APPENDIX G DAHP CULTURAL RESOURCES SURVEY COVER SHEET

CULTURAL RESOURCES SURVEY COVER SHEET

Authors: Douglas F. Tingwall, Linda Naoi Goetz, Kara M. Kanaby, and Thomas C. Rust, PhD.

Title of Report: I-405, SR 520 TO I-5 IMPROVEMENT PROJECT, CULTURAL, HISTORIC, AND ARCHAEOLOGICAL TECHNICAL MEMORANDUM

Date: July 23, 2007

Counties: King, Snohomish
Sections: 13, 14, and 24 Township: 27N Range: 4E
Sections: 29, 30, 31, and 32 Township: 27N Range: 5E
Sections: 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, and 33 Township: 26N Range: 5E
Sections: 4, 5, 8, 9, 17, 20, and 29 Township: 25N Range: 5E
Quads: Bothell (1953, photorevised 1981), Edmonds East (1953), Kirkland (1950, photorevised 1968 and 1973) Acres: 962.73

CD submitted? Yes

Does this replace a draft? No

Sites Found? Yes

TCP(s) found? No

DAHP Archaeological Site #:
45KI756
45KI757
_____
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REPORT CHECK LIST

Report should contain the following items:

- Clear objectives and methods
- A summary of the results of the survey
- A report of where the survey records and data are stored
- A research design that:
  - Details survey objectives
  - Details specific methods
  - Details expected results
  - Details area surveyed including map(s) and legal locational information
  - Details how results will be feedback in the planning process

DATA RECOVERY AT 45KI757, AN OLCOTT ISOLATE KING COUNTY, WASHINGTON

Submitted to:
WSDOT Contract Y-10400 AA

Submitted by:

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December 24, 2009

AMEC Project No. 9-915-16849-0

EXECUTIVE SUMMARY

The Washington State Department of Transportation (WSDOT) is constructing improvements to I-405, called the SR-520 to I-5 Improvement Project, in the cities of Kirkland, Bothell, and Lynnwood. Archaeological surveys of the project corridor have demonstrated that the archaeological site 45KI757 within the WSDOT right-of-way will be entirely destroyed. Under the proposed Alternatives, the site cannot be avoided. WSDOT Urban Corridors Office (UCO), in consultation with the Washington State Historic Preservation Officer (SHPO), has determined that data recovery is the only means available for mitigating construction impacts to this site.

The 45KI757 data recovery effort took place between October 9, 2009 and October 20, 2009. 19.24 cubic meters of soil was excavated to explore the site and surrounding area. Fire-altered rock was found across the site, in low concentrations. This artifact type was not associated with any cultural artifacts, but sometimes occurs in association with burned/oxidized soil or ash lenses from root burns. It is probable that these occurrences were natural and resulted from local fires. Only one cultural artifact was found during the data recovery. The tip of a Cascade-type projectile point was found in one of the block excavations on the slope on the east side of the site. The lack of association with other definitive cultural materials suggests that this is an isolated projectile point that was lost by hunters who lived in the area between 10,000 and 5000 years ago.

AMEC analyzed the artifacts that were collected during previous investigations and did not find any attributes which indicated a cultural association. Chipped cobbles had been rolled and rounded by stream action subsequent to their fracture; reported stone waste flakes lacked characteristics associated with conchoidal fracture that are necessary for that identification.

The research design for work at 45KI757 was developed to address two issues related to understanding the Olcott Phase in the Puget Sound region: chronology of this cultural phenomenon and the composition of a single-event assemblage related to this time period. The results of the data recovery provided insufficient information to address these issues; however, the presence of an isolated Cascade point provides secondary avenues for discussion. The location of the find in comparison with other similar finds in King and Snohomish counties provides information on Olcott Phase hunting practices. Like the specimen from 45KI757, other Olcott Phase projectile points concentrate on or near steep slopes, which, under the more open vegetation of the time, were probably the region's prime settings for finding feeding and bedding deer.

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1.0 INTRODUCTION

The Washington State Department of Transportation (WSDOT) is constructing improvements to I-405, called the SR-520 to I-5 Improvement Project, in the cities of Kirkland, Bothell, and Lynnwood. Archaeological surveys of the project corridor have demonstrated that the archaeological site 45KI757 within the WSDOT right-of-way will be entirely destroyed. Under all proposed project alternatives, the site cannot be avoided. WSDOT Urban Corridors Office (UCO), in consultation with the Washington State Historic Preservation Officer (SHPO), has determined that data recovery is the only means available for mitigating construction impacts to this site.

The 45KI757 data recovery effort was conducted between October 9, 2009 and October 20, 2009 by AMEC Earth& Environmental, Inc (AMEC) under contract Y-10400, Task AA. This document describes the site and presents the methods used to excavate the site, the analysis of results from that excavation, and a discussion of the findings.

1.1 Project Description

Site 45KI757 is documented in Department of Archaeology and Historic Preservation site inventory records as a small lithic scatter situated on the south wall of the Sammamish River valley on the east side of I-405 between the NE 160th St. and SR 522 interchanges (Appendix A). It sits on a narrow, sloping bench overlooking the valley near the head of a small, unnamed creek that flows north toward the Sammamish River (Figure 1). The site was discovered in 2007 by archaeologists from Landau, Associates (Landau), who made the discovery during a subsurface archaeological survey conducted as part of the National Historic Preservation Act, Section 106 compliance effort for the SR-520/I-5 Improvement Project. The site is located in an area that is considered to be a landslide concern and WSDOT plans to stabilize this location by constructing a retaining wall and sound barrier.

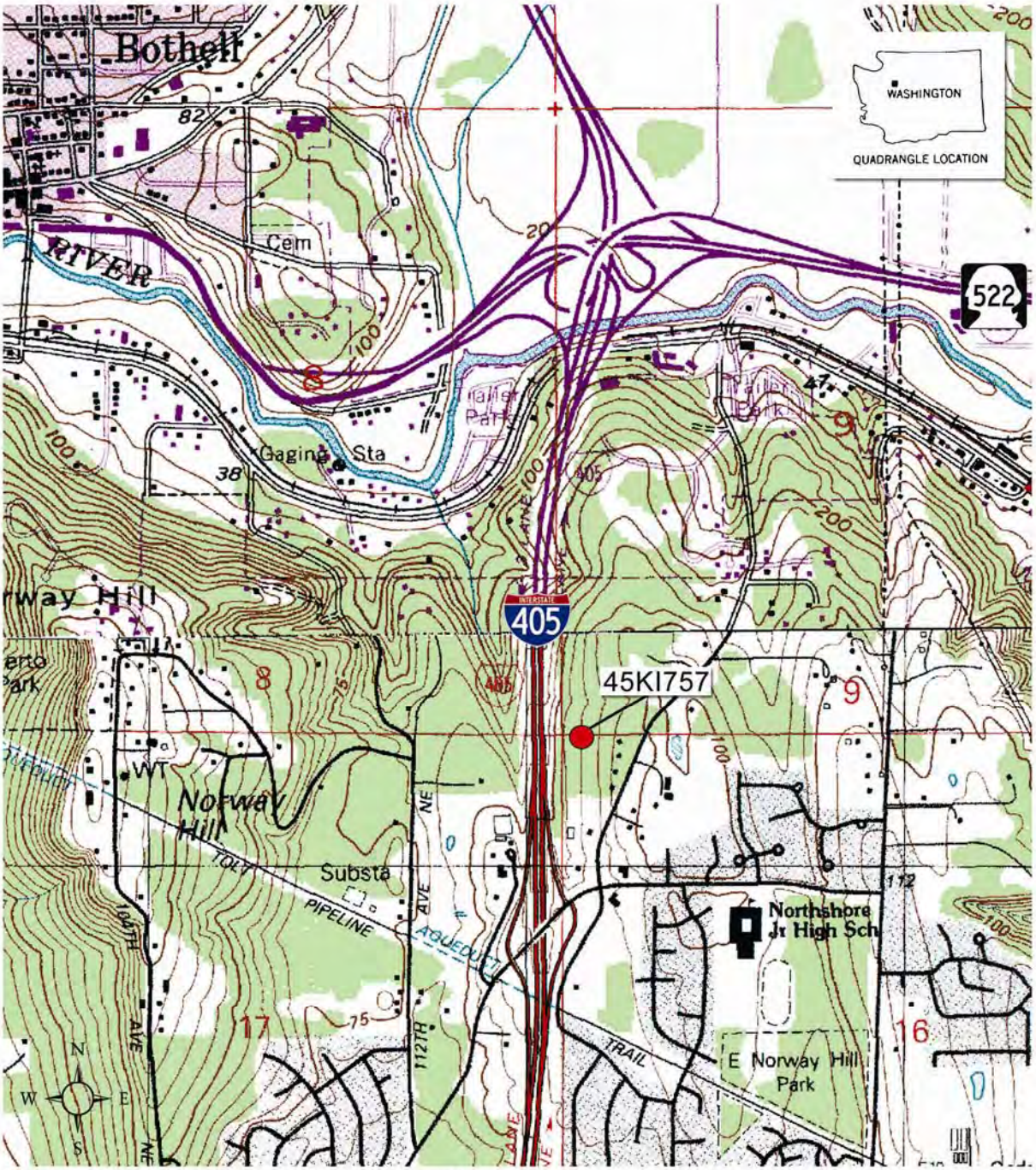
In 2007, AMEC was tasked by WSDOT to develop a research design for this data recovery effort (Chatters 2007). That design formed the basis for a Memorandum of Agreement (MOA) for mitigation of expected adverse effects to an historic property. Signatories to the MOA were WSDOT, DAHP, the Federal Highways Administration, Muckleshoot Indian Tribe, and Snoqualmie Tribe of Indians. Under that agreement, artifacts from the project are to be curated alternately by the two tribes.

2.0 ENVIRONMENTAL CONTEXT

2.1 Geomorphology

Site 45KI757 occupies a narrow, westward sloping bench on the east wall of a small, unnamed steep-walled drainage that flows north into the Sammamish River. At an elevation of

Township 26 North, Range 5 East



Source: USGS Bothell (1953; photorevised 1981) 7.5 minute topo and Bellevue North (1982) 7.5 x 15 minute topo

Note: Not to scale and offset in image is due to the merging of two topographic quads.

FIGURE 1

Project Vicinity Map

DATA RECOVERY AT 45KI757

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59.5 meters (195 feet) it sits 50 meters (165 feet) above the confluence of North Creek and the Sammamish River. It looks out on the broad, steep-walled, north-south trending North Creek Valley and the narrower, equally steep-sided Sammamish River Valley. The Sammamish River originates in Lake Sammamish, from which it flows north through its own broad valley to its meeting with North Creek. West of the confluence, the Sammamish flows another few kilometers before emptying Lake Washington. South of the site is a broad, rolling upland dotted by small ponds and marshes.

Local topography and soils were formed during the late Pleistocene by repeated glacial advances from the Fraser Valley to the north and the Cascade Range to the west. As glaciers advanced, their seasonal meltwaters produced broad fluvial plains of sand and gravel. The weight of ice more than a mile thick depressed the earth's crust. As glaciers melted, they left behind hummocky, poorly sorted drift plains and more-level outwash plains. The result was a series of broad, north-south trending ridges, separated by broad troughs. In the first millennia after the melt, the land remained depressed, allowing first a large freshwater lake and later sea water to fill the troughs. Runoff carved deep channels into the unconsolidated drift and effluvium. By around 9000 years ago, the land had returned to near its present level. From that time until around 5000 years ago, sea level stood higher than it does today, making shallow fjords of nearby Lake Washington and the Duwamish and Snohomish River Valleys. The North Creek and Sammamish Valley, however, appear to have remained free of salt water.

2.2 Geology and Soils

The geologic map for 45KI757 vicinity indicates that surface geologic units consist of advance outwash deposits consisting of dense to very dense, stratified sand with gravel and some cobbles (GeoEngineers 2005). Geotechnical studies along the east side of I-405 have revealed that layers of fine-grained silt and sand are predominant (GeoEngineers 2005). Historically, the steep slopes along the current Interstate alignment were unstable and subject to landslides particularly associated with seismic activity (WSDOT 2007). Groundwater seepage along the contact between glacial advance outwash sand and an underlying transitional clay bed caused erosion of the sandy soils resulting in undercutting, shallow sliding, and block failures. Local landforms are indicative of multiple prehistoric landslide events (GeoEngineers 2005). Site 45KI757 is located on one such the upper, outer edge of a large rotation block that resulted from one such landslide. A small ridge that parallels the slope just above the site is the outer edge of the head of the slump block.

With steep slopes and unconsolidated sandy sediment, the surface of 45KI757 is likely to have been somewhat mobile. At any time the surface was denuded of vegetation, such as after a fire or logging event, or even a large tree fall, it is likely to have been subject to slope creep and sheet erosion. Evidence of such erosional events was expected to be seen during excavation.

The 1973 Soil Conservation Service survey manual for King County identifies the predominant surface soils in the site locality as part of the Kitsap Soil series. Kitsap silt loam is a very deep, moderately well drained soil that is found on terraces and formed in glacial deposits (SCS 1973). The surface layer is dark grayish-brown, dark yellowish-brown and dark brown silt loam

to a depth of 60 centimeters (33 inches). The substratum extends to depth of 120cm or more (60 inches) and is a light olive brown silty clay loam (SCS 1973). Some variation from these generalized soil descriptions occurs at the local level. Soils on-site show little clay in their composition, consisting predominantly of silty fine sand and fine sand (see Section 6.2 Stratigraphy).

2.3 Climate and Vegetation

The regional climate is influenced by the Puget Sound on the west and the Cascade Mountain Range on the east. The maritime air mass, originating over the Pacific Ocean and flowing northwesterly, influences the climate throughout the year. Warm, dry summers and wet, mild winters are characteristic climatic conditions for the Puget Sound region. The annual precipitation at Bothell is 124 centimeters (49 inches), with more than half falling between October and March as rainfall. Temperatures range from 75 degrees F in summer to 35 degrees F during winter (www.weather.com). In pre-contact times this moist, temperate climate supported a lush plant community that was valued by both human and animal foragers for subsistence.

A western hemlock forest, part of the Western Hemlock Zone of Franklyn and Dyrness (1973) occupies the west facing slope on which 45KI757 lies. Approximately 80 year-old hemlock and Douglas fir trees make up the overstory, with a few small red alders and bigleaf maples growing in recently exposed openings. Bracken fern, salmonberry, and trailing blackberry dominate the understory, which also contains scattered clumps of dogtooth hazel, salal, stinging nettle, and lady fern.

Historic climatic and ecological changes in this region have been documented through analysis of the pollen records of regional lakes. Because changes in vegetation are influenced by climate, particularly temperature and precipitation, analyses of pollen records are useful indicators for understanding the timing and nature of these events. The pollen sequence from Lake Washington shows that during the early post-glacial period of 16,000 to 13,0001 years ago temperatures increased appreciably (Leopold et al. 1982). Sedge and grass species that initially colonized the landscape as the ice receded were quickly replaced by open forests of lodgepole pine, Douglas fir, and true fir. This flora indicates conditions that were still relatively cool and moist. From 13,000 to 7,800 years ago, Douglas fir, alder, and bracken fern replaced the local flora indicating a shift to drier, and perhaps warmer conditions.

Recent exposures excavated into lowland peat bogs located in King and Snohomish Counties have provided further insights into the character of early Holocene plant communities. At Forbes Lake in Kirkland (Chatters 2007) and at Lower Noble Bog in Granite Falls, AMEC staff have observed numerous charcoal layers indicating fires on a massive scale from an estimated 13,000 years ago until a few centimeters above the Mazama ashfall, which dates to 7700 years ago (Bacon 1983). This corroborates the pollen evidence for drier conditions and more xeric-adapted vegetation at that time. Vegetation of the Bothell vicinity at that time was probably more

[1] Dates referred to in this report are presented in sidereal (solar) years rather than radiocarbon years.

like the open prairies with scattered mixed deciduous and conifer woodlands seen historically farther south around Fort Lewis, or even farther south around Battleground and Vancouver, Washington. Such large open prairies, associated with an open forest environment, would have provided plant resources such as camas and acorns (Blukis-Onat et al. 2001).

After 7,800 years ago, western red cedar and western hemlock became increasingly prevalent in Puget Sound forests, although conditions continued to be warmer and forests were more open than those of the present day until around 5200 years ago (Brubaker 1991, Leopold et al. 1982). By 5200 years ago, climatic conditions had changed once again, becoming more similar to the conditions we experience today. Ecologically the vegetation community shifted after 5200 years ago from an open forest environment to a closed forest.

3.0 CULTURAL CONTEXT

3.1 Prehistory

The first human occupation of Washington State may date back about 14,000 years to the Manis Mastodon site at Sequim, where a possible bone point and the spirally fractured bones of a mastodon indicate possible human hunting and butchering (Gustafson et al. 1979). Artifacts of the Clovis culture, which has been dated to between 12,800 and 13,200 years ago elsewhere in North America (Waters and Stafford 2007), have been found in isolated locales in southern and central Puget Sound (Carlson 1990), but no campsite of this culture has yet been found in Washington. The Richey Roberts site is the sole in situ discovery of Clovis archaeology in Washington (Gramly 1991; Mehringer 1989). Several similar early sites that are coeval in time with or even possibly predating Clovis in the region are presented in recent literature (Davis and Sisson 1998; Gustafson et al. 1979; Huckeberry et al. 2003). This early culture is generally believed to have relied heavily on big game for subsistence, although there is evidence they also relied on plants and smaller animals (Cannon and Meltzer 2004).

