separated locations across the Hanford site, plus two additional locations immediately outside the reservation boundaries. The purpose of this effort was to gather information on soils which represent a compositional range typical of uncontaminated Hanford Site soils to aid in development of contamination identification and clean-up standards. Our literature and records review showed that three of the sampling sites ( #1, #4, and #12) are in close proximity to known archaeological properties. Three additional sampling sites ( #2, #10, and #11) are in previously unsurveyed and undisturbed areas. Site #13 is located in an area designated as High-Sensitivity for the presence of cultural resources. The remaining seven sites are all located in areas that have been heavily impacted by soil borrowing activities, however, soil profiles created by large excavations frequently expose buried archaeological deposits. To insure that no archaeological sites were damaged by sampling activities, pedestrian survey or monitoring by an HCRL archaeologist was required at locations #1, #2, #4, #10, #11, #12, and #13. Between 12 September and 2 October 1991, P. E. Minthorn or H. A. Gard preformed cultural resource inspections of site wide background soil sampling sites throughout the 600 area of the Hanford Site. A total of 9 collection sites were inspected (numbers 1, 2, 3, 4, 10, 11, 12, 13, and 14).

**Cultural Resources**: No cultural resources were located in any of these areas.

**HCRC #91-600-017**

**THE USGS GRASS RESEARCH DRILL SITE.**

**Requester:** Edmund A. Prych
Water Resources Division
Pacific Northwest District
USDI, Geological Survey
1201 Pacific Avenue, Suite 600
Tacoma, WA 98402

**Project Description**: This project entailed drilling a 10 inch diameter hole 30 feet in-depth within the southwest corner of section 29, T11N, R28E, Wooded Island 7.5 min quad. A power auger mounted upon a 2.5 ton truck would be used to accomplish this task. The work is part of ongoing permeability and percolation research conducted by the USGS. Our literature and records review showed that no cultural properties were known to be located at the project site, but no previous cultural resource surveys have been preformed within the project boundaries. An inspection of aerial photographs revealed that the area in question was undisturbed. Therefore a cultural resources survey was required before clearance to proceed could be given. On 3 October 1991, P. E. Minthorn and H. A. Gard preformed a cultural resources survey of the proposed new well location at the Grass Research Site. A 250 m north/south by 250 m east/west area was surveyed in 20 m spaced north/south transects. Surface visibility ranged from 30% to 70% and averaged 50%.

**Cultural Resources**: No cultural resources were located within this area. Furthermore, geomorphological indicators and previous experience indicates that the chances of encountering buried cultural material within this area are considered to be low.

**HCRC #91-600-021**

**WELLS 53 AND 55C PUMP TESTS.**

**Requester:** Marty Gardner
Restoration and Remediation
Environmental Division
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project involved pump testing at two ground water monitoring wells, #'s 53 and 55c. Approximately 20 acre feet ( 2000 gallons) of water were to be pumped on to the ground over a duration of 72 hours. A cultural resources review was required due the potential damage this activity could cause to any archaeological sites in the vicinity. Our literature and records review showed that no cultural properties were known to be located at the project site, however no cultural resource surveys had been conducted previously in the area. An inspection of aerial photographs revealed that the project site was largely undisturbed. Therefore, ground survey of the project site by an HCRL archaeologist was required. On 18 September 1991 P. E. Minthorn of the HCRL inspected a 300 $m^2$ area northwest of the well sites (Figure B8).

**Cultural Resources**: No Cultural material was encountered at either of the two well sites.

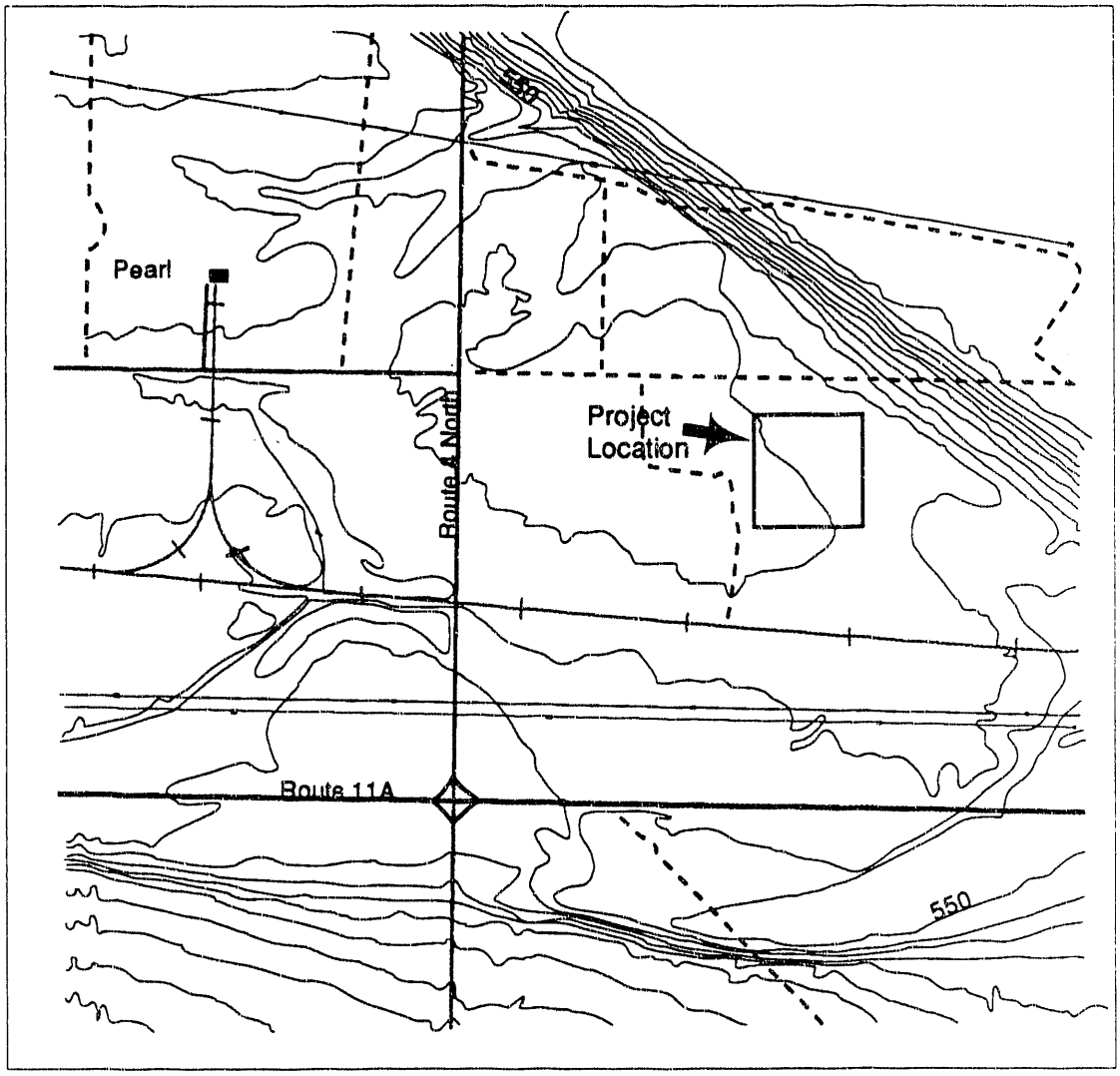


Figure B8. Well Testing #53 and 55C. HCRC#91-600-021. Section 27, T13N/R26E. Contour Interval is 10 feet. Scale is 1: 24000.

**HCRC #91-1100-002**

**PROJECT W-119, CERCLA GROUNDWATER MONITORING WELLS 1100-EM-1.**

**Requester:** B. A. Gilkeson
Waste Management
Environmental Projects
Westinghouse Hanford Company
Richland, WA 99352

**Project Description**: This project entailed installation of four groundwater monitoring wells as part of the CERCLA Remedial Investigation/Feasibility Study for the 1100-EM-1 Operable Unit. The well sites were designated MW-19, MW-20, MW-21, and MW-22 (Figure B9.). Each well site would impact a 150 ft. (46 m) by 150 ft. area. Bore holes would reach depths between 60 ft. (19 m) and 90 ft. (28 m). Additionally, access roads would require improvement. Our literature and records review showed that no cultural properties were known to be located at any of the well sites . An inspection of aerial photographs revealed that one of the well sites, MW-21, was situated in an area that had been extensively disturbed by past construction, and, therefore, the chances of encountering undisturbed cultural material at that location was considered to be low. A pedestrian survey was preformed at each of the well sites on 10 May 1991 by H. A. Gard, P. E. Minthorn, and J. C. Chatters of the HCRL.

**Cultural Resources**: Cultural material was encountered at only one location, adjacent to MW-19. All of the other well sites were cleared of cultural resource concerns. An early 19th century homestead archaeological site was recorded approximately 60 m northeast of MW-19, and was been designated HT-91-008. To avoid impacts to this site access to the well pad was required via the existing dirt road west of the well location.