The post-Clovis prehistory of Western Washington has been divided into three periods designated simply Early, Middle, and Late. The early period, which lasted from approximately 12,000 to 7,000 years ago, includes the Proto-Western and Old Cordilleran Traditions (Matson and Coupland 1995). Sites left by these traditions typically occur on high marine and river terraces, sometimes at a significant distance from modern water courses, and consist of concentrations of cobble cores; flakes; a variety of scraper forms, large ovate knives; and broad-stemmed and leaf-shaped projectile points (Kidd 1964; Wessen 1990). Locally, the Old Cordilleran Tradition is known as Olcott. People are thought to have relied more on inland hunting than on fishing and shellfish procurement for subsistence, although finds along the British Columbia Coast indicate aquatic resources were sometimes important (Matson and Coupland 1995). Wessen (1990) suggests that Olcott people were adapted to and made significant use of marine resources, but the archaeological vestiges of that use have been submerged under rising sea levels and buried under meters of fluvial sediments in major river valleys.

The Middle Period, lasting from 7,000 to 3,500 years ago, incorporates a continuation of the Old Cordilleran Tradition/Olcott until around 4,500 years ago, but few sites can be attributed to this time interval (Morgan 1999). Two exceptions appear to be the Stuwe'yuqw (45-KI-464) (Blukis-Onat et al. 2001) and Marymoor (45-KI-9) (Greengo and Houston 1970) sites, which are located in the Tolt and Sammamish River basins respectively. Sites dating after 4,500 years ago are more common and technologically more complex.

Human lifeways changed radically in the Late Period (3,500 to 150 years ago), as people focused even more strongly on aquatic resources; the number and diversity of sites markedly increased. People maintained permanent villages on the coast and along the lower reaches of inland rivers (Chatters 1989; 1990). They used these as home bases and storage warehouses for fish, shellfish, game, and plant foods systematically amassed during the warm seasons. Huge shell-middens built up in saltwater settings (e.g., Grabert 1988). Cemeteries and petroglyph sites are often associated with villages, midden sites, and fishing camps, and petroglyphs occur occasionally in higher montane settings. Blazed cedars, stripped of bark for basketry or with planks removed from their living trunks, can still be found throughout the lowlands (Gunther 1973). Small open camps, left by hunters, fishers, plant gatherers, and traders have been found from the lowlands well into the subalpine zone of the mountains, but usually remain close to larger, permanent sources of water. They typically are concentrated along trade routes that linked communities living east and west of the Cascades (Burtchard 2003). People usually strayed from larger streams and lakes only in the larger prairies of the lowlands, such as those around Fort Lewis and Sequim (e.g. Morgan 1999), in the huckleberry fields of the uplands, and near natural outcroppings of favored tool stone. Open, temporary camps, manifest as lithic scatters, are common in these settings.

3.2 Olcott in Puget Sound Prehistory

The artifacts that have thus-far been reported at 45KI757 consist of flaked cobbles, lithic debitage, and FAR. Such artifacts, found on high benches or terraces overlooking formerly or currently estuarine drainages in the central Northwest Coast are traditionally assigned to what Carlson (1990) calls the Pebble Tool Tradition. In Puget Sound, manifestations of this tradition are usually identified with the Olcott Phase (Butler 1961). Manifestations of the Olcott Phase contain cobble cores, cobble flakes, large bifaces, leaf-shaped or lanceolate projectile points, and occasional end scrapers, usually made from basalt, dacite, or some other crystalline volcanic rock (Mattson 1985; Wessen 1993). Sites attributable to this phase are commonly found around upland ponds and on elevated terraces overlooking Puget Sound and the large river valleys tributary to it (e.g. Blukis-Onat et al. 2001; Mattson 1985; Stilson and Chatters 1981). The Olcott Phase shares most characteristics with the Cascade Phase of the Southern Columbia Plateau, which led Butler (1961) to include both within his Old Cordilleran Culture.

Olcott has been recognized as a distinct cultural period in the Puget Sound region since the early 1960s (Butler 1961; Kidd 1964), yet this cultural manifestation remains little known beyond a set of artifact lists. Identified first at a site along Jim Creek in the Stillaguamish River Basin, Olcott is common on higher terraces and rolling uplands of stream systems on both sides of

Puget Sound, extending well into the higher mountains. Although dozens of Olcott sites have been documented ((Blukis-Onat et al. 2001) few have been dated by any means other than artifact style and the presence of thick weathering rinds on the artifacts. Consequently, the chronology of Olcott remains one of the key mysteries of Western Washington archaeology. With the exception of the Stewe'yuq (Tolt) Site (Blukis-Onat et al. 2001) and a limited assemblage from Layser Cave (Daugherty et al. 1987), no chronometric dates have yet been obtained on manifestations of this phase. Radiocarbon of charcoal and uranium series dating of weathering rinds on artifacts of volcanic rock place the primary occupation of Stewe'yuq sometime between 3600 and 7700 cal BP. Olcott occupation of Layser Cave dates between 6000 and 7500 cal. Along the lower Fraser River Valley, however, Olcott-like assemblages have been found in dated stratigraphic context at the Milliken (Borden 1960) and Glenrose Cannery Sites (Matson 1996) where they date as old as 10,000 years.

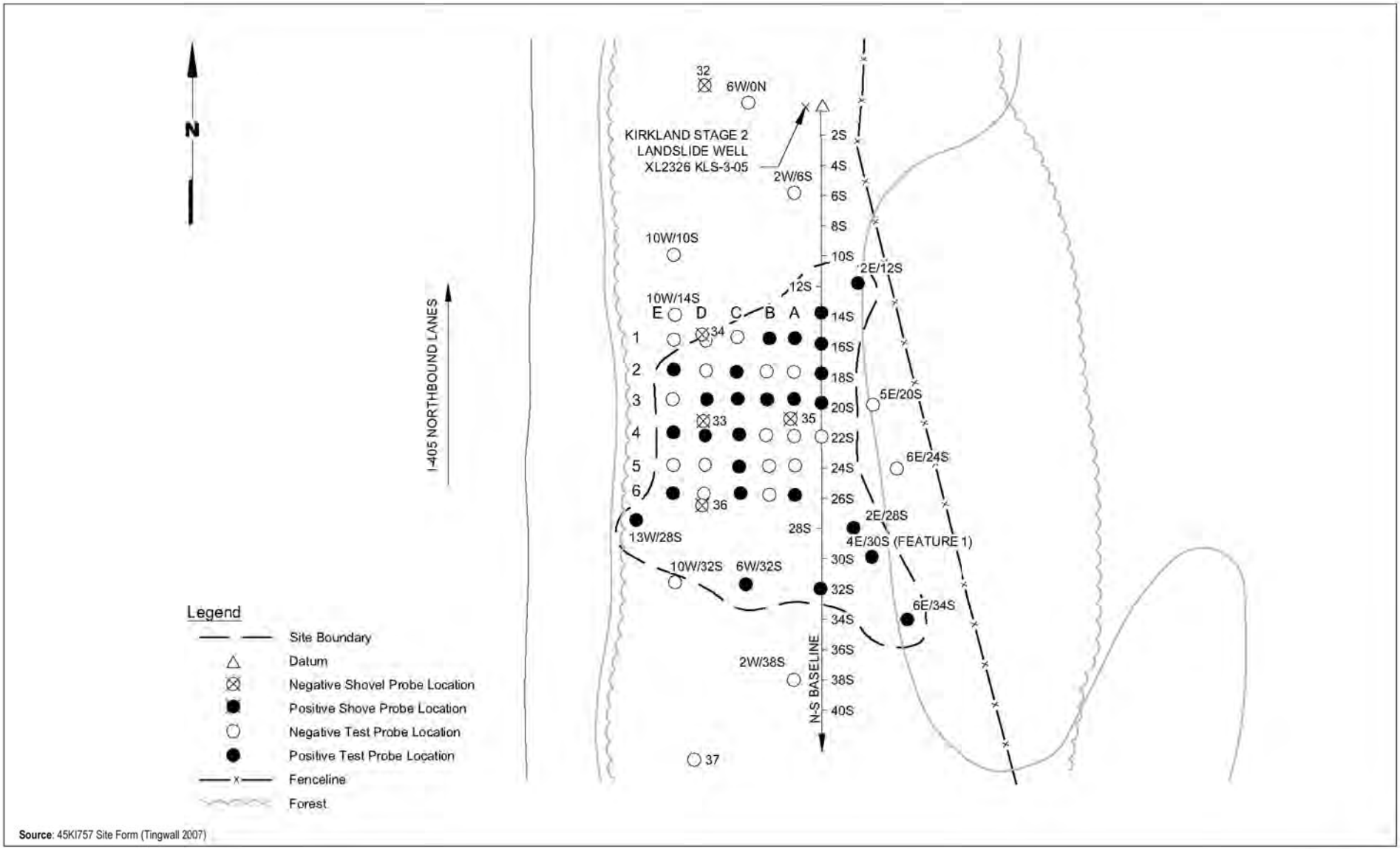
Most Olcott occupations that have been intensively studied, including the Olcott type site (Butler 1961), Stewe'yuq (Blukis-Onat et al. 2001), the Squirrel Site (Lewarch and Benson 1989a), the Vine Site (Lewarch and Benson 1989b), Layser Cave (Daugherty et al. 1987), Slab Camp (Gallison 1994), and Beech Creek (Chatters and Prentiss 2008; McClure 1992), were used repeatedly and represent a variety of subsistence and tool production activities performed over long periods of time. Because the low sedimentation rates and extensive bioturbation of western Washington soils, separate occupation episodes are inextricably co-mingled. Small sites with low artifact counts are not usually subjected to intensive study, although, they have the most potential for information about the nature of individual Olcott Phase occupation events. To date, only one such site, 45SN48N, has been thoroughly excavated and described (Stilson and Chatters 1981). Thus, data from 45KI757, as initially reported, had the potential to double the amount of information currently available about the characteristics of an assemblage produced by a single Olcott Phase habitation episode.

3.3 Previous Investigations at 45KI757

On November 11, 2007, Doug Tingwall and Kara Kanaby, archaeologists at Landau Associates, explored the narrow bench on which site 45KI757 was found by excavating a line of 30-centimeters (cm) diameter shovel tests at 20 meter intervals (Figure 2). When one of their Shovel Tests (STP 33) encountered what appeared to be a flaked quartzite cobble, Landau excavated additional tests at 5 meter intervals to the north, south, and east, reporting additional archaeological materials.

Once the locality had been designated a site, Landau conducted systematic test excavations. Working from a north-south baseline, they excavated 30-cm diameter shovel tests every two meters over an area of 12 meters north-south by 10 meters east-west. They placed an additional 14 shovel tests judgmentally. Landau excavated a total of 50 shovel tests. WSDOT archaeologists excavated one additional shovel test at approximately 0 south along the baseline.

Shovel tests ranged from 25 to 65 cm deep in what appears to be a sandy, glaciofluvial deposit. Soil at the site is a well-developed podsol with a disturbed E-horizon and a B-horizon rich in



Source: 45KI757 Site Form (Tingwall 2007)

0 5 10
Scale in Meters

FIGURE 2

2007 Excavation Locations by Landau Associates

Data Recovery at 45KI757

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iron. Excavators reported fire-affected rock (FAR); flaked cobbles; a schist knife; preforms of slate and meta-sedimentary rock; and debitage of schist, slate, and other metasedimentary rock. During a later site visit, WSDOT archaeologist, Ken Juell, found another flaked cobble at 0 south. Altogether, nearly 100 artifacts were reported from the site. They occurred between the surface and 24 inches (60 cm) below surface. WSDOT and AMEC archaeologists inspected the collection from the site and determined that the majority of the reported artifacts were natural shards of platy stone. Sixteen items appeared to have a possible cultural origin, however, including fire-altered rock, an anvil stone, and flakes and flaked cobbles of igneous and meta-sedimentary rock.

As known from the distribution of artifacts reported by Landau, 45KI757 extended 32 meters north-south by 12 meters east-west. Discovery of an artifact in the 0 south unit by WSDOT, however, indicated the site may extend farther to the north. The site may be conterminous with the bench landform, which continues north for approximately 30 meters. The setting of the site and its long history as a bio-active forest floor precludes the possibility for geological stratification. Aside from soil creep, the surface is unlikely to have received new sediment since the erosion of the drainage shortly after the end of the glacial melt-off; artifacts vary in depth primarily as a result of bioturbation.

4.0 RESEARCH DESIGN

The small, spatially discrete assemblage from 45KI757, as originally reported, was thought to represent a single occupation event or a few events that occurred over a brief time interval. If 45KI757 could be attributed to the Olcott Phase and can be dated using thermoluminescence (TL) methods, this data recovery effort might have been able to make a significant addition to what is known about the age of the phase. Successful TL dating could encourage other area researchers to use the method, leading to a great improvement in the archaeological chronology of western Washington.

The research design for work at 45KI757 was developed to address two issues related to understanding the Olcott Phase in the Puget Sound region: chronology of this cultural phenomenon and the composition of a single-event assemblage related to this time period. As more was learned about the site and its artifacts, it became apparent that these questions could not be addressed here. The site did prove to date to the Olcott Phase, but it contributed to an understanding of hunting patterns rather than the issues addressed in the original research design.

5.0 METHODS

In 2008 AMEC developed a Data Recovery Plan (Appendix B) for 45KI757. Data recovery efforts proceeded in October 2009, following the methods outlined in that plan. AMEC Field Director, Lara Rooke, M.A., R.P.A., and archaeologists Emily Scott, Tyler McWilliams, and Dan Kristmann completed the excavations between October 12th and October 20th, 2009. The data recovery effort consisted of mapping, exploration, and focused excavations. The rationale for the placement of the units and the method of excavation and documentation of each is

described below. All notes, completed excavation forms, and photographs from the data recovery effort are on file at AMEC's Bothell, Washington office.

5.1 Mapping

A high-resolution (20-cm interval) topographic map of the bench and its immediate surroundings was created using a Nikon Total Station and TDS Data Collector (Figure 3). This map covers approximately 80 meters (262 feet) along the long axis of the site and 60 meters (197 feet) perpendicular to that axis. The map was developed as a means for demonstrating the precise relationship between the archaeological explorations and the landform on which they rest.

5.2 Exploration

As shown on Figure 2, the location of artifact concentrations from the 2007 Landau excavations was determined precisely for the area through systematic shovel testing, but WSDOT's discovery of a flaked cobble north of the 2007 work raised the possibility that the artifact distribution might extend an undetermined distance beyond the area that was tested. To determine if additional artifact concentrations existed, AMEC archaeologists hand-excavated 35 additional shovel tests and a series of four 50-cm (20-inch) wide trenches with a total combined length of 37 meters (122 feet).

The 35 shovel probes were placed in locations to the north and east of the established site boundaries. These probes were located in areas where previous testing was either not completed, or data was insufficient for establishing the site boundaries. Shovel tests measuring 40-cm (16 inches) in diameter at the surface and excavated down 60-cm (24 inches) below the surface were placed judgmentally to assist with site boundary determination. Where possible, shovel test locations conformed to the existing site grid. A shovel/auger probe form was completed for each of these tests to record the stratigraphy and any inclusions that were observed.

Once site boundaries were established through the shovel probe explorations, trenches were to be placed to seek artifact concentrations, with their length and location taking into account the subtleties in terrain slope and obstacles such as standing trees. AMEC excavated four - 50 centimeter (20-inch) wide trenches across the terrace, placing three outside of the site boundary, as defined by Landau in 2007, and one within the central area of the site boundary. Two trenches were placed at the north end near the site datum, and one at the south end. Placement of the trenches was chosen to develop a geologic profile for the site and to explore areas of the landform that had received little attention during the initial archaeological investigation. Three of the trenches (1, 3, and 4) provided an almost continuous cross section of the site location and land form (Figure 4). Trench 2 was placed parallel to trench 1 to explore the widest part of the terrace.

Horizontal provenience control was maintained in 1-meter (3.25-foot) intervals. Excavation of each unit engaged the skim-shoveling method, with each 1-meter (3.25- foot) long horizontal segment removed as a single vertical unit. Units were excavated in a manner that enabled estimation of the approximate depth of individual artifacts or artifact clusters to within 10

centimeters (4 inches). Sediment was screened through 1/4 inch mesh; all lithic artifacts and FAR was collected for analysis. A unit level form was completed for each 1-meter (3.25-foot) segment and a stratigraphic profile for one long side wall of each trench was drawn, described in NRCS soils terminology, and photographed.

5.3 Block Excavations

In order to obtain a larger sample of artifacts and gain more information about potential features identified during the 2007 explorations, block excavations were conducted in areas adjacent to finds made previously by Landau and WSDOT. Two 2-by-2 meter block units were placed in areas where Landau had recovered artifacts and FAR. These units were excavated to explore a larger area than the initial shovel probes provided, so that we could obtain a clearer understanding of the stratigraphic context for the 2007 finds.