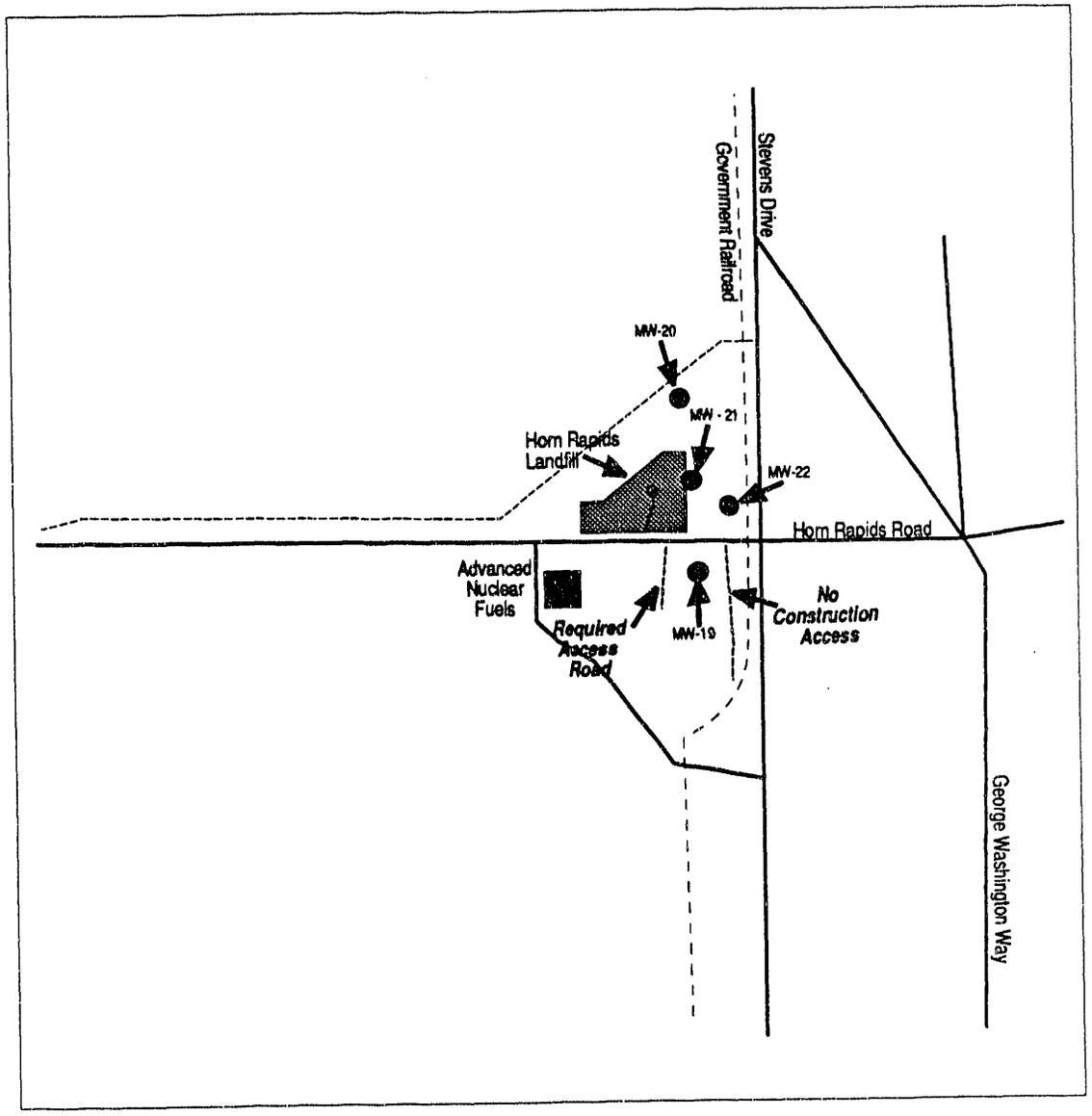


Figure B9. CERCLA Groundwater Monitoring Wells, 1100-EM-1. HCRC# 91-1100-002. Section 15, T10N/R28E. Scale is 1 cm = 400 m.

# APPENDIX C

## MAPS OF AREAS SURVEYED UNDER HCRC# 91-100-CERCLA

APPENDIX C

MAPS OF AREAS SURVEYED UNDER HCRC# 91-100-CERCLA

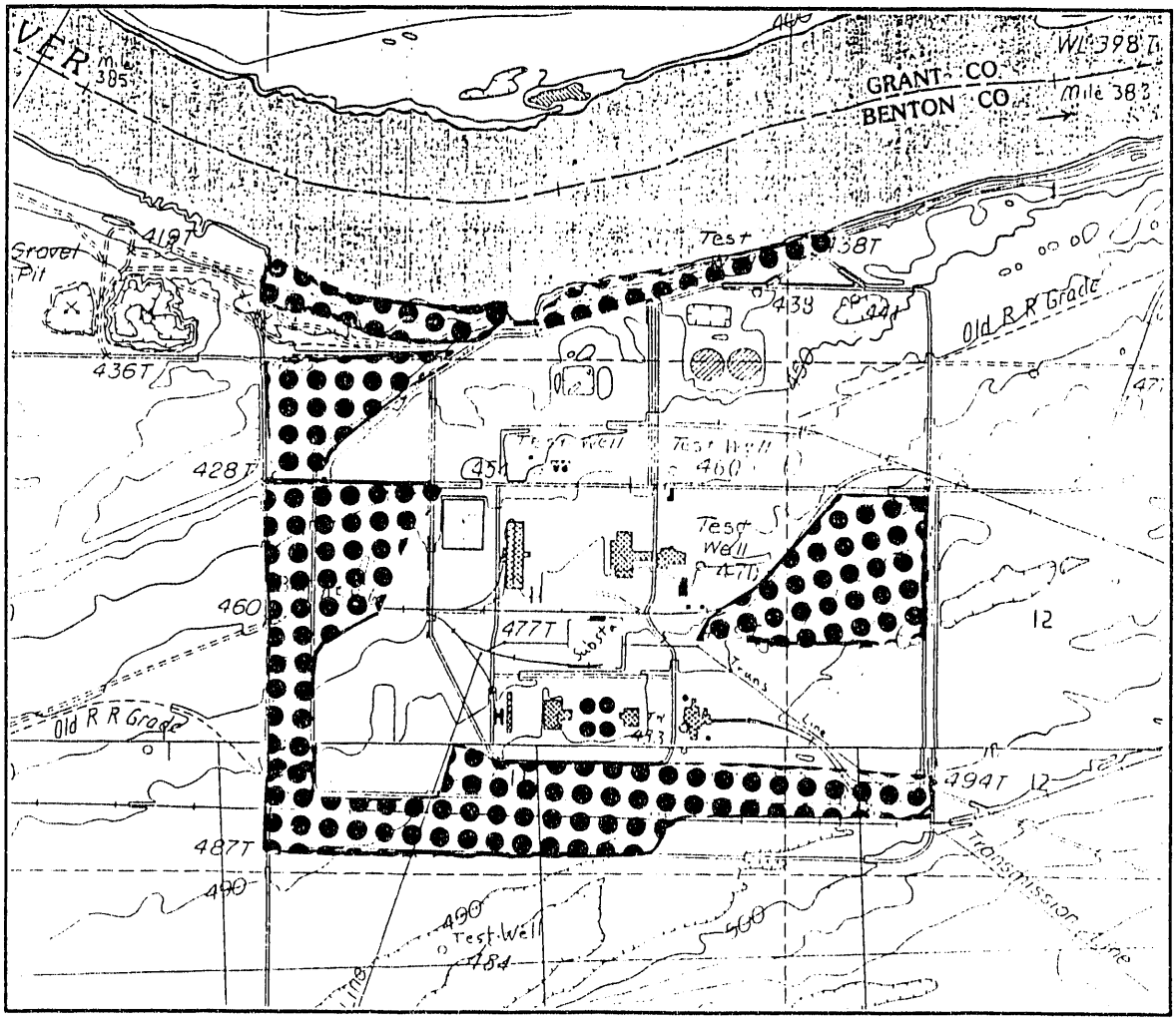


FIGURE C.1. 100-B Reactor Survey Area on a Portion of the USGS Vernita Bridge 7.5-min Quadrangle

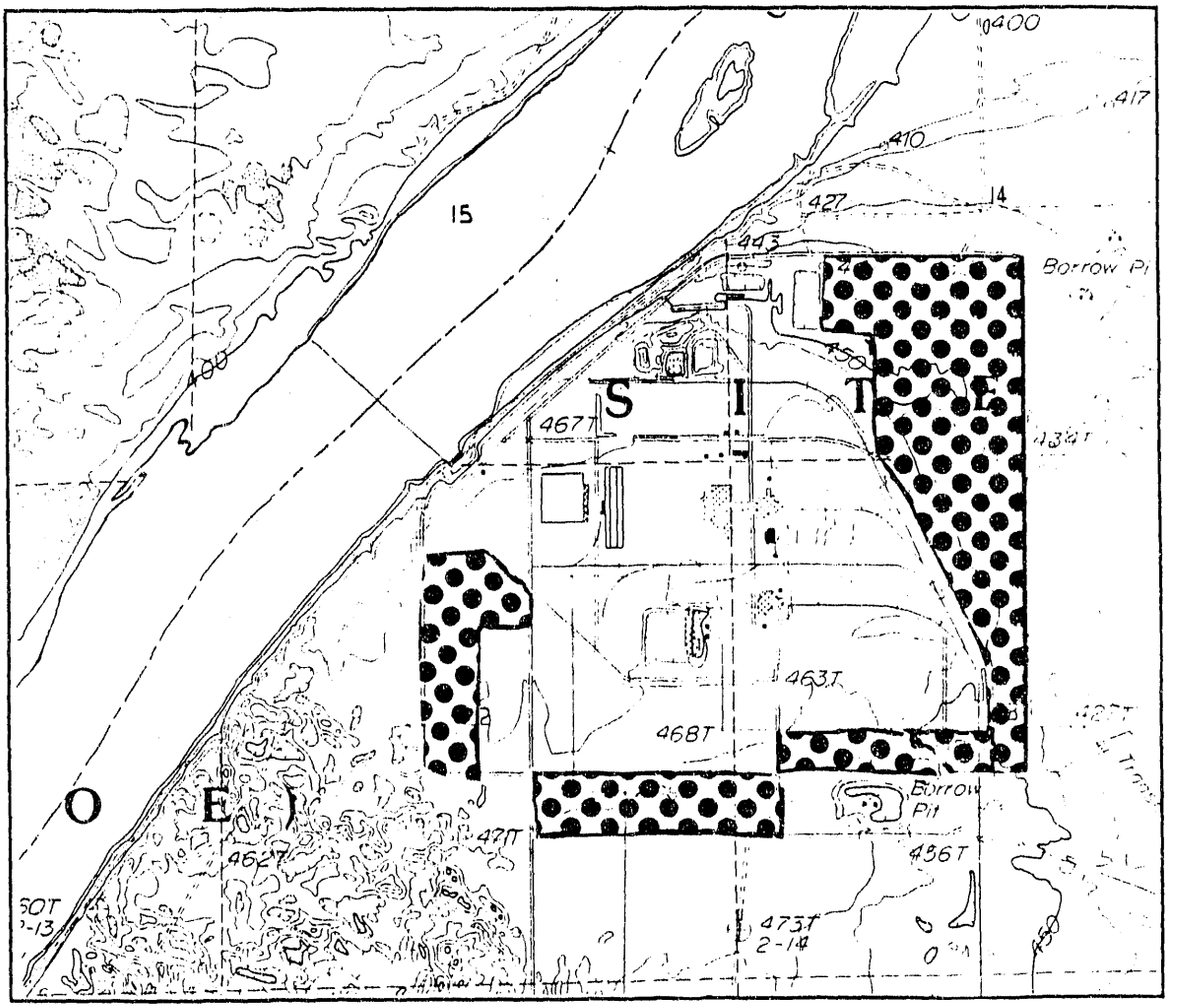


FIGURE C.2. 100-D Reactor Survey Area on a Portion of the USGS Coyote Rapids 7.5-min Quadrangle