Each 2-by-2 meter square was excavated in a single vertical unit level to a culturally sterile depth or 60 cm below ground surface, within the weathered glacial sediments. Units were excavated in the same manner as the trenches to enable estimation of approximate depth of individual artifacts or artifact clusters within 10 centimeters (4 inches). Emphasis was placed on maximizing the sediment volume sampled given the site's open setting and lack of cultural horizons exposed during site characterization. The block units were excavated adjacent to Landau's Unit 8W/22S and Units 2-4E/28-30S, all of which produced FAR (Tingwall 2007). Provenience was maintained by square meter grid unit. For consistency, vertical provenience, excavation, documentation, and screening was addressed in the same manner as the trench explorations.

6.0 RESULTS

6.1 Excavations

AMEC excavated a total of 19.24 cubic meters during the October 2009 data recovery work. This included 35 shovel probes, 4 trenches, and 2 block units. During the field work, inclement weather and poor lighting conditions, primarily due to the closed forest canopy above, did not hamper excavation. The sandy sediments provided effective drainage of slope run-off and precipitation; however, poor lighting conditions impacted the quality of the photographic documentation.

The data recovery plan was modified slightly as work progressed. The lack of artifacts and cultural strata in our initial shovel probes and trenches resulted in a shorter field project than planned. Only 37 meters (122 feet) of trenches were explored rather than 60 meters (200 feet) as presented in the work plan (Appendix B: Data Recovery Plan). Archaeologists did recover several pieces of schist and meta-sedimentary materials similar to the objects recovered in the 2007 explorations; however, none of these materials exhibited the characteristics that would define them as culturally modified stone tools and/or debitage. Flake scars, platforms, and bulbs of percussion were absent from all of these recovered cobbles and stone fragments.

Only one artifact was found. A broken tip from a serrated Cascade point was recovered from Unit 1, a 2-by-2 meter unit that was excavated on the slope to the east of the bench where the site rests.

The following section describes the nature and extent of the data recovery excavations, site stratigraphy, depositional processes, and provides a description of the artifact that was found.

6.1.1 Shovel Probes

Fifteen shovel probes were excavated to the north of the site boundary extending the existing baseline and grid from the previous site work. The probes were placed on a low flat bench, overlooking Interstate 405. The probes were excavated to an average depth of 60 centimeters below the ground surface. The sediments observed within the probes exhibited a common stratigraphic sequence (Appendix C: Table 1). Evidence of pedogenic horizonation was observed in the profiles of each of the shovel probes. Leaching of minerals downward through the horizons and a fining-upward sequence of sediments in each probe suggest that the landform has been stable long enough for pedogenic processes to have developed.

Rounded and sub-angular pebbles and gravels decreased in presence throughout the stratigraphic column. FAR was noted in a few of the shovel probes, but was always associated with partially burned roots. No artifacts were present. The stratigraphic profile for the site is presented in section 6.2 below and photographs are located in Appendix D.

Another 20 shovel probes were placed randomly, outside of the existing baseline grid, to the east of the site boundaries (Figure 3). This area was not tested during the initial investigations as it was not part of the original Area of Potential Effects (APE). A chain link fence that runs north-south along the eastern edge of the site formed the original APE boundary. Since the original survey, WSDOT expanded the right-of-way (i.e., APE) to include a larger area. The landform on the east side of the fence is steeper and more undulating than the topography of the bench below. It appears that this topography may represent a slump or block failure from a previous landslide. Evidence of logging was present across this portion of the APE. Tree stumps and discarded logs made the systematic placement of probes challenging. The probes were placed across the top of the ridge, and additional probes were placed around the original site datum where a cobble tool was reported to have been previously documented.

The stratigraphic profile within these additional 20 probes did not vary significantly from those excavated on the lower bench to the north. A slightly thinner A-horizon and the complete lack of FAR were the only notable changes from the stratigraphic description presented below. No artifacts were found in any of these probes.

6.1.2 Trenches

Four 50-centimeter wide trenches were excavated, removing a total volume 10.73 cubic meters of sediment. As our shovel probe explorations did not identify any additional artifact concentrations to the north or east of the site, the trenches were placed in a north-south direction across the terrace where the site was initially documented. Placement of the trenches

was chosen to provide an almost continuous geologic cross-section of the site. Three trenches were placed outside of the site boundary; two were placed at the north end near the site datum on the widest section of the site, and one at the south end (Table 1). The fourth trench was placed within the main artifact concentration area as defined by Landau (Figure 2).

Table 1 Trench Coordinates

Trench	North/South Coordinates (meters)	East/West Coordinates (meters)	Volume Excavated (m^3)
1	0 – 10 south	2.5 -3 west	3.01
2	1 north – 9 south	7-7.5 west	2.93
3	14 – 24 south	3 -3.5 west	3.00
4	32 – 38 south	6.5 -7 west	1.80

The stratigraphic profile (described in Section 6.2) was consistent in each of the trenches, with variation only resulting from tree throw events and historic logging activities (Figure 4; Appendix C: Table 2, 3, 4, and 5; Appendix D)). FAR was found in several locations, however it was always found in association with partially burned roots and within the A and B horizons. No artifacts, FAR, or larger than pebble size rocks were found within the C-horizon.

As our shovel probes and trenching explorations did not produce any new artifacts, our scope of work was reduced and investigations began focusing on block excavations in areas where Landau had identified possible archaeological features.

6.1.3 Block Excavations

Two 2-by-2 square meter block units were excavated adjacent to Landau's Unit 8W/22S and Units 2-4E/28-30S (Figure 2). Both of these locations were identified based on the potential location of archaeological features; possible hearths containing FAR. Unit 1 was located between 2E/28S and 4E/30S, and Unit 2 was placed to the southwest of 8W/22S.

Unit 1 is located on a slight slope above the terrace. The stratigraphy at Unit 1 was more complex than that seen during the excavations across the rest of the site (Photograph 1). Sediments in this area have been subject to slope run-off and block slumping events. The profile shows two sequences of colluvium overlying buried organic materials (Figures 5 and 6). In addition, bioturbation and episodes of root burning are present. Three soil horizons were observed, each consistent with the texture, color and composition of those horizon's observed in the trench profiles. All areas where FAR was recovered were found in direct association with recent root burning, tree throws, and/or with no additional cultural evidence.

A Cascade style serrated projectile point tip (45KI757-1) was found in this unit (see Section 6.3 for description). It was found 5 centimeters north of the south wall of the unit at the interface between an A horizon that was buried below colluvium, and the B horizon. No charcoal or FAR was found in association. In light of the absence of recovered cultural artifacts, this find appears to be an isolated artifact associated with seasonal hunting activities that was buried during a localized landslide or slope run-off event.

Unit 2 is located on the edge of the terrace to the south of Landau shovel probe at 8W/22S (Photograph 2). The probe is located on a gradual slope in an area of disturbance. An overturned stump sits in the northeast corner and an historic logging access road crosses along its western edge. The A-horizon was slightly thicker at this location, and tree throw occurrences presented an undulating boundary between the iron rich B-horizon and the C-horizon below. Rounded and sub-angular pebbles and gravels decreased in presence throughout the stratigraphic profile. Gravels and pebbles were distributed throughout the sediments decreasing in volume in the lower strata.

Photograph 1 Unit 1 east wall.

Photograph 2 Excavation in progress at the Unit 2 block.

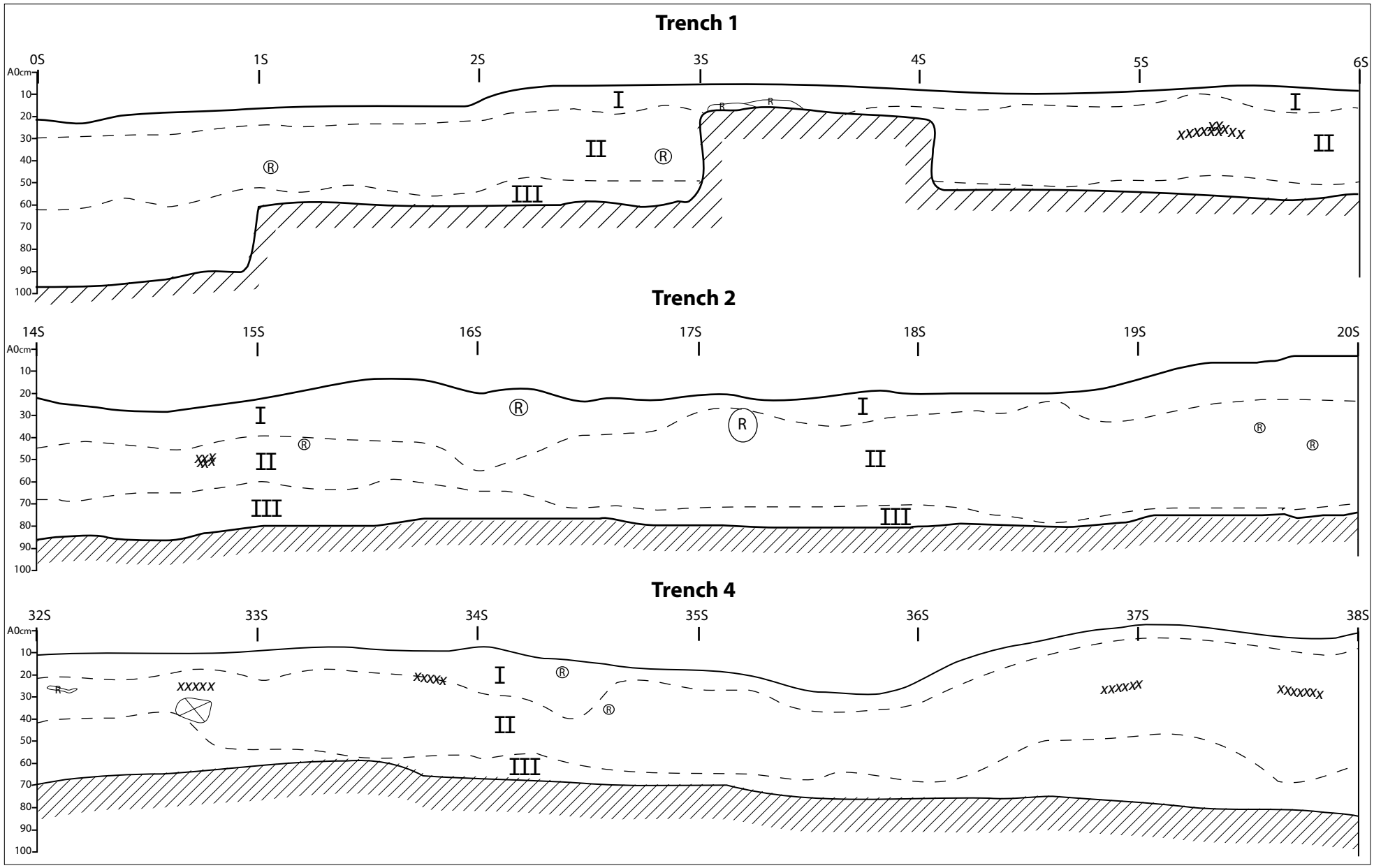
6.2 Site Stratigraphy

The sediments at the site consist uniformly of sandy, glaciofluvial deposits modified by soil development processes. Soil at the site is a well-developed spodosol with a disturbed E-horizon and a B-horizon rich in iron. .The sediment profile was similar across the bench surface (Figure 4). The A-horizon (Stratum I in the profiles) is a dark olive-brown, organic-rich, silty-sand with root intrusions and charcoal flecking underneath a thin layer of duff (5-15 cm thick) (10YR3/3). It is massive, nonsticky and nonplastic. An abrupt boundary separates the A-horizon from the B-horizon. The sediments in this stratum are a yellowish brown (10YR4/4), fine silty-sand, with roots and charcoal flecking present (10-30 cm thick). The soil's color is due to oxidation of resident iron and precipitation of iron weathered from the A horizon. Again, the soil appears to lack ped structure (although the high degree of moisture probably contributed to this at the time of excavation) and is only very slightly sticky and plastic. Large tree roots and krotavina representing older, rotted roots, some of them containing charcoal and burned earth, are abundant in this horizon. As a result of extensive bioturbation, bedding structures are entirely absent. This horizon grades gradually into the parent material/C-horizon. The C-horizon is an olive brown (2.5Y5/4), very fine sand with almost no organics and little iron mineral content. Horizontal bed forms are evident in the deepest excavation units. The iron deposits which are concentrated in the B-horizon are almost completely absent in the C-horizon.

Overall there are few particles larger than sand-size. Rounded to sub-angular gravel decreased in presence from top to bottom within the stratigraphic profile. Occasionally large, cobble-sized particles were found within the A and B horizons. These are probably present as a result of

	CLIENT WSDOT UCO	DWN BY: BRJ CHK'D BY: - DATUM: - PROJECTION: - SCALE: 1" = 8 meters	PROJECT DATA RECOVERY 45KI757	REV. NO.: 1 DATE: DECEMBER 2009
AMEC Earth & Environmental 11810 NORTH CREEK PARKWAY NORTH BOTHELL, WA 98011	amec		TITLE CONTOUR MAP SHOWING 2007 AND 2009 EXCAVATION AT 45KI757	PROJECT NO: 9915168490 FIGURE No. 3

\\Por-ar1\GIS_PROJECTS\AMEC_US_OFFICES\Kirkland\165920 – 757\Figure 3 Contour Map Showing 2007 and 2009 Excavation at 45KI757.dwg – Layout – Dec. 24, 2009 6:46am – brian.johnson



End of Excavation

xxxxx Charcoal and Ash

Ⓡ Root

⊗ Rock

0 20cm 40cm

I: A Horizon - Dark brown, silty sand; 10 YR 3/3

II: B Horizon - Yellowish brown, silty sand; 10 YR 4/4

III: C Horizon - Olive brown, fine sand; 2.5 Y 5/4

FIGURE 4

Trenches 1, 2 and 4

45KI757

9915168490

amec

deflation from overlying channel fills or could be a part of colluvium from higher on the slope. Some of the larger stones, particularly those adjacent to pockets of charcoal from burned roots, exhibit thermal alteration in the form of oxidation and thermal fracture. The FAR reported by Landau was almost certainly produced by this process.

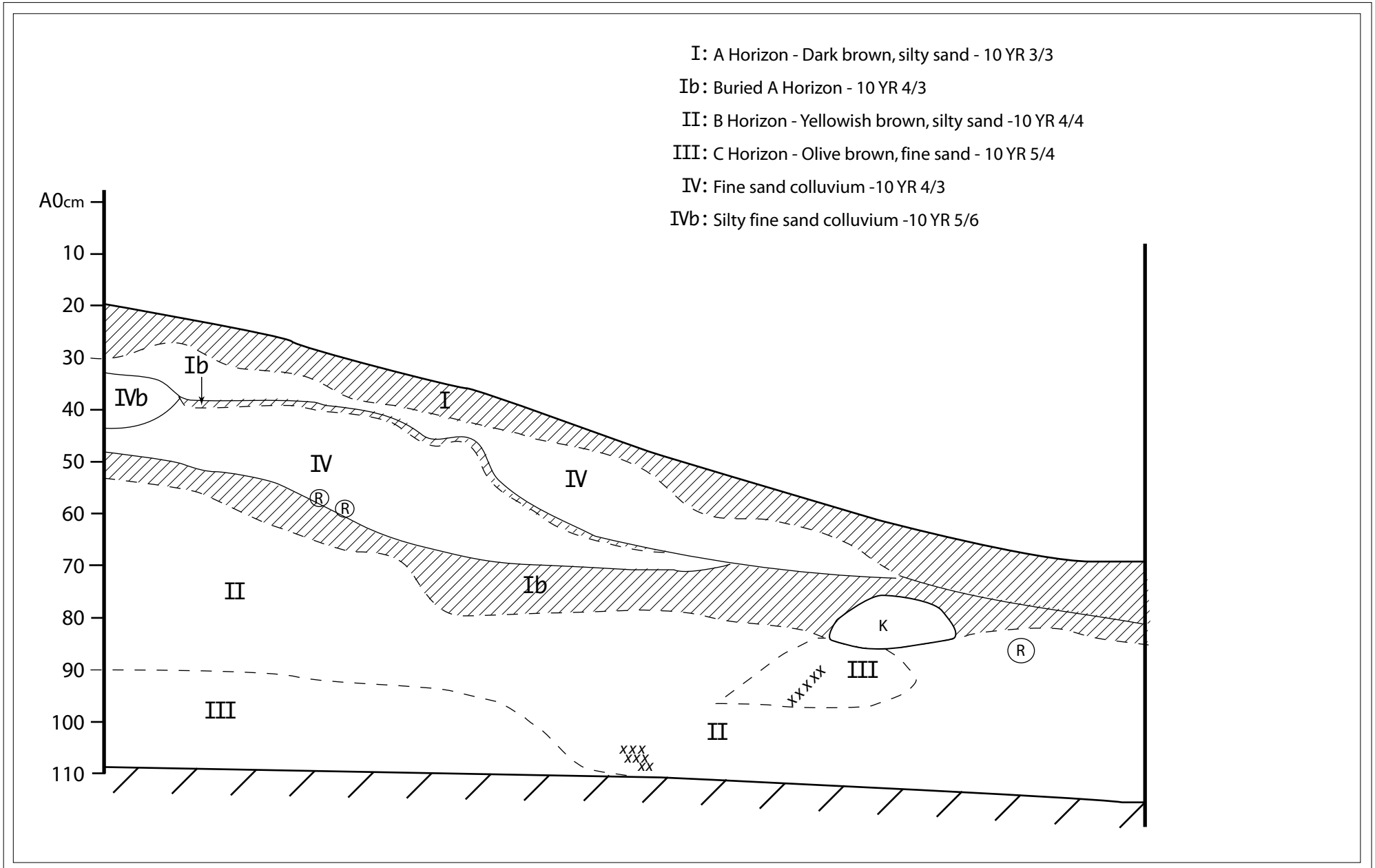
The stratigraphy of Block 1 (Figure 5, 6) differs from that of other units. There, two buried A horizons occur, separated by colluvial sand and silt (Stratum IV). Both contain woody debris, indicating they were covered by colluvium only recently. The presence of charcoal in the lower of these two horizons indicates that the colluvial events they cap probably occurred during the historic period, perhaps after episodes of logging on or above the site.