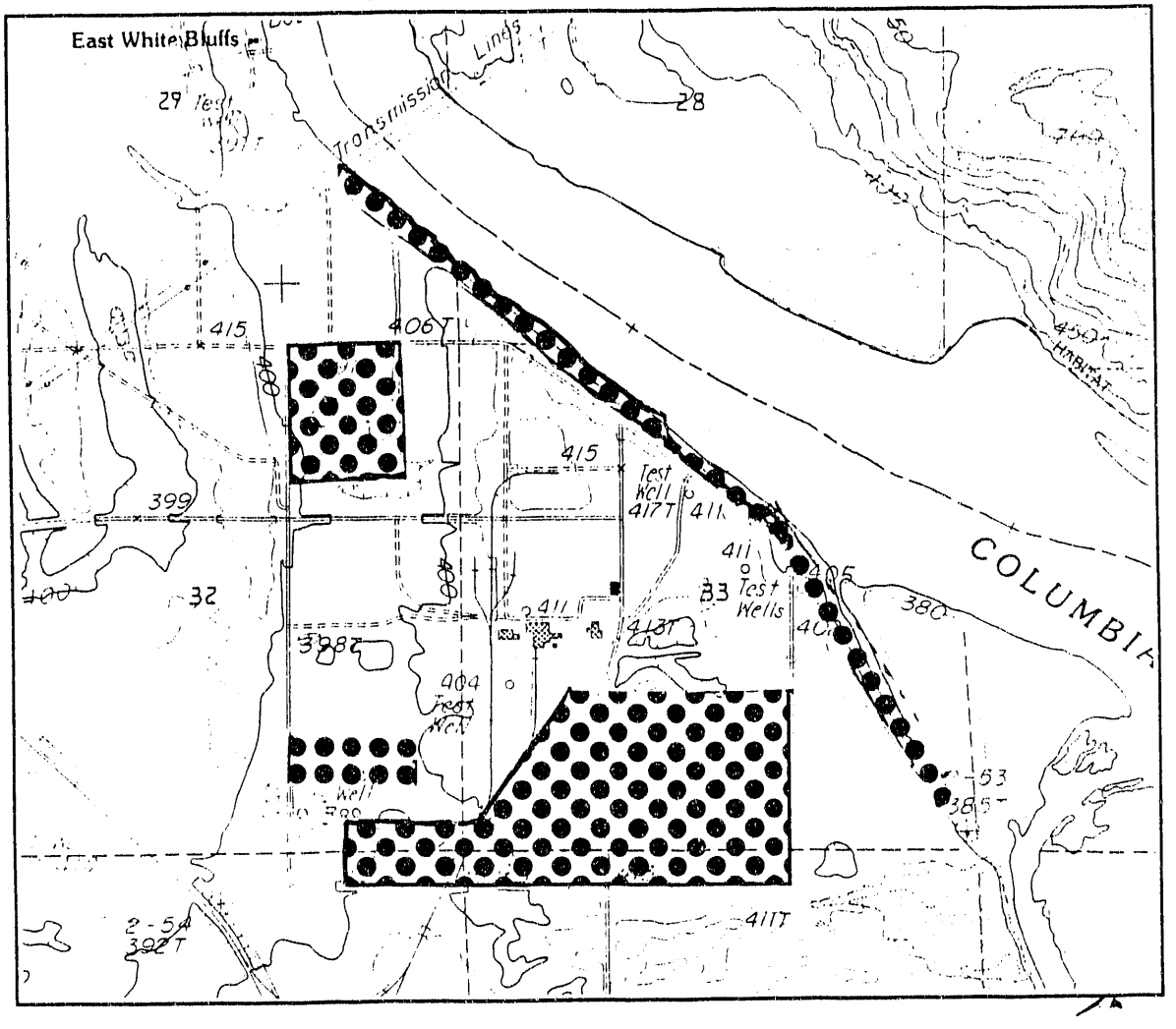


FIGURE C.3. 100-F Reactor Survey Area on a Portion of the USGS Locke Island 7.5-min Quadrangle

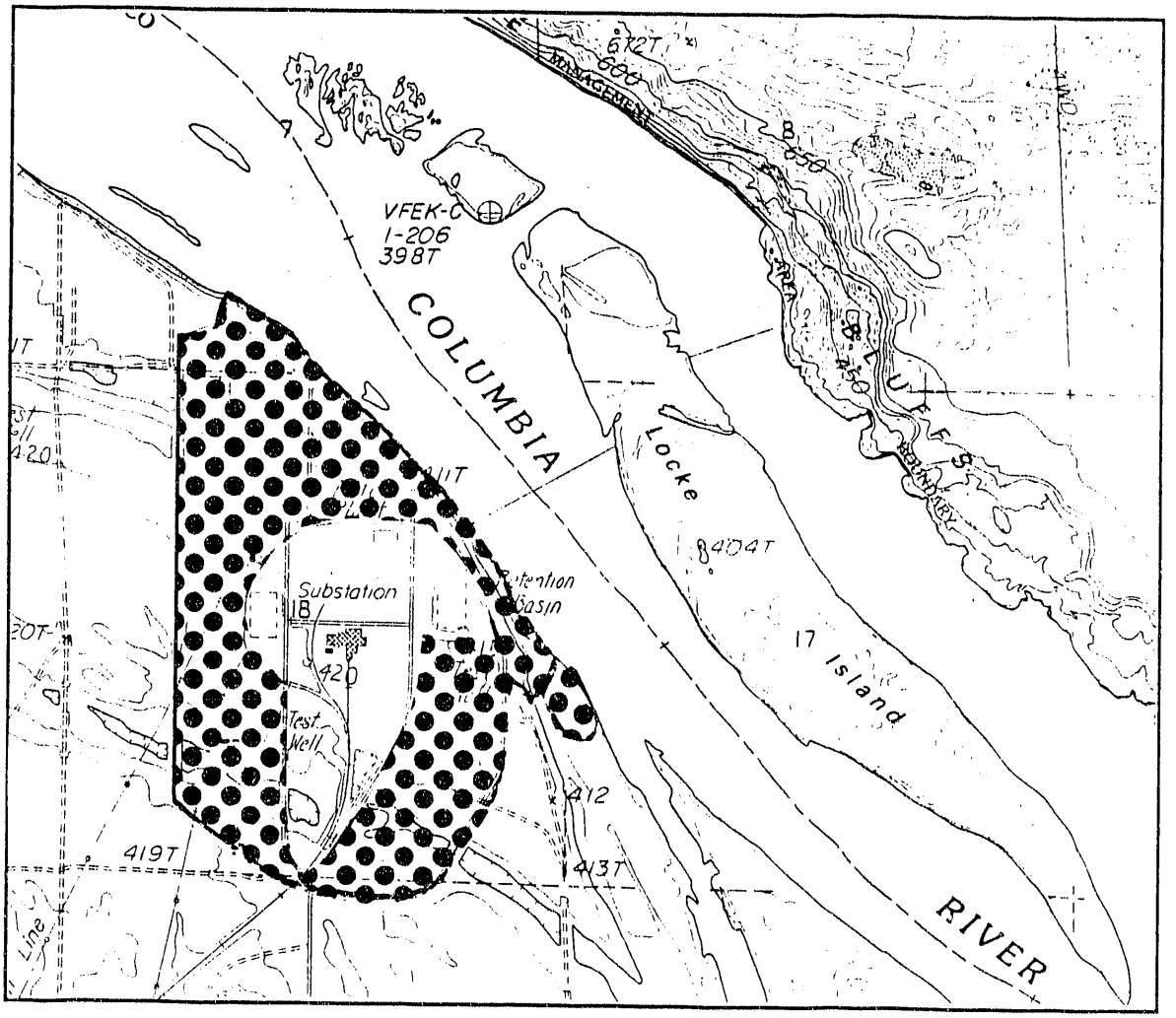


FIGURE C.4. 100-H Reactor Survey Area on a Portion of the USGS Lock Island 7.5-min Quadrangle