6.3 Artifacts

Landau Associates (Tingwall 2007) reported finding multiple artifacts at 45KI757. AMEC was able to recover only one, a fragmentary projectile point, and found that the objects reported by Landau were naturally produced objects of stone.

Artifact 45KI757-1: Projectile Point. The sole artifact recovered from 45KI757 is the tip of a projectile point made from a form of crystalline volcanic rock (Photograph 3). The absence of chemical weathering on this object, which is common on artifacts made from glassy dacites in this region (e.g. Stilson and Chatters 1981; Blukis-Onat et al. 2001) indicates the raw material was a form of either basalt or andesite. Fragmentary dimensions are 18 mm long, 18 mm wide, and 6 mm thick. The width/thickness ratio of what remains of the point is 3.0. Distinguishable flake scars are small and regular indicating pressure reduction of at least the tip of the original object. On the dorsal side (Photograph 3a) these extend past the center line of the object, but on the ventral side (Photograph 3b) they extend only 4.0 to 4.5 mm from the edge, leaving a broad triangle of the ventral face of the original flake blank in the center. Nearly all flake removals ended in step fractures. The cross-section is biconvex, although the cross-section of the ventral face appears flat in the center and tapers to edges, indicating the complete point would probably appear plano-convex. Both edges are serrated from the fracture edge to the tip. The serrations are regular, measuring up to 1.2 mm deep and 2.1 mm tip to tip. With the object oriented tip upwards, all but a few of the serration flake scars appear on the left edge of each face. This pattern indicates the maker serrated first one edge, the flipped the point over and serrated the opposite edge. Assuming he worked with the tip toward his thumb, or to the outside, the maker was probably right-handed. The projectile point is broken transversely in a step fracture of the sort that results from impact with a hard object (Photograph 4).

This projectile point can be at least tentatively assigned to the Cascade type. Cascade projectile points, as defined by Butler (1961), are a long, narrow, bipointed, oval or leaf-shaped implement with a length-width ratio between 2.4 to 4.0 and the widest point in the proximal one-third of its length. They have diamond, lenticular, triangular, or plano-convex cross-sections, often exhibit a distinct longitudinal ridge down the center of one or both faces, and are thick in proportion to their width. Chatters and Prentiss (2008) found that Cascade points at the Beech Creek Site in Lewis County typically had width/thickness ratios averaging 2.95. Edges are often serrated (Butler 1961; Kidd 1964; Greengo and Houston 1970; e.g. Letourneau and Stone 2001:



End of Excavation

xxxxx Charcoal

Ⓡ Root

Ⓚ Krotovina

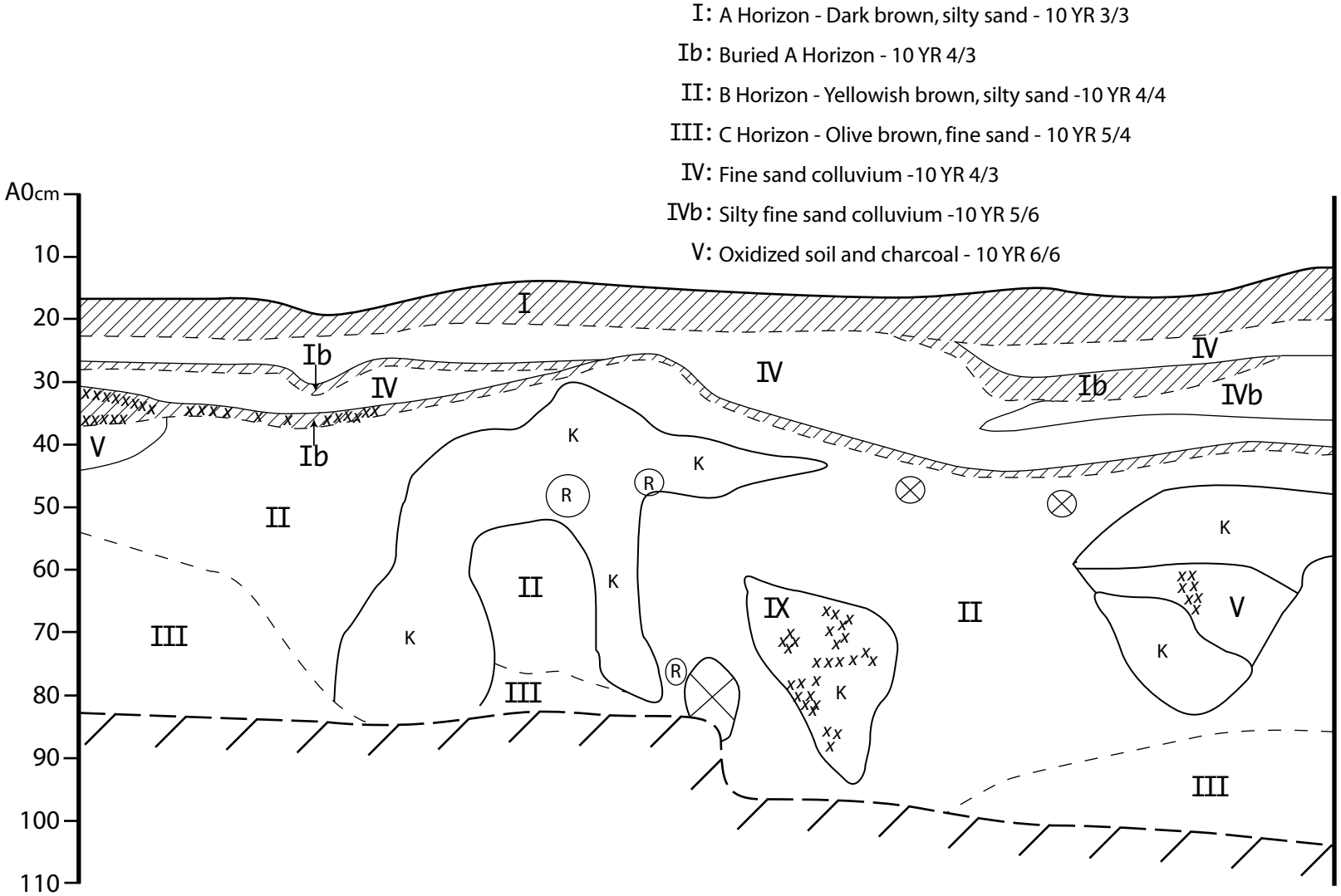
0 10cm 20cm

FIGURE 5

South Wall Profile of Unit 1

45KI757

9915168490



End of Excavation

xxxxx Charcoal

Ⓡ Root

Ⓚ Krotovina

⊗ Rock

0 10cm 20cm

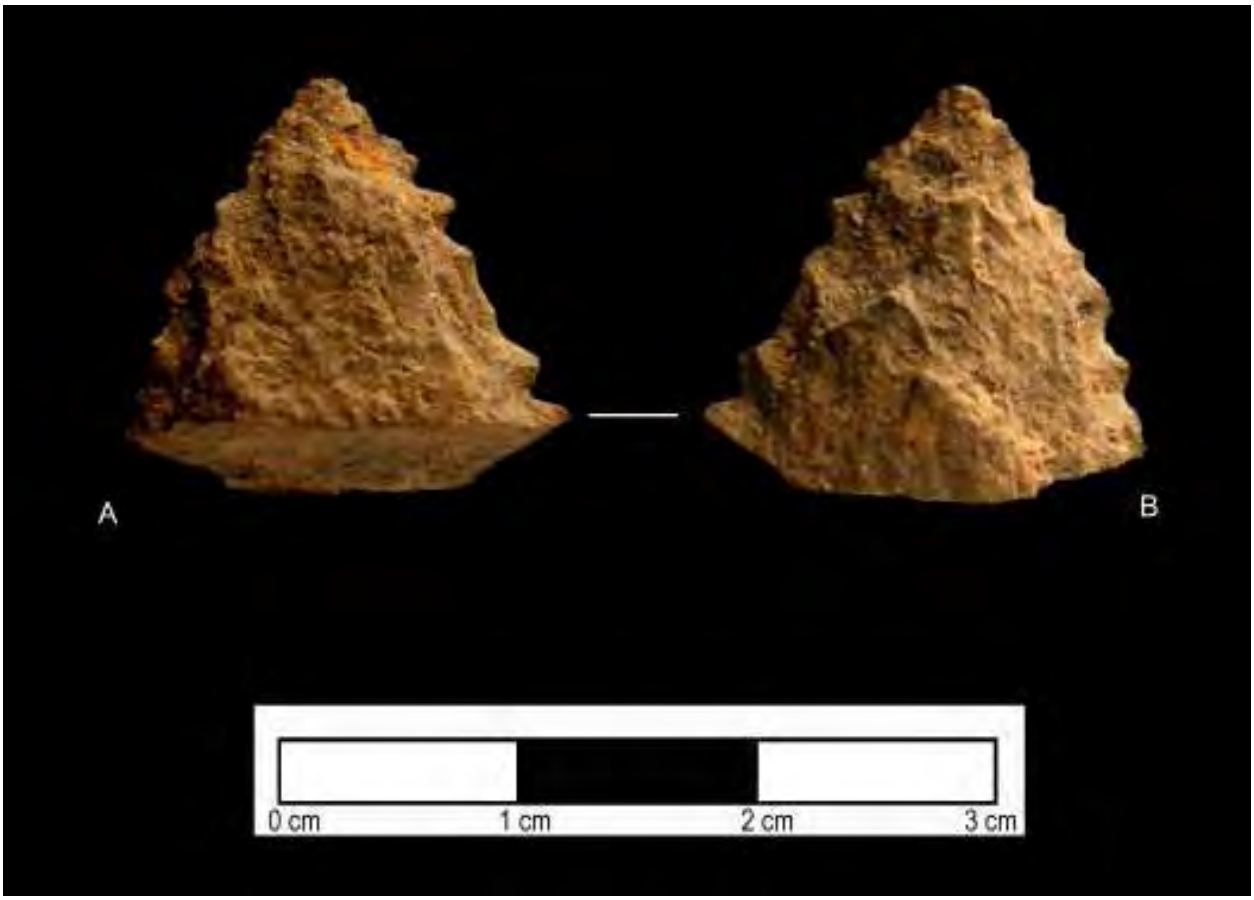
45KI757

9915168490

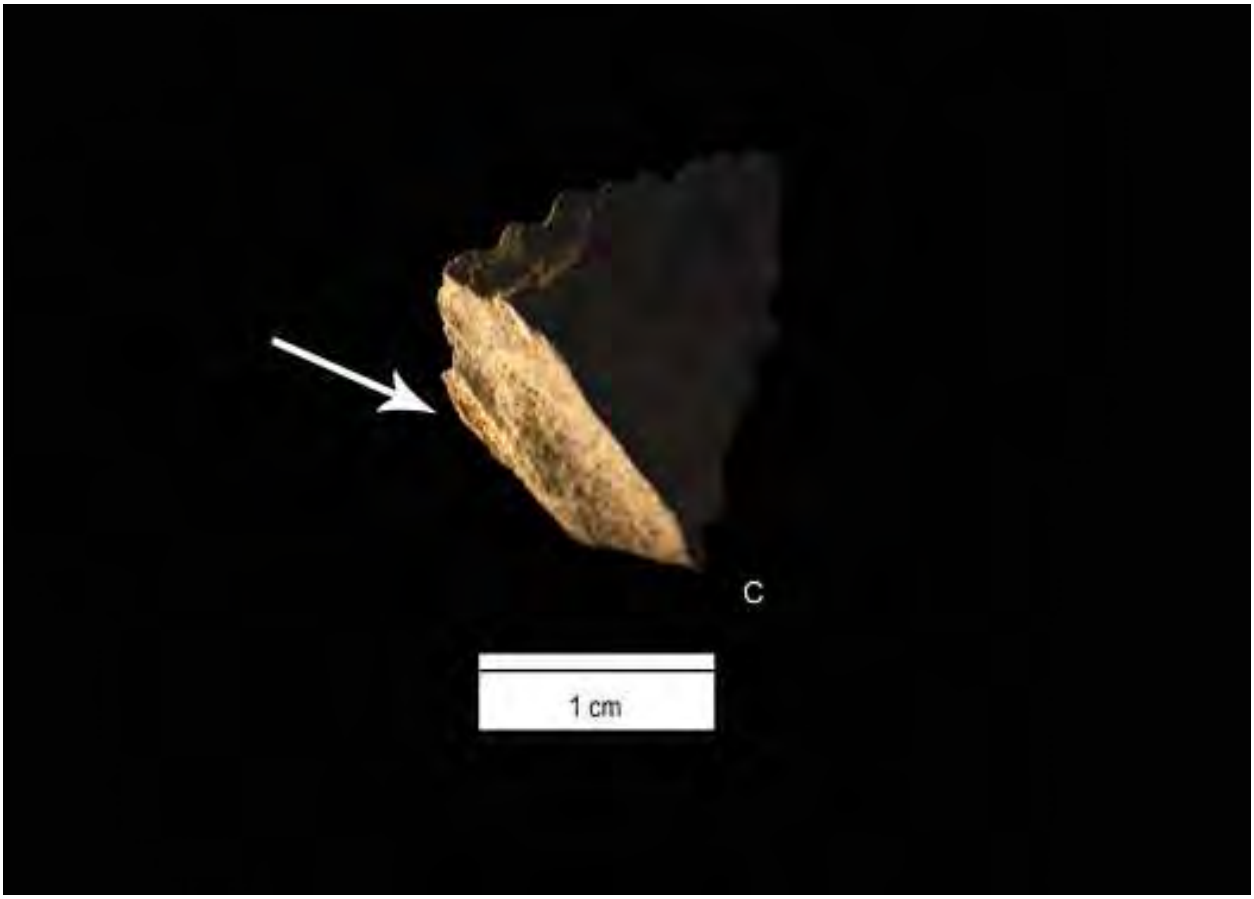
FIGURE 6

East Wall Profile of Unit 1

amec



Photograph 3 Projectile point artifact, dorsal (A) and ventral (B) sides.



Photograph 4 Projectile point artifact, close-up at mid-section break.

Figure 7.11). It is not unusual for Cascade points to exhibit vestiges of the flake blanks from which they were produced. In the Puget Sound region, such projectile points are usually made from crystalline volcanic rock (Butler 1961; Gallison 1994; Kidd 1964; Letourneau and Stone 2001; Matson 1985; Wessen 1993). Artifact 45KI757-1, produced by pressure reduction of a flake blank of crystalline volcanic rock, with a readily visible remnant of the original flake surface on the ventral face, serrated edges, and a width-thickness ratio of 3.0, meets these criteria quite closely.

"Artifacts" reported by Landau Associates. In their survey and test excavation work, Landau Associates recovered 66 objects they identified as artifacts. In addition to 12 FAR, the reported three flaked cobbles, a knife made from quartzofeldspathic schist, two preforms made from metasedimentary materials," two waste flakes of cryptocrystalline material, and 42 waste flakes of metasedimentary material. After an initial review of these objects, WSDOT archaeologists determined that not more than sixteen of these items might be construed as resulting from human activity; these and two others determined non-cultural after the research design for this project was written were discarded. On December 17, 2009, AMEC received the remaining 14 items from Ken Juell of WSDOT; six of those were FAR.

The conventional indicators of cultural alteration for flakes and tools include, a set of attributes that must be present as a group or individually. These attributes include evidence of a striking platform, bulb of percussion (cones of force), conchoidal fracture, and flake removal scars (Whittaker 1994). In addition, the materials used to make stone tools are variable, but share a set of properties that can also be characterized. Rocks that fracture conchoidally are more desirable for flaking. They are homogenous, brittle, and elastic. Stones that are not homogenous have cracks, cleavage planes, flaws and irregularities, making them fracture unpredictably (Whittaker 1994). Fine-grained metamorphic or igneous rocks including cryptocrystalline volcanic rocks and cryptocrystalline silicates were predominantly utilized in western Washington. Meta-sedimentary rocks with platy structures and cleavage planes, such as sandstone and slate, are rarely found as chipped stone artifacts because they are not suited to flaking. Ground-stone artifacts made from these materials are commonly found at sites in British Columbia, but are rare in Puget Sound. Materials such as schist, a medium-grade metamorphic rock, contain too many mineral inclusions and irregularities for flake manufacture.

All of the potential artifacts found during the initial data recovery except for two quartzite cobbles and two small shards of chert are made from poor quality rocks, and few show any flaking attributes. Although the lack of flaking attributes is often considered to be a function of weathering due to soil acidity, a common occurrence at Olcott phase sites, the artifacts found at 45KI757 show no sign of chemical weathering. Mineral concretions on the surface of the artifacts, and mechanical weathering attributes, including rounded and sub-rounded edges are more prevalent in this collection. This suggests that these rocks were battered prior to deposition and were transported to the site by glaciofluvial processes.