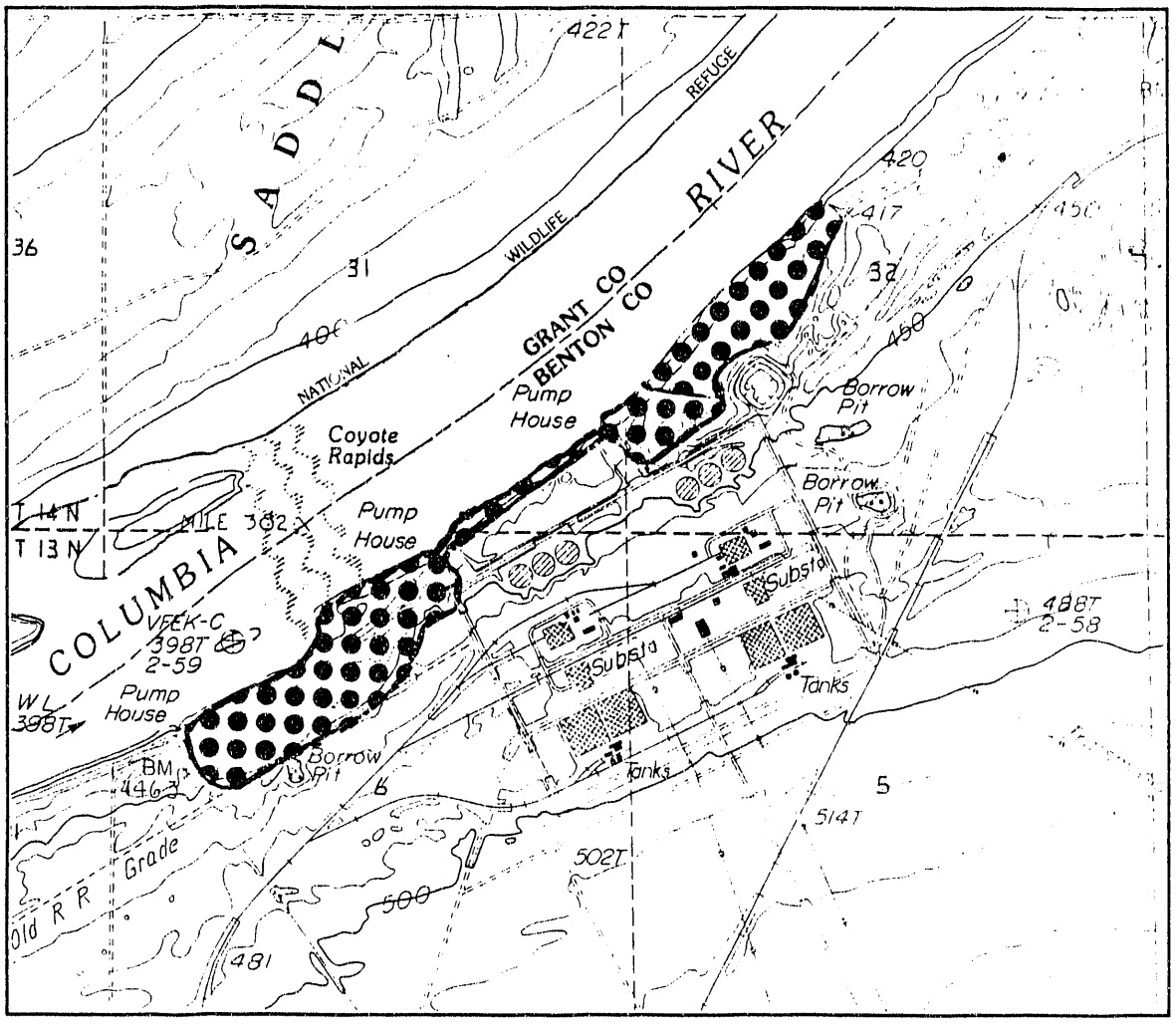


FIGURE C.5. 100-K Reactor Survey Area on a Portion of the USGS Coyote Rapids 7.5-min Quadrangle