The fire-altered rocks that were collected or noted during excavation lack a definitive cultural context also. None of these artifacts were not found in clusters or associated with other common characteristics we attribute to hearths or cooking stones. The FAR that was found during the data recovery was almost always found with burned roots and often in isolation. The lack of other cultural materials at this site does not support a cultural process. Forest fires and slash and burn practices are common in western Washington, natural occurrences of FAR are expected.

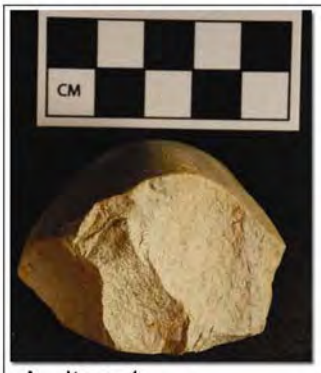
Table 2 compares our interpretation of the other eight objects with that of Landau (Tingwall 2007). The objects have been given unique numbers to facilitate description. Details are provided in the text and photos that follow.

Table 2 Artifacts collected by Landau Associates and submitted to AMEC in 2009.

Item	Provenience	Material	Landau Description	AMEC Observations
1	SP 33	quartzite	tested cobble	Naturally fractured cobble, subsequently stream rolled
2	0W/6S	quartzite	tested cobble	Naturally fractured cobble, subsequently stream rolled
3	6W/32S	quartzite	core[1]	Unmodified angular cobble
4	6W/24S	CVR	decortication flake	FAR
5	2E/28S	chert	flake	angular, tabular pebble
6	4W/16S	jasper	flake	angular, tabular pebble
7	6W/22S	slate	flake	naturally split sub-rounded pebble
8	2W/26S	schist	flake	angular, tabular pebble

[1.] This item was first labeled FAR and later changed to core.

Item 1. This was discovered by Landau during initial survey efforts and is illustrated in their site inventory form (Tingwall 2007:Figure 3A). The illustration shows a sub-rounded cobble with five negative flake scars separated by sharp-edged arises. Our examination shows a fragment of a greenish, rounded quartzite cobble that indeed has multiple fracture facets, at least three showing distinct cones of force (dimensions 55 x 46 x 40 mm). Some of the cones of force are manifest as negative bulbs of percussion, some as positive bulbs. The shape of these cones is indicative of force directed toward the center of mass, which is inconsistent with human intent to remove flakes. One facet has cones at opposite ends, indicative of force applied from both sides simultaneously. This item could, therefore, be construed to be a bipolar core; however, both the arises (ridges) between facets and the edges where these facets meet the smooth cortex of the cobble exhibit post-fracture rounding (Photograph 5a). This is a natural cobble probably fractured by the force of glacial ice pressing it against its neighbors.



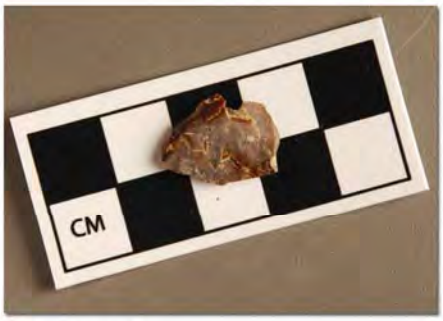
A - Item 1

B - Item 2

C - Item 3

D - Item 4

E - Item 5



F - Item 6

G - Items 7-8

PHOTOGRAPH 5

Artifacts Collected by Landau Associates During Site (45KI757) Recordation

Item 2. Discovered during the testing phase of work at 45KI757, this object is a rounded ovoid cobble of light brown quartzite with at least four flake scars at one of its ends (dimensions 64 x 56 x 39 mm) (Photograph 5b). As is the case with Item 1, cones of force are evident as both positive and negative bulbs of percussion; one facet exhibits cones at both of its ends. Arises and the edges where flake scars meet the smooth cobble cortex have been extensively rounded subsequent to fracture, although the rounding varies from flake scar to flake scar. Like Item 1, this object is a natural cobble that was fractured by bipolar and unipolar force and subsequently rolled; breaking by contact with other stream cobbles is the best explanation for its morphology.

Item 3. Initially listed as a FAR and later interpreted to be a flake core, this is an angular cobble of coarse-grained, gray, quartzite with multiple sharp-edged facets (dimensions 72 x 60 x 39 mm). Three of the facets, which are at right angles to each other, have negative cones of forces and radial lines, indicating removal by impact (Photograph 5c). Extensive crushing around each of the bulbs indicates force was directed primarily into the center of rock mass. Direction of the force applied to the stone and the lack of regularity to the flake scars is indicative of naturally fractured rock. This angular cobble was probably deposited by advancing glacial ice. Like other cobbles in this site it probably reached its place in a sand matrix through deflation of overlying deposits.

Item 4. Identified initially as a decortication flake, this is a leaf-shaped fragment of crystalline volcanic rock with a triangular cross-section (76 x 35 x 18 mm)(Photograph 5d). The dorsal surface exhibits two surfaces, the curving, rounded cortex of a sub-rounded cobble and a smaller concave pot lid facet. The ventral surface has but one irregular facet that lacks any flake features. Although the shard is complete (but in two pieces) there is no positive bulb of percussion; such features as radial lines and concentric rings, are absent. A look at the cross-section of the cortical surface shows heat oxidation. This is a heat spall—a FAR.

Items 5 and 6. These are tabular fragments of chert originally characterized as flakes (Photograph 5 e and f). Item 5 is a piece of green chert-like material with three facets on one face (dorsal), one with what appears to be a negative bulb of percussion, and one relatively featureless face (ventral) (16 x 10 x 3 mm). The facets on the dorsal side make the piece appear to be a flake, until the ventral face, which, if this were a flake, would have to have been broken after the dorsal. This ventral face exhibits rounding and polish indicative of stream action. Item 6 is a flat piece of red-brown jasper with one stream-polished surface and sharp edges (17 x 13 x 2 mm). There is no sign of any flake attributes. If other debitage of this material were evident, it would be identified as shatter; in the absence of such material it is simply a stone.

Items 7 and 8. These objects were originally reported as debitage. Both are instead tabular pieces of platy metasedimentary rocks (Photograph 5g and h). Item 7 is a shard from a clast of sub-angular slate gravel (33 x 24 x 3 mm). On its dorsal surface it displays the polish and rounding of a pebble; its ventral surface is flat, consistent with the bedding planes found in slates. There are no flake attributes indicative of conchoidal fractures and no faceting or striations of the kind seen in ground stone tools. Item 8 is a flat piece of schist (22 x 18 x 3 mm). Both surfaces are somewhat irregular, with the pattern of parallel linear features typical of

schist. Like Item 7, it displays no characteristics indicative of conchoidal fracture or grinding by human hands.

7.0 DISCUSSION: THE RESEARCH VALUE OF AN ISOLATE

Site 45KI757 did not fulfill expectations that it might represent a single event Olcott Phase occupation, since only a single artifact was recovered. It is, therefore, more appropriately labeled an isolated projectile point find. This find is not without its cultural and scientific value, however, when it is looked at in the light of other finds of its kind and age. In fact, as an isolated implement, the find may be more informative than a small concentration of debitage might have been. Isolated implements are a valuable source of information about past human behavior, especially resource gathering methods, and past environmental conditions.

Projectile points are objects of limited utility. They were created simply to tip weapons intended to kill prey (although earlier forms were also employed as knives [Chatters and Prentiss 2008]). Isolated projectile points were probably lost while being engaged in the effort to do just that. Assuming their primary use was for animal predation, the distribution of isolated projectile points provides an indication of where in the environment people were hunting. A look at the distribution of isolated projectile points representing a restricted time period should, more precisely, display the environmental preference of hunters working within the constraints of their technology in the ecosystem of their era.

7.1 Projectile Point Distributions

To make the greatest possible use of the limited information we were able to obtain from 45KI757, we collected records on all confirmed isolated Olcott Period projectile points (referred to as Cascade, Olcott, or large leaf-shaped in the records) documented within the Puget Lowland in northern King and Snohomish Counties. A confirmed find is an object that has been inspected by an archaeologist and for which a subsequent search has found no other artifacts of any kind at the discovery site. We then obtained site records on these finds, including the precise topographic location of each. Finds were then characterized by their environmental settings to determine if the finds display environmental patterning or are randomly distributed. In this effort we searched the DAHP database, and were aided by Philippe Letourneau of King County and Kelly Meyers of the Burke Museum, who graciously helped locate find records.

Records contain evidence of seven confirmed isolated Olcott projectile points in addition to 45KI757 (of what must be thousands of the projectile points lost in this region over the millennia). All of the records are in Snohomish County, where most were initially reported by John Mattson and later field verified by archaeologists from Northwest Archaeological Associates (Miss and Campbell 1991). Additional Olcott projectile point finds have been reported in King County, but no field verification has yet been undertaken. The projectile points and their environmental locations are listed in Table 3 and their locations shown in Figure 7.

Table 3 Characteristics and environmental settings of isolated projectile points reported in the DAHP archaeological database for King and Snohomish Counties.

Site	Description	Environmental Setting	Aspect
45SN21	a heavily-weathered basalt projectile point	a swampy area in a rolling upland less than ¼ mile from the east wall of Bear Creek Valley.	neutral
45SN25	a large point	a low point of land projecting into the floodplain of the Pilchuck River .	neutral
45SN44	a long basalt bipoint (Olcott)	south wall of the Snohomish River valley, overlooking the floodplain.	north
45SN55	large basalt projectile point (Olcott)	edge of a high terrace above the Pilchuck River.	neutral (east)
45SN83	a 6 cm-long single-shouldered leaf-shaped projectile point with striking platform base (Olcott)	east edge of a steep-walled drainage known as Pigeon Creek.	neutral (west)
45SN84	long leaf-shaped projectile point with striking platform base (Olcott)	rolling upland between Snohomish River and Puget Sound, at head of a small drainage, in the saddle between it and Pigeon Creek.	west
45SN85	long, crude leaf-shaped projectile point (possible preform) (Olcott)	gently sloping high terrace overlooking Snohomish River, within ca 100 m of the base of the western valley wall.	east
45KI757	tip of a serrated basalt projectile point (Olcott)	east wall of a small, steep drainage on the south wall of the Sammamish River Valley.	west

The small number of projectile points limited the precision of the environmental analysis we were able to perform. To determine if any level of patterning existed among the eight finds, we were forced to divide the environment topographically into only a small number of categories. Any active hunter knows that prey animals tend to pattern their activities according to elevation, slope, aspect, availability of water, and vegetation. Vegetation itself is typically patterned according to the same set of topographic variables. In a study of isolated projectile point patterning in the upland steppes of central Idaho, Chatters (1982) found that dart points occurred primarily on or near along terrace slopes, far from the gallery forest of active streams. In contrast, arrow points were found along the streams. Taking into account palynological evidence for more open woodlands between 10,000 and 4500 years ago, when the Olcott

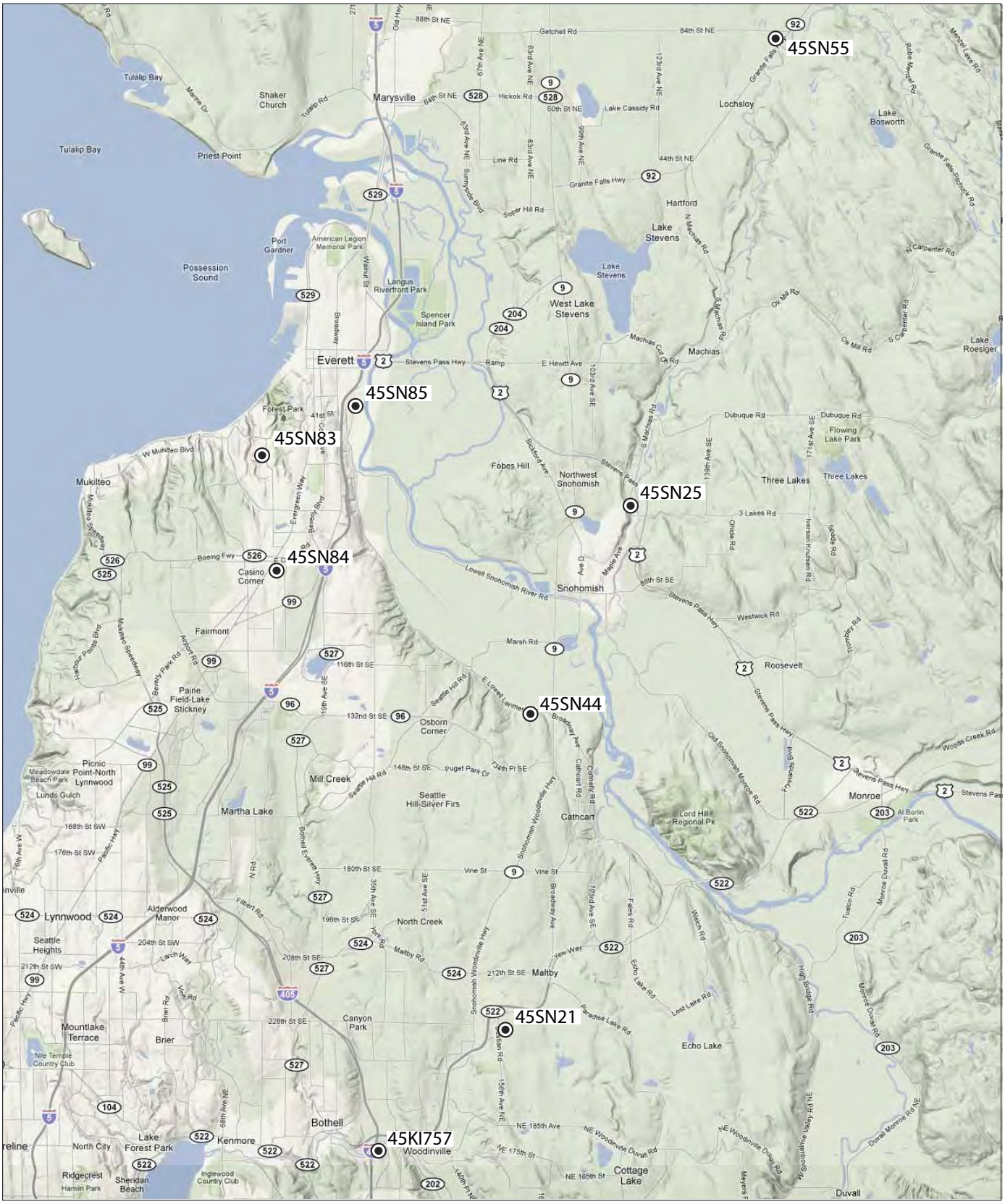


Image Source: 2009 Google Maps

FIGURE 7

Location of isolated projectile points reported in the DAHP archaeological database for northern King and Snohomish Counties

hunters were active, we reasoned that a similar pattern might exist in the Puget Lowlands. Therefore, topographic variables were the following:

A. On or within 100 meters of the steep faces of valley walls and stream-cut draws with south aspect (typically bare in open country).

B. On or within 100 meters of the steep faces of valley walls and stream-cut draws with other than south aspect (typically heavily vegetated in open country.

C. Within 100 meters of upland wetlands such as lakes and marshes (where game might feed or take water and where vegetation is typically dense in open country.

D. Rolling till and outwash plains greater than 100 meters from steep slopes or wetlands (which would have been mostly open meadowlands).

E. Valley bottoms greater than 100 meters from steep slopes.

Table 4 shows the distribution of Olcott Period projectile points among these 5 environmental variables. The eight isolated finds were primarily found in environment B, on or within 100 meters of valley walls and deep draws with east, west, or north-aspects. None of the other isolates were found far from this environment. The one example from the rolling till upland was near the saddle between two draw systems. Time did not allow us to compute the size of each of the environments in the area from which the projectile points came, which would have permitted a statistical analysis of these results, but a quick look at Figure 7 shows that rolling till and outwash plains probably account for more than 80 percent of the landscape, yet only 12.5 percent of the projectile points were found there. Clearly, Olcott hunters were most active along valley walls and other steeply-sloping, non-north-facing landforms.

Table 4. The environmental distribution of isolated Olcott projectile points found in the area shown in Figure 7.

Environment	A	B	C	D	E	Total
Number of finds	0	5	1	1	1	8

When we take into consideration the palynological evidence for the ecosystems of Olcott times, along with the behavior of deer, and elk, which would have been the principal lowland big game species, this pattern makes eminent sense. Palynological studies have shown that climates were drier between 11,000 and 4500 cal BP, and driest between 11,000 and 7,000 BP—the early Holocene. During that time, the vegetation of the Puget Lowland more closely resembled like the historic fire-maintained prairies of Fort Lewis in Pierce County. The dense, ubiquitous old growth cedar-hemlock forests that occupied the area in the nineteenth century had not been fully established until after the end of Olcott. Under these conditions, steep slopes with non-northerly aspects and well watered sites like stream bottoms, and wetlands, would be the most heavily vegetated environments. The difference between the distributions of early Holocene and historic vegetation are illustrated in Figure 8.

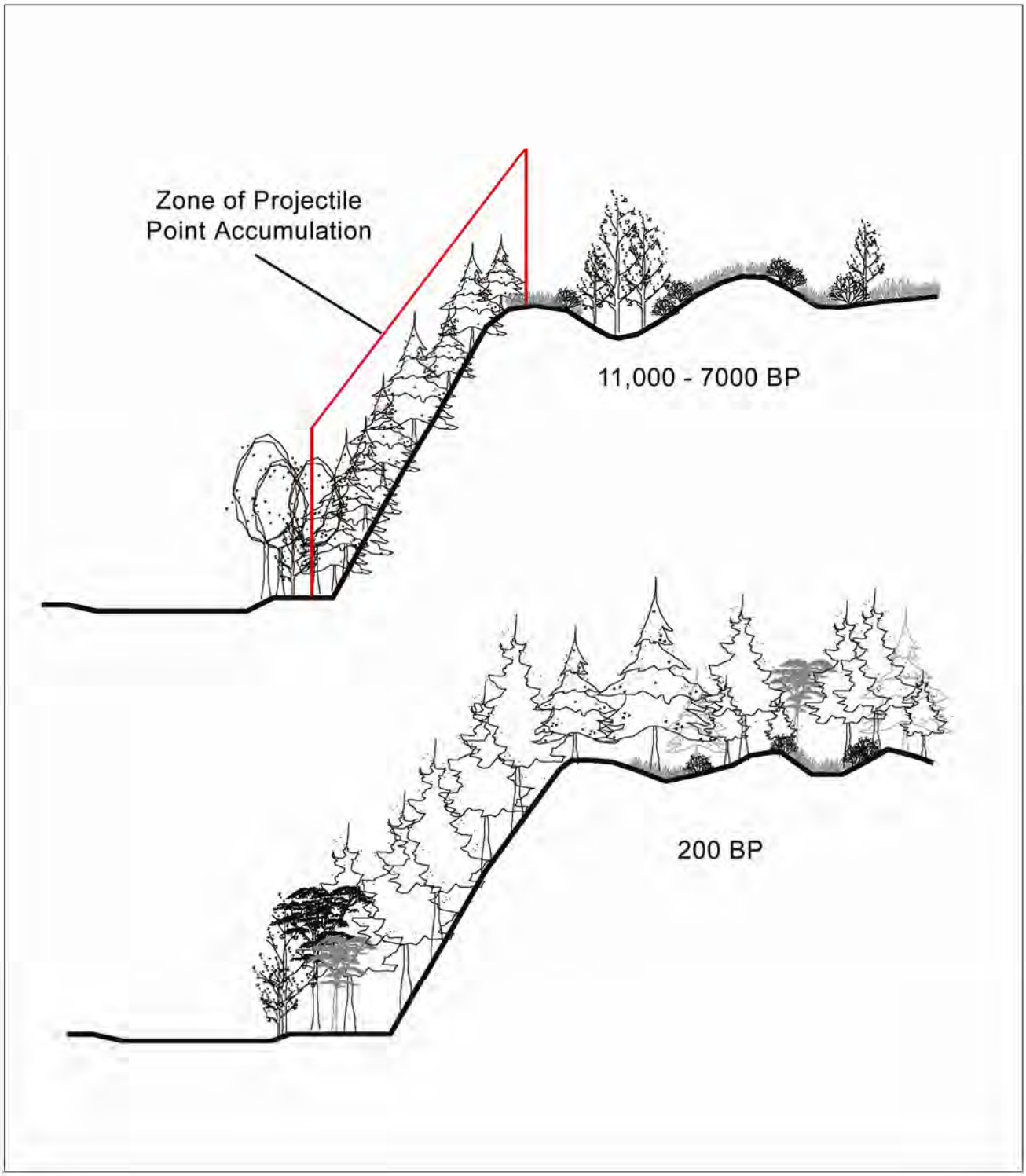


FIGURE 8

Cross-sections Showing Postulated Distribution of Vegetation in Early Holocene and Ethnohistoric Times

DATA RECOVERY AT 45KI757

amec

9915168490

Blacktail, whitetail, and mule deer are all edge species (Johnson and O'Neil 2001). They use dense vegetation as thermal and escape cover. They bed there, emerging primarily at dawn and dusk to feed. A hunter, particularly one who is armed with an early atlatl rather than a gun, who is seeking deer in an area with a prairie-forest mosaic is most likely to hunt along the edges of the heavy cover, from which deer will to emerge in a predictable way. A wounded deer, such as one with a projectile point tip embedded in a thigh or shoulder, will attempt to escape its pursuer by re-entering the heavy cover. Projectiles thrown at these deer by a short-range weapon like the early atlatl would have been lost within a short distance of these edges, which is where we find them.

8.0 SUMMARY AND CONCLUSIONS

AMEC conducted data recovery excavations at archaeological site 45KI757, a reported occupation of the Olcott Phase, which is thought to date between 10,000 and 5000 years ago. The research design for work at 45KI757 was developed to address two issues related to understanding the Olcott Phase in the Puget Sound region: chronology of this cultural phenomenon and the composition of a single-event assemblage related to this time period. Excavation of 19.24 cubic meters in shovel tests, trenches and two 2 x 2 meter blocks resulted in recovery of but one artifact, the tip of a Cascade-type projectile point. Close inspection of the artifacts originally reported from the site demonstrated that one of those objects had characteristics that could not be attributed to natural processes.

Data recovery excavation and reanalysis of artifacts demonstrated that 45KI757 is better identified as a prehistoric isolate. Isolates are not without their research value as, viewed collectively, they provide information about past subsistence behavior A comparison of the topographic settings of eight Olcott Phase projectile points from King and Snohomish counties demonstrates that people of that time focused their hunting activity on or near steep slopes, which are prime escape and thermal cover as well as bedding areas for deer where vegetation forms prairie-forest mosaic.

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APPENDIX A

45KI757 Site Form

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Site No.
45KI757
County:
KING

Date: 04/17/07 **Compiler**: Doug Tingwall

Location Information Restrictions:

SITE DESIGNATION

Site Name: East Norway Hill Lithic Scatter

Field/ Temporary ID: NBA-1

Site Type: (*Refer to the DAHP Survey and Inventory Guidelines)* Pre contact lithic material

SITE LOCATION

***USGS Quad Map Name**: Bothell, WA (1953; photo revised 1981)

Legal Description: T.26N R.5E ***Section(s):*** 9 ***Quarter Section(s):*** NW ¼, SW ¼, SW ¼

UTM: ***Zone*** 10 ***Easting*** 561120 ***Northing*** 5288700

Latitude: 48.0044˚***N*** ***Longitude:*** 122.2294***°W*** ***Elevation (ft):*** 260 feet

Other Maps ***Type***

Scale ***Source:***

Drainage, Major: Sammamish River ***Drainage, Minor:*** unnamed creek ***River Mile:*** 6

Aspect: West ***Slope:*** 10%

***Location Description** (general to specific): The site is situated in the Puget Trough Province of Western Washington on the east side of Puget Sound less than 0.50 mile south of the Sammamish River where I-405 spans the river on East Norway Hill near Bothell. The site is situated on a forested bench along the west slope of the foot of East Norway Hill near milepost 23 overlooking a narrow valley incised by a north-trending drainage that is occupied by the I-405 corridor (Figure 1). The site is located in the Washington State Department of Transportation (WSDOT) right-of-way just east of the I-405 northbound lanes, close to a

freeway sign for exit 22. The site is situated 5 meters (m) east of and approximately 7 m above the highway right-of-way.
Approach (to relocate): Accessing the site will require prior coordination with WSDOT to obtain permission for parking on the shoulder of I-405 and for access to WSDOT property. Proceed north on I-405 from Bellevue to a point approximately 0.50 mile beyond the NE 160th Street overpass and park on the shoulder of the highway. Proceed up the slope and walk south to the Kirkland Stage 2 landslide well. The site is located approximately 15 m southwest and on a 24 degree compass bearing from the Kirkland Stage 2 landslide well xL2326 KLS-3-05.

*Mandatory information for official site designation

SITE DESCRIPTION

Narrative Description: The site consists of a light scatter of lithic debitage, fire-cracked rock (FCR), expedient stone tools, and a subsurface feature consisting of four metamorphic cobbles distributed across a relatively level bench of a forested, west-sloping hillside bounded by a steep west-trending drainage to the north and a southwest-trending swale to the south. The prehistoric artifacts occur in a buried context between 20 centimeters (cm) to 70 cm below ground surface (BGS) in dark yellowish brown (10YR 4/6), sandy loam to olive brown (2.5Y5/4), sandy loam with sparse gravels.

***Site Type**: (*Refer to the DAHP Survey and Inventory Guidelines*) Pre-contact lithic material

Dimensions, Method of horizontal measurement: Pacing

Length: 42 meters Direction: N-S Width: 17 meters Direction: E-W

Depth: 20-70 cm BGS Method of vertical measurement: Shovel probe depth

Vegetation - On Site: Cedar, blackberry, alder, and maple.

Local: Forested Hill Regional: *Tsuga heterophyllya* zone

Landforms - Hill Local: Upland

Water Resources - Type: Sammamish River Distance: 0.5 mile Permanence: Permanent

CULTURAL MATERIALS AND FEATURES

Narrative Description: The prehistoric lithic scatter at 45KI757 consists of: 3 small, tested pebbles/cores; 1 thin, tabular schist knife; 1 slate preform; 1 metasedimentary preform; 1 large, tabular metasedimentary manuport; 12 fragments of fire-cracked rock, 4 of which were associated with a feature (Feature 1); and assorted slate, metasedimentary, schist, and cryptocrystalline silicate (CCS) debitage.

Shovel Probe #	Artifact Description	Depth Below Ground Surface	Associated Stratum
SP 33	One metasedimentary tested cobble, one schist knife	24 cm	Stratum II
A1-2W/16S	One piece slate shatter, two slate flakes, one schist flake	54-70 cm	Stratum II
A3-2W/20S	Two slate flake fragments	63 cm and 80 cm	Stratum II

A6-2W/26S	One slate flake (broken)	40 cm	Stratum II
B1-4W/16S	One cryptocrystalline flake	20 cm	Stratum II
B3-4W/20S	Three metasedimentary flakes	20-40 cm	Stratum II
C2-6W/18S	Two slate flakes (broken)	10-25 cm	Stratum II
C3-6W/20S	Two pieces of fire cracked rock (FCR)	20-45 cm	Stratum II
C4-6W/22S	One slate decortication flake	20-40 cm	Stratum II
C5-6W/24S	Two metasedimentary flakes (broken), one metasedimentary decortication flake (broken in two pieces)	Upper 40 cm	Stratum II
C6-6W/26S	One metasedimentary flake (broken)	20 cm	Stratum II
D3-8W/20S	Two slate flakes	15-40 cm	Stratum II
D4-8W-22S	One fire-cracked rock	10-15 cm	Stratum I
E2-10W/20S	One metasedimentary flake	20-50 cm	Stratum II
E4-10W/22S	One metasedimentary tested cobble	Upper 20 cm	Stratum II
E6-10W/26S	One piece of slate shatter and a possible slate preform	40 cm	Stratum II
28S/13W	Two slate flakes (broken)	20-30 cm	Stratum II
0W/14S	One slate flake fragment, one metasedimentary utilized flake, one metasedimentary complete flake	Upper 20 cm and upper 50 cm	Stratum I-II
0W/16S	One slate flake	50-60 cm	Stratum II
0W/18S	One metasedimentary flake	Upper 50 cm	Stratum III
0W/20S	One metasedimentary preform	40 cm	Stratum II
0W/32S	One cryptocrystalline flake (broken)	30-40 cm	Stratum II
6W/32S	Two pieces fire-cracked rock	60-70 cm	Stratum II
2E/12S	One schist flake, one slate flake (broken)	37 cm and upper 50 cm	Stratum II-III
2E/28S	Three pieces of fire-cracked rock, five slate flakes (four broken), two metasedimentary flakes, one schist flake (broken)	Upper 60 cm	Stratum III
4E/30S	Four pieces of fire cracked rock found in Feature 1, one metasedimentary flake, one schist flake, one metasedimentary tested cobble	Upper 45 cm	Stratum III
6E/34S	Two slate fragments (broken)	Upper 50 cm	Stratum III

Tree root wad	Tabular angular manuport	30-40 cm	Unknown

The original artifact discovered during preliminary shovel probing (SP 33) is a subrounded, pale olive (5Y6/3), fine-grained metasedimentary, tested pebble measuring 6 cm by 4.5 cm by 4 cm that exhibits percussion flake scars forming one convex lateral margin and an amorphous rind of iron oxide concretions on its ventral surface, some of which extends onto the flake scars.

The second tested pebble recovered during site testing (E4) is an oblate, rounded specimen of greenish gray (Gley 1 6/1 5GY), pitted, fine-grained, metasedimentary stone measuring 4 cm by 3.5 cm by 2cm with two, percussion flake scars converging to a point along one lateral margin. The arrises of this specimen are worn and the cortex exhibits pitting similar to pebbles and cobbles found in early till deposits although whether this incipient decomposition transpired before or after the specimen's anthropogenic modification cannot be determined. It also exhibits iron oxide concretions along its cortex and to some degree within the flake scars.

A third tested cobble is an angular, tabular fragment of striated, metasedimentary stone measuring 8 cm by 4.5 cm by 3 cm exhibiting broad flake scars parallel to the grain of the rock along three margins and iron oxide concretions on the flake scars as well as both dorsal and ventral surfaces. This specimen was recovered approximately 40 cm BGS in association with Feature 1 (4E/30S) in light olive brown, sandy loam with 15 percent to 20 percent pea-sized gravels.

The lamellar fragment of quartzofeldspathic schist also found in SP 33 is a knife measuring 5.5 cm by 3.5 cm by 2 millimeters (mm), with broken proximal and distal edges and one beveled lateral margin. A sinuous step fracture runs parallel to the beveled edge and may represent fissile decortication or the intentional removal of a piece of the schist to facilitate edge modification.

The slate preform, which measures 2 cm by 2 cm by 0.5 cm, is plano-convex to lenticular in cross section and is broken along the proximal, distal, and one lateral margin. The specimen was recovered approximately 40 cm BGS (E6) and exhibits a notch and incipient edge preparation along two margins on one face in the form of flaking and grinding.

The metasedimentary preform was found at approximately 40 cm BGS (0W/20S) and exhibits a unilaterally shouldered, laurel leaf shape measuring 9.5 cm by 3.5 cm by 1.5 cm, with a flaked pointed distal termination and step fractures along cleavage planes within the stone. The artifact may also represent an expedient perforating tool.

One large, tabular, angular cobble of striated, metasedimentary rock measuring 25 cm by 22 cm by 7 cm and weighing 4 kilograms (kg) was recovered from a root wad of an upturned stump between grid test probes D3 and D4. The cobble has a grain reminiscent of that seen in petrified wood, but its blocky appearance and anastomozing striations seen in profile along one edge suggest it is a partially metamorphosed argillaceous stone. The cobble was observed in a stratum of dark yellowish brown, sandy loam with sparse gravels at an estimated depth of 30 cm to 40 cm BGS, but other than its unusual occurrence and similarity to the stone comprising some of the metasedimentary lithic debitage, it bears no sign of battering or cultural modification suggestive of an inferred use as an anvil stone for bone breakage or bipolar reduction for stone tool production.

A total of 12 pieces of subangular to angular, metamorphic FCR, altogether weighing 8.57 kilograms (kg), were recovered from the following test probes: 3 FCR weighing 64.35 grams (g) from 2E/28S; 2 FCR weighing 18.60 g from C3; 1 FCR weighing 71.72 g from D4; 2 FCR weighing 2.96 kg from 6W/32S; and 4 FCR weighing 4.06 kg from Feature 1 in 4E/30S. The bases of three of these specimens were situated at approximately 30cm BGS, and the fourth, which stood on end, was situated at 45 cm BGS in a stratum of light olive brown, sandy loam. No evidence of carbonaceous staining or oxidation was observed in association with this feature.

The total count for lithic debitage recovered from the site was 44 and consisted of 24 pieces of slate, 14 pieces of metasedimentary rock (some with an aphanitic texture and others with a striated texture), 4 fragments of schist, and 2 CCS flakes. Twenty (45 percent) of the flakes are complete specimens, 20 (45 percent) exhibit one broken margin, 2 (5 percent) exhibit more than one broken margin, and 2 (5 percent) represent shatter. The lithics were sorted with sieves in the following size classes: 1 inch, 0.5 inch, 0.25 inch, 0.125 inch. With respect to size, 22 (50 percent) fall within the 1 inch size class or above, although most of the specimens cluster at 1 inch, and 20 (45 percent) at 0.5 inch, and 2 (5 percent) at 0.25 inch. Half of the lithic debitage exhibited cortex and the remainder did not. Fifteen (68 percent) of the 22 flakes exhibiting cortex fell within the 1.0 inch size category. The composition of the lithic debitage suggests a combination of early to middle stage reduction, possibly representing expedient tool production with the smaller specimens, such as the CCS flakes representing late stage reduction suggestive of tool refinement and/or rejuvenation.