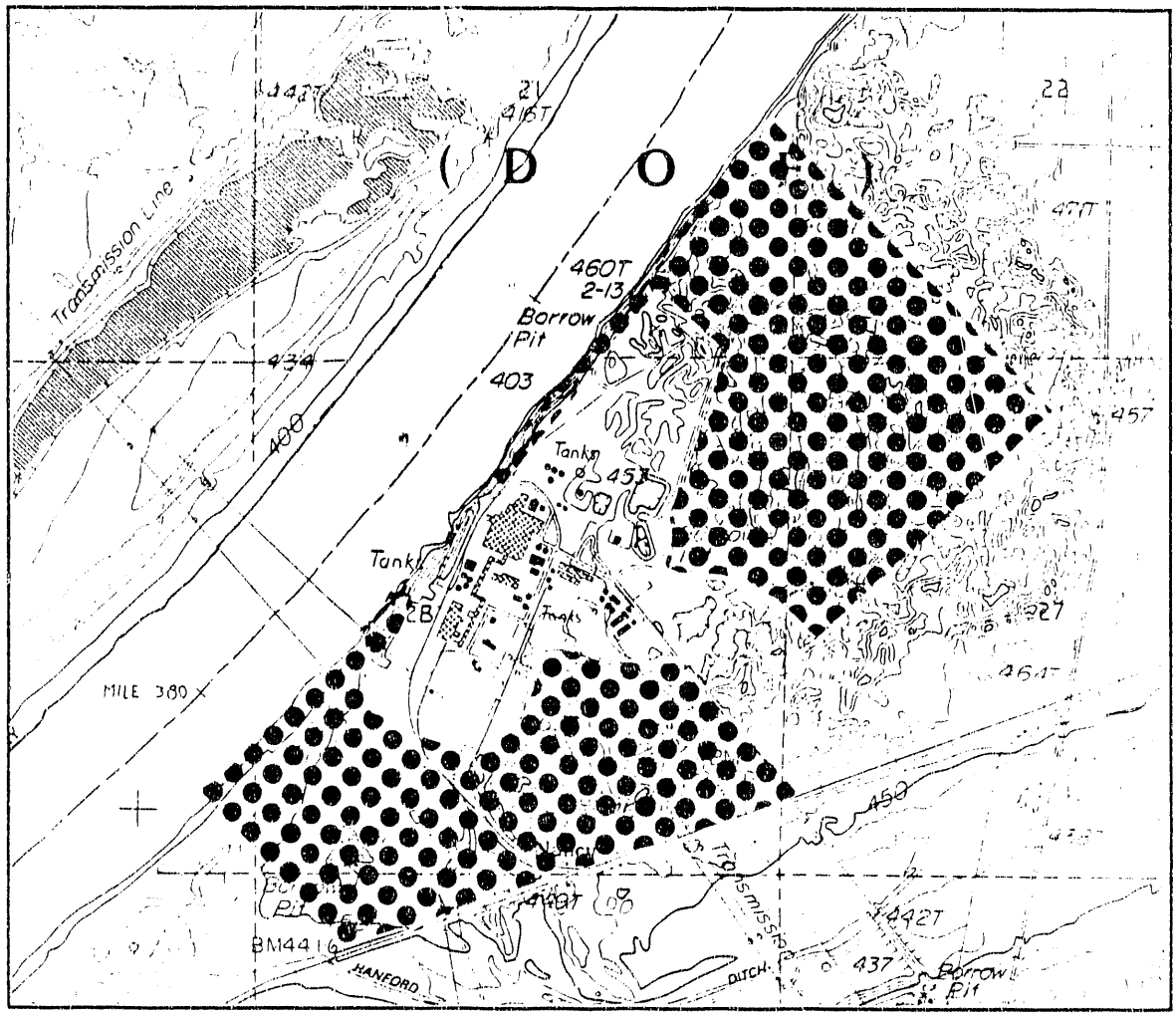


FIGURE C.6. 100-B Reactor Survey Area on a Portion of the USGS Coyote Rapids 7.5-min Quadrangle

# APPENDIX D

## ABSTRACTS OF ARTICLES AND PAPERS WRITTEN BY HCRL STAFF IN FY 1991

APPENDIX D

# ABSTRACTS OF ARTICLES AND PAPERS WRITTEN BY HCRL STAFF IN FY 1991

## A HISTORY OF CULTURAL RESOURCES MANAGEMENT AT THE U.S. DEPARTMENT OF ENERGY'S HANFORD SITE, WASHINGTON

*Northwest Anthropological Research Notes*, in press.

by James C. Chatters

The U.S. government has managed the Hanford Site in south central Washington since the land's acquisition in 1943. Closure and surveillance of this huge tract have protected areas of archaeological and cultural importance from much of the development and vandalism that have occurred elsewhere in the lowland Northwest. Efforts to manage this cultural resource base have a long and checkered history. In the late 1980s an extensive state-of-the-art management program was developed by the U.S. Department of Energy's Richland Operations Office in collaboration with historic preservation officials and area Indian tribes. Although often sporadic, earlier cultural resource management efforts appear to have left a well-preserved legacy of archaeological sites and nearly pristine landscapes that constitute a valuable scientific and traditional cultural resource base.

## BISON PROCUREMENT AT TSULIM: A 2100 YEAR-OLD KILL SITE ON THE COLUMBIA PLATEAU.

Submitted to *Plains Anthropologist.*

by James C. Chatters, Sarah K. Campbell , Grant D. Smith, and Phillip E. Minthorn Jr.

Bison bones are found in Columbia Plateau archaeological sites from throughout the Holocene, yet no information on people's tactics for procuring them has yet been reported. The recent discovery of the Tsulim Site, a 2100-year-old bison kill on the U.S. Department of Energy's Hanford Site, has provided the opportunity to investigate those tactics. Analysis of stone artifacts, faunal remains, and site geology revealed that at least 8 animals were killed in the apex of a

parabolic dune during the early to mid winter by hunters using both the atlatl and dart and bow and arrow. Local topography and meteorology make it most likely that the herd was encountered in a low paleochannel, driven northward between the limbs of the dune, up the steep channel wall and into the kill area, a sort of inverted buffalo jump. Use of primarily atlatl darts to kill the bison, even though the bow and arrow were available, leads to the speculation the atlatl was the preferred implement for such large prey.

## A FISH EYE'S VIEW: SALMONID BEHAVIOR AS A MEANS OF PREDICTING ARCHAEOLOGICAL FISHING SITE LOCATIONS

*Archaeology in Washington*, Vol 4., in press; also presented at the Northwest Anthropological Conference, Missoula, Montana, April 28, 1991

by H. A. Gard

Research into prehistoric aboriginal fishing practices and locations has taken on increased importance as native salmon runs decrease and controversy over the declining resource increases, particularly with reference to guaranteed Native American fishing rights. The Hanford Reach, the last unaltered portion of the Columbia River, provides a study area where locations of archaeological fishing sites can be predicted based upon the behavior of anadromous fish and the channel morphology. Additionally, it should prove possible to determine the method of capture employed at a site by establishing what the most efficient fishing method would be for a given area. This approach provides a means of checking ethnographic information and verifying traditionally gathered archaeological data on fishing locations.

## CULTURAL VALUES REGARDING ANCESTRAL HUMAN REMAINS

Paper presented at the Northwest Anthropological Conference, Missoula, Montana, April 28, 1991

by Phillip E. Minthorn

Native ancestral human remains are held sacred among the Sahaptin-speaking peoples of the Columbia Plateau. To better understand this sacred aspect, it is necessary to examine available information that will shed light on the most basic values regarding ancestral burial sites and human

remains in general. Although it would be inappropriate to discuss all of those values, it can be demonstrated that there is a historical depth to the profound reverence accorded to the earth and ancestral burial sites.

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