The stratigraphy onsite consists of duff and a dark brown to dark grayish brown, sandy loam (Stratum I) overlying a dark yellowish brown, sandy loam (Stratum II) overlying a basal stratum of compact light olive brown, sandy loam (Stratum III) with shrub and tree roots, trace charcoal flecking, root burn, and gravel density from less than 5 percent to 25 percent. No evidence of a seasonal water table in the form of iron oxide

or manganese nodules was observed in the shovel probe profiles although an unevenly distributed rind of iron oxide concretion was found adhering to the cortex and flake scars of some of the artifacts. The stratigraphy on site is well drained and the concretions may be attributable to iron translocation through the agency of rain water percolating downward in the soil profile and flocculating or leaving behind incremental, trace concentrations of iron precipitate on the surfaces of the flaked stone. The iron oxide concretions then could indicate a considerable antiquity for some of the artifacts. Although the majority of the artifacts occurred within the dark yellowish brown, sandy loam stratum, the easternmost test probes near the crest of the hill exhibited a stratigraphic unconformity with the dark brown sediment immediately overlying the compact light olive brown stratum. The lack of Stratum II in the easternmost test probes may represent differential transport of the sediment through slopewash, and this factor, together with the absence of any discernible paleosol, suggests the possibility that some of the prehistoric material may have been displaced from its original context. Formal subsurface testing should be able to determine if this is the case by getting more precise vertical proveniences for artifacts and noting strike and dip of any artifacts found in situ. Moreover, formal testing should be able to determine if the artifacts represent one or multiple occupations. If the artifacts are in a primary depositional context, then their depth within the soil profile of a landform in a non-depositional setting, together with the iron oxide concretions that adhere to the flaked edges of some of the tools and debitage, would indicate a considerable antiquity for the assemblage.

The tested pebbles and expedient tools/preforms, as well as the flaked slate, metasedimentary, and schist debitage from 45KI757, are similar to those evident in early Holocene assemblages associated with the Pebble Tool Tradition as defined at sites such as Glenrose Cannery, Milliken, and South Yale along the Fraser River in British Columbia. The Pasika complex is an early Holocene riverine and coastal adaptation with assemblages dominated by simple, flaked pebbles and expedient multipurpose tools that seldom exhibiting bifacial flaking (Borden 1968; Carlson 1990; Carlson and Dalla Bona 1996). Archaeologists speculate that the Pebble Tool Tradition represents an initial coastal settlement by early Holocene peoples who subsequently followed rivers into the interior uplands and may be affiliated with or ancestral to the Olcott tradition in Puget Sound (Carlson 1990). Although they lack a specific chronological association, artifacts associated with the Bertelson Suquamish collection from Puget Sound exhibit poorly flaked material tentatively identified as shale and suggest that local prehistoric indigenous groups utilized unconventional types of toolstone such as the metasedimentary flakes recovered at 45KI757 (Smith 1950). The type of artifacts found at 45KI757, together with their location in an interior, upland setting relatively far removed from any major drainage but proximal to minor, seasonal drainages, suggests the possibility of an ephemeral occupation with an early to middle

Holocene affiliation like that associated with regional Olcott sites. Method of Collection: Collected from shovel test probes Location of Artifacts (Temporary/ Permanent): Temporary. Washington State Department of Transportation, Urban Corridors Office, 401 2nd Ave. S., Suite 400, Seattle, WA 98104
SITE AGE
*Component: Prehistoric Pebble Tool Tradition *Dates: 9,000-4,000 BP *Dating Method: Assemblage

SITE RECORDERS

*__Recorded by__: Doug Tingwall and Kara Kanaby

*__Affiliation/Address__: Landau Associates, 130 2nd Avenue South, Edmonds, Washington, 98020

*__Date Recorded__: 11/16/2007

*__Affiliation Phone Number__: 425-778-0907 **Affiliation E-mail**: lgoetz@landauinc.com

Revisited by: Affiliation Address:

Date Revisited:

SITE HISTORY

Previous Work (references):

Borden, Charles E. 1968. "Prehistory of the Lower Mainland." *Lower Fraser Valley: Evolution of a Cultural Landscape*. A.H. Siemens (ed.). British Columbia Geographical Series 9. pp. 9-26.

Carlson, Roy L. 1990. "Cultural Antecedents." In *Handbook of North American Indians*. Vol. 7. Northwest Coast. Wayne Suttles (ed.). Smithsonian Institution. Washington D.C. pp. 60-69.

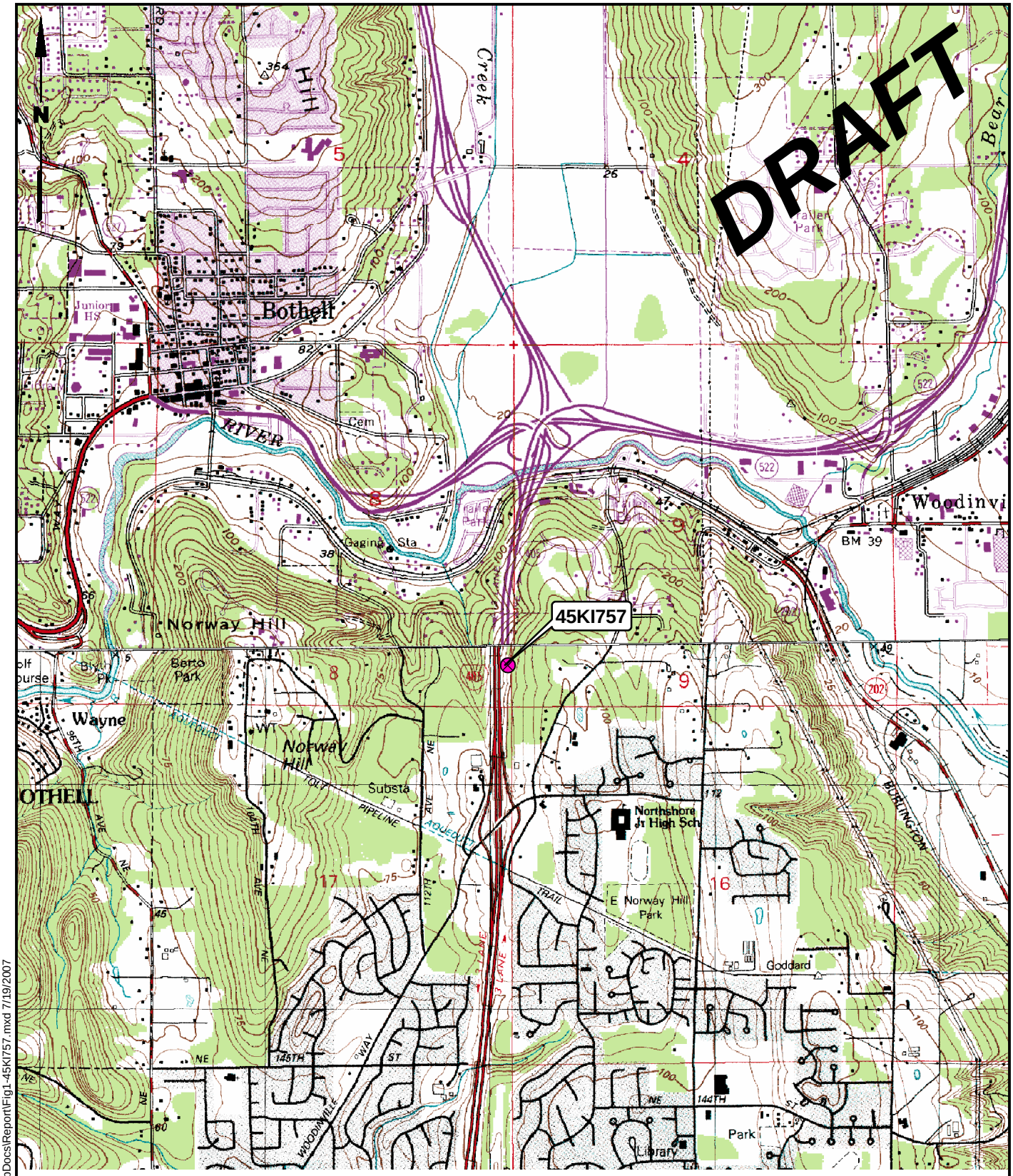
Carlson, Roy L. and Luke Dalla Bona (eds.). 1996. *Early Human Occupation in British Columbia*. UBC Press. Vancouver, British Columbia.

Smith, Marian W. 1950. *Archaeology of the Columbia-Fraser Region*. Memoirs of the Society for American Archaeology Number 6. Society for American Archaeology and Columbia University. Menasha, Wisconsin.

SITE OWNERSHIP

*Owner/Address: Washington State Department of Transportation
Urban Corridors Office-Environmental Services
Attn: Allison Hanson, UCO Deputy Director
I-405 Congestion Relief and Bus Rapid Transit Projects I-405, SR 520 to I-5 Project
401 Second Avenue South, Suite 500
Seattle, Washington 98104

Parcel Nos: There is no parcel number as the property is the State of Washington Department of Transportation right-of-way along I-405.
FORM RECORDS
Other Forms (specify): N/A



0 1,900 3,800

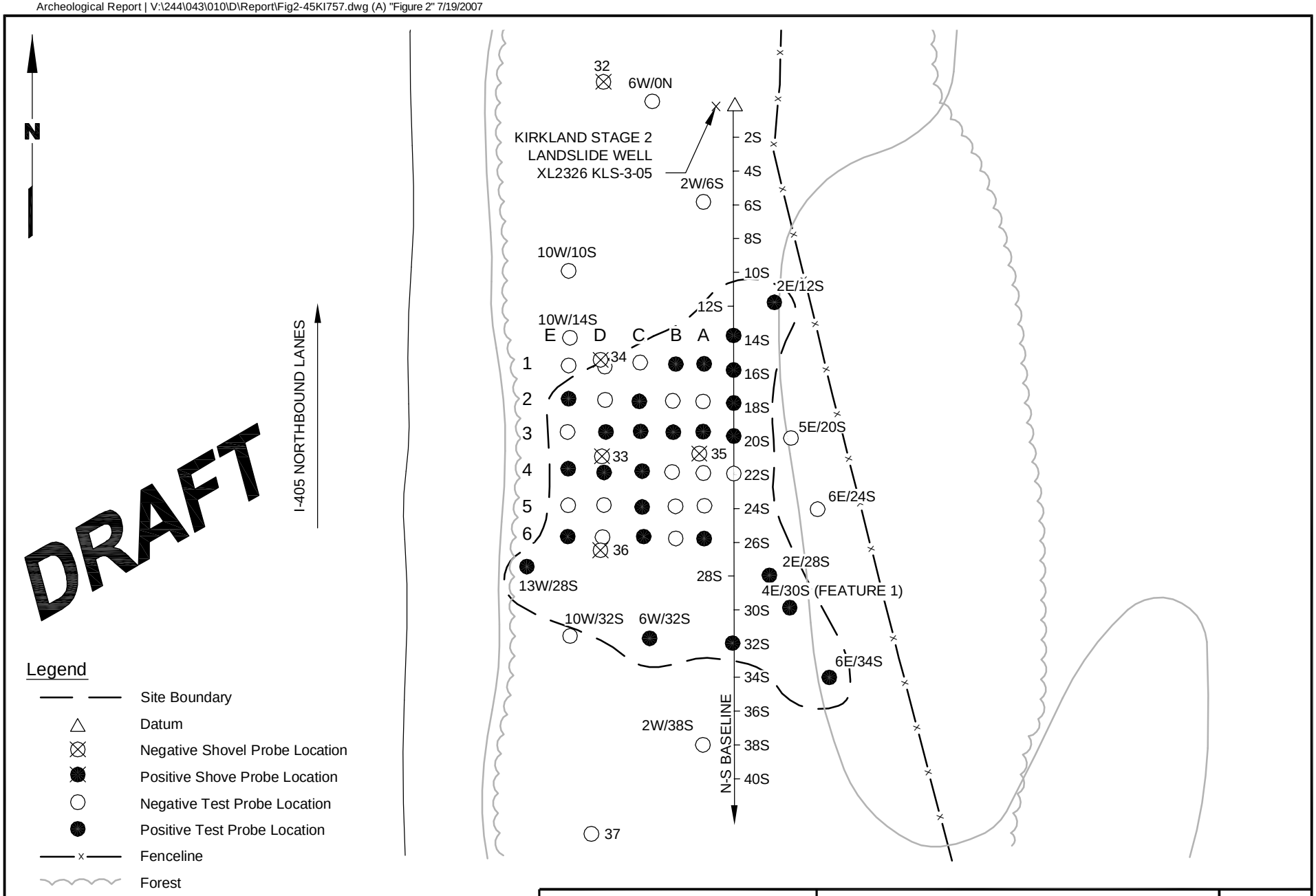
Scale in Feet

Data Source: USGS 7.5' Topo Quads (Bothell and Kirkland)

Y:\Projects\24043\010\MapDocs\Report\Fig1-45KI757.mxd 7/19/2007

LANDAU ASSOCIATES

I-405 SR 520 to I-5 Improvement Project King County, Washington	**Site Location Map**	Figure 1

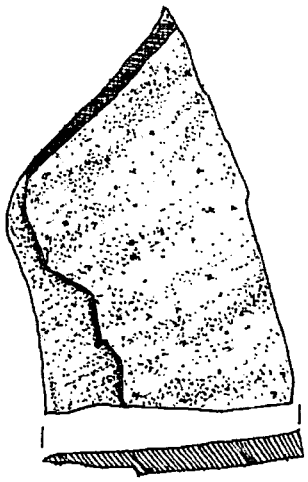


LANDAU ASSOCIATES

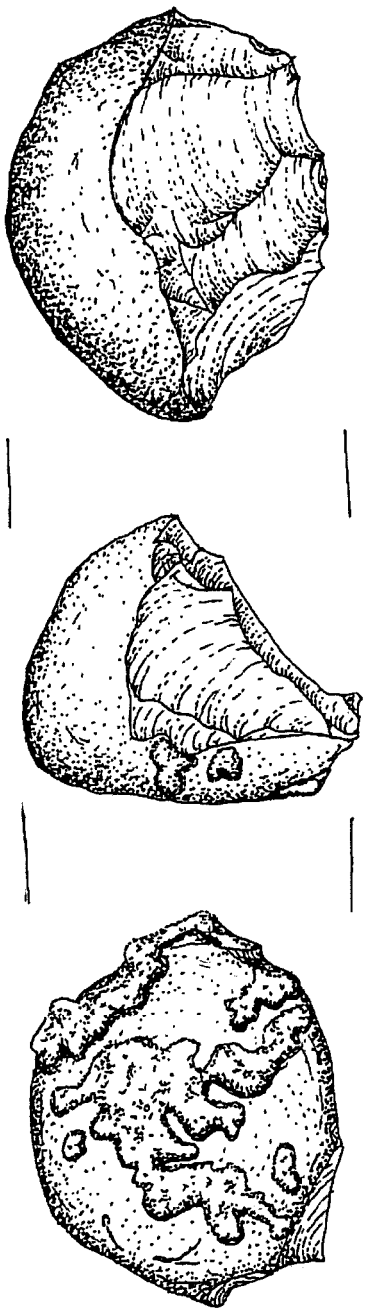
I-405, SR 520 To I-5
Improvement Project
Snohomish County, Washington

45KI757 Site Map
East Norway Hill
Lithic Scatter

Figure
2



SCHIST KNIFE
SP33, STRATUM II
(27cm bgs)



METASEDIMENTARY
TESTED PEBBLE
SP33, STRATUM II
(24cm bgs)

0 2 4
Scale in Centimeters

DRAFT

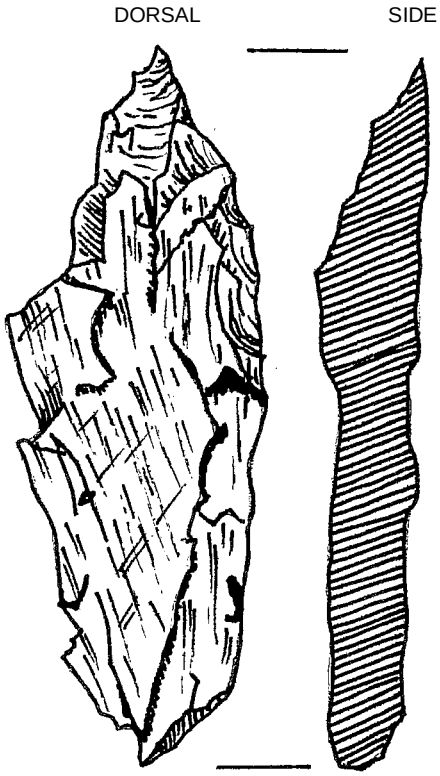
Archeological Report | V:\244\043\010\D\Report\KirklandFig3A_3B.dwg (A) "Figure 3A" 7/19/2007

LANDAU ASSOCIATES

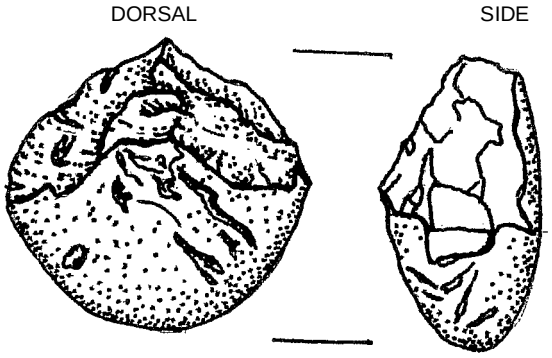
WSDDOT/I-405: SR520 to
I-5 Improvement Project
King County, Washington

Artifact Sketches

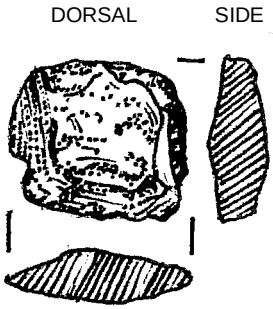
Figure
3A



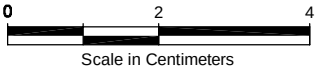
METASEDIMENTARY
PREFORM
OW / 205, STRATUM II
(20cm bgs)



METASEDIMENTARY
TESTED PEBBLE
E4, STRATUM II
(20cm bgs)



SLATE PREFORM
E6, STRATUM II
(44cm bgs)



DRAFT

Archeological Report | V:\244\043\010\D\Report\KirklandFig3A_3B.dwg (A) "Figure 3B" 7/19/2007

LANDAU ASSOCIATES

WSDDOT/I-405: SR520 to
I-5 Improvement Project
King County, Washington

Artifact Sketches

Figure
3B

MANDATORY USGS MAP
*__Quad Name__: Bothell, WA *Series: 7.5-minuate *Date: 1953; photo revised 1981 **SEE ATTACHED** **Section**: 9
SKETCH MAP
Legend: Known boundary Possible boundary Other symbols (other than USGS **SEE ATTACHED** Scale: North Arrow (mag.)

Site 45KI757-Artifact Table

Shovel Probe #	Artifact Description	Depth Below Ground Surface	Associated Stratum
SP 33	One metasedimentary tested cobble, one schist knife	24 cm	Stratum II
A1-2W/16S	One piece slate shatter, two slate flakes, one schist flake	54-70 cm	Stratum II
A3-2W/20S	Two slate flake fragments	63 cm and 80 cm	Stratum II
A6-2W/26S	One slate flake-broken	40 cm	Stratum II
B1-4W/16S	One cryptocrystalline flake	20 cm	Stratum II
B3-4W/20S	Three metasedimentary flakes	20-40 cm	Stratum II
C2-6W/18S	Two slate flakes-broken	10-25 cm	Stratum II
C3-6W/20S	Two pieces of fire-cracked rock	20-45 cm	Stratum II
C4-6W/22S	One slate decortication flake	20-40 cm	Stratum II
C5-6W/24S	Two metasedimentary flakes (broken), one metasedimentary decortication flake (broken in two pieces)	Upper 40 cm	Stratum II
C6-6W/26S	One metasedimentary flake-broken	20 cm	Stratum II
D3-8W/20S	Two slate flakes	15-40 cm	Stratum II
D4-8W-22S	One fire-cracked rock	10-15 cm	Stratum I
E2-10W/20S	One metasedimentary flake	20-50 cm	Stratum II
E4-10W/22S	One metasedimentary tested cobble	Upper 20 cm	Stratum II
E6-10W/26S	One piece slate shatter and a possible slate preform	40 cm	Stratum II
28S/13W	Two slate flakes-broken	20-30 cm	Stratum II
0W/14S	One slate flake fragment, one metasedimentary utilized flake, one metasedimentary complete flake	Upper 20 cm and upper 50 cm	Stratum I-II
0W/16S	One slate flake	50-60 cm	Stratum II
0W/18S	One metasedimentary flake	Upper 50 cm	Stratum III
0W/20S	One metasedimentary preform	40 cm	Stratum II
0W/32S	One cryptocrystalline flake-broken	30-40 cm	Stratum II
6W/32S	Two pieces fire-cracked rock	60-70 cm	Stratum II
2E/12S	One schist flake, one slate flake-broken	37 cm and upper 50 cm	Stratum II-III
2E/28S	Three pieces of fire-cracked rock, five slate flakes-four broken, two metasedimentary flakes, one schist flake-broken	Upper 60 cm	Stratum III
4E/30S	Four pieces of fire-cracked rock found in Feature 1, one metasedimentary flake, one schist flake, one metasedimentary tested cobble	Upper 45 cm	Stratum III
6E/34S	Two slate fragments-broken	Upper 50 cm	Stratum III
Tree root wad	Tabular angular manuport	30-40 cm	Unknown

Site 45KI757 Shovel Probe Table

Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
A1-2W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	109 cm	Dark yellowish brown, fine silty sand with less than 10% subrounded to rounded gravels with some roots and sparse charcoal fragments from root burn over olive brown, fine sand with less than 10% subrounded to rounded gravels	One piece of slate shatter, two slate flakes, one schist flake
A2-2W/18S	Location for Sound/ Retaining Wall -Milepost 23.5 to 23.0 Locus VII E	80 cm	Dark yellowish brown, sandy loam over dark yellowish brown, fine sandy silt with less than 10% subrounded to rounded gravels and a slow gradation to olive brown, very compact fine sand	None
A3-2W/20S	Location for Sound/ Retaining Wall -Milepost 23.5 to 23.0 Locus VII E	100 Cm	Duff with dark brown, silty sandy loam with some rootlets over brown, fine silt with less than 10% subrounded to rounded gravels and abundant roots over olive brown, fine silty sand with less than 10% gravels and cobbles	Two slate flake fragments
A4-2W/22S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	80 cm	Duff with very dark brown over dark yellowish brown, fine sand with less than 10% subrounded gravels over light olive brown, fine sand with less than 10% subrounded to rounded gravels	None
A5-2W/24S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Duff with organics over very dark brown, silty loam with less than 10% subrounded to rounded gravels over dark yellowish brown, silty sandy loam, mottled with olive brown, with less than 10% subrounded to rounded gravels over olive brown, fine silty sand	None
A6-2W/26S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Very dark brown duff over dark yellowish brown, fine silty sand with less than 10% subrounded to rounded gravels with some roots and over light olive brown, fine sand with less than 10% subrounded to rounded gravels	One broken slate flake
B1-4W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Very dark brown, sandy loam over dark yellowish brown, sandy loam between 20 cm to 30 cm of gradation to yellowish brown to light olive brown; less than 10% subrounded to rounded gravels over light olive brown, fine compact sand	One cryptocrystalline flake
B2-4W/18S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Dark brown, silty sand with less than 10% subrounded to rounded gravels over dark yellowish brown, silty sand with less than 10% subrounded to rounded gravels over olive brown, fine sand with less than 10% subrounded to rounded gravels	None

Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
B3-4W/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Very dark brown, sandy loam fine sand with less than 10% subrounded to rounded gravels over dark yellowish brown, fine sandy with less than 10% subrounded to rounded gravels over light olive brown, compact fine sand	Three metasedimentary flakes
B4-4W/22S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff with very dark grayish brown over dark yellowish brown, fine sandy silt with less than 10% subrounded to rounded gravels over olive brown, fine sandy silt becoming increasingly compact in depth to a clayey silt with less than 10% subrounded to rounded gravels; roots extend down to 80 cm	None
B5-4W/24S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	80 cm	Very dark brown over dark yellowish brown, fine silty sand with less than 10% subrounded to rounded gravels with detrital tree bark and large red welded sand at 20 cm to 40 cm BGS with less than 10% pea-sized subrounded to rounded gravel and a few cobbles over olive brown, fine sand with less than 10% subrounded to rounded gravels, three subangular metamorphic cobbles between 70-80 cm and less than 10% gravels	None
B6-4W/26S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	44 cm	Duff with very dark brown, fine silty loam over dark yellowish brown, fine silty sand with less than 10% subrounded to rounded gravels. Encountered roots at 4 cm (impenetrable).	None
C1-6W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	110 cm	Dark yellowish brown, loose fine sandy loam with organics, 40% pea-sized subrounded to rounded gravels, roots over dark yellowish brown, moderately compact sandy loam with 5% gravels, roots, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% sand forms small peds, large roots	None
C2-6W/18S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	95 cm	Very dark brown, sandy loam over dark yellowish brown, very compact fine silty sandy loam over light olive brown, fine sand with less than 5% gravels. Roots go to depth.	Two broken slate flakes
C3-6W/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff with very dark brown, rich loam over dark yellowish brown, moderately compact sandy loam with 5% gravels, roots, and sparse charcoal flecking over light olive brown, compact medium sand with less than 5% of sand forming small peds, large roots (weathered glacial sediments)	Two pieces of fire-cracked rock

Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
C4-6W/22S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Duff-Dark brown sandy loam over dark yellowish brown fine sand with less than 10% gravels subrounded to rounded over light olive brown-very compact roots extend down to 85 cm trace silt and fine sand	One slate decortication flake
C5-6W/24S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff-very dark brown rich loam over dark yellowish brown moderately compact sandy loam with 5% gravels, roots persist, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% sand forms small peds, large roots persist (weathered glacial sediments)	Two metasedimentary flakes-broken, one metasedimentary decortication flake (broken in two pieces)
C6-6W/26S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff- very dark brown rich loam over dark yellowish brown moderately compact sandy loam with 5% gravels, roots persist, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% sand forms small peds, large roots persist (weathered glacial sediments)	One metasedimentary flake-broken
D1-8W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Dark brown sandy loam over dark yellowish brown-compact ring of roots around 55 cm over olive brown loose fine sand	None
D2-8W/18S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Discontinuous band of duff-over dark yellowish brown fine sandy loam with roots and less than 10% pea sized gravels, rounded gravels, very few rounded gravels over dark yellowish brown-moderately compact sandy loam with less than 5% gravels and roots, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% gravels, sand form peds (friable) roots present, weathered glacial sediments	None
D3-8W/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90	Duff-very dark brown organic lens discontinuous band -over dark yellowish brown fine sandy loam with roots and less than 10% pea sized gravels, rounded gravels, very few rounded gravels over dark yellowish brown-moderately compact sandy loam with less than 5% gravels and roots, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% gravels, sand form peds (friable) roots present, weathered glacial sediments	Two slate flakes

Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
D4-8W/22S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Discontinuous band of duff over very dark brown, organic loam with charcoal from root burn, over dark yellowish brown, fine sandy loam with roots and less than 10% pea-sized gravels, rounded gravels, very few rounded gravels over dark yellowish brown, moderately compact sandy loam with less than 5% gravels and roots, sparse charcoal flecking over light olive brown, compact medium sand with less than 5% gravels, sand forming peds (friable), roots, weathered glacial sediments	One fire-cracked rock
D5-8W/24S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	80 cm	Very dark brown, organic loam with lots of roots over strong brown band of oxidation from root burn, small pieces of charcoal over dark yellowish brown, sandy loam with roots and less than 5% gravels over compact light olive brown, sandy loam with less than 5% gravels, sparse roots	None
D6-8W/26S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff-organic loam with abundant roots over dark yellowish brown, sandy loam with roots and less than 5% gravels over olive brown, sandy loam with less than 5% gravels and tree roots	None
E1-10W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff-very dark grayish brown, silty loam with sparse charcoal over dark yellowish brown, fine silty sand with less than 10% subrounded to rounded gravels over dark yellowish brown fine silt with less than 10% subrounded to rounded gravels over olive brown, fine sand and less than 10% subrounded to rounded gravels increasingly compact in depth	None
E2-10W/18S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	110 cm	Very dark grayish brown, sandy loam over dark yellowish brown, fine sand with less than 10% gravels over light olive brown, fine sand with less than 5% gravels	One metasedimentary flake
E3-10W/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff-dark brown, fine silty sand over dark yellowish brown, fine sand with less than 10% subrounded to rounded gravels over olive brown, fine sand with less than 5% subrounded to rounded gravels	None
E4-10W/22S	Location for Sound/ Retaining Wall Milepost 23.5 to 23.0 Locus VII E	100 cm	Very dark brown duff, organic loam, abundant roots over dark yellowish brown sandy loam with less than 10% gravels and some tabular, subrounded pebbles with iron oxide concretions over compact olive brown, sandy loam with less than 5% gravels	One metasedimentary tested cobble

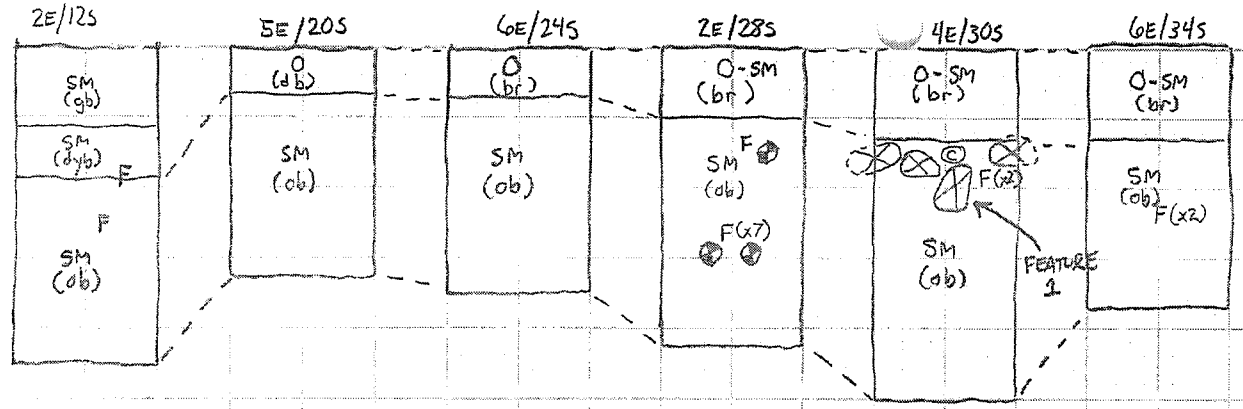
Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
E5-10W/24s	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff, dark grayish brown over light yellowish brown to dark yellowish brown, sandy loam with less than 10% subrounded to rounded gravels-fine sandy loam to silty loam over light olive brown, fine sand with less than 5% gravels	None
E6-10W/26S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	80 cm	Duff-very dark brown, organic loam, lots of roots over dark yellowish brown, sandy loam with roots, less than 5% gravels over olive brown, compact sandy loam with less than 5% gravels, sparse roots	One piece of slate shatter, one possible slate preform
Judgmental probe-0N/6W	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	106 cm	Duff over dark yellowish brown, fine silty loam with less than 10% subrounded to rounded gravels over light olive brown, fine silty sand becoming a fine sand with less than 5% subrounded to rounded gravels	None
Judgmental probe 2E/28S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	85 cm	Duff over brown, sandy loam with organics, over a compact to very compact olive brown, silty sand with less than 20% subrounded to rounded and tabular pea-sized gravels, sparse pebbles, and tree roots	Three pieces of fire-cracked rock, five slate flakes (four are broken), two metasedimentary flakes, one broken schist flake
Judgmental probe 4E/30S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Duff-brown organic loam with abundant rootlets and 10% to 15% pea-sized gravels and sparse pebbles over olive brown, compact to very compact sandy loam to silty sand with 15% to 25% pea gravels predominately rounded with some cortical spalls	One metasedimentary tested cobble from the upper 20 cm, one schist flake, and one metasedimentary flake. One feature (F1) with four metamorphic cobbles found at 30 cm BGS to 45 cm BGS.
Judgmental probe-5E/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	65 cm	Duff-very dark brown over a very compact light olive brown, sandy loam with less than 5% subrounded gravels	None
Judgmental probe 6E/24S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	70 cm	Duff over compact olive brown, silty sand and less than 5% pea-sized gravels and less than 10% gravels at base of shovel probe, becomes a hardpan at 70 cm	None
Judgmental probe 6E/34S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	75 cm	Duff-brown with organic loam over compact olive brown, silty sand with 20% subrounded to rounded pea gravels, becomes a hardpan at 75 cm	Two slate flakes

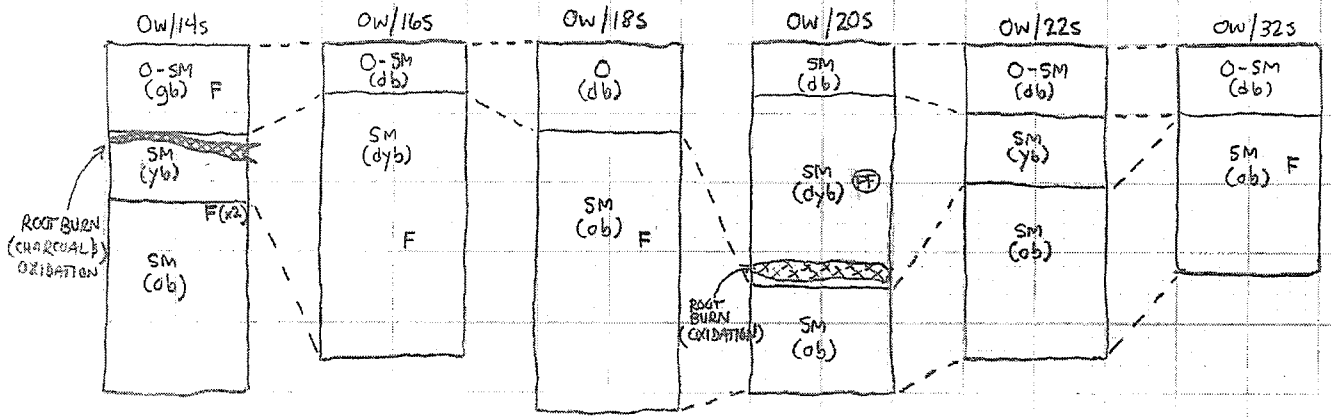
Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
Judgmental probe-10S/10W	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	95 cm	Dark brown fine sandy loam with less than 10% subrounded to rounded gravels over a strong brown fine sand gradating to yellowish brown compact fine sand with less than 10% subrounded to rounded gravels over a light olive brown very compact fine sand	None
Judgmental probe 28S/13W	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	118 cm	Dark brown fine silty loam over dark yellowish brown very compact fine silty sand over a olive brown fine silty sand with less than 10% subrounded to rounded gravels with density decreasing in depth	Two slate flakes-broken
Judgmental probe 0W/14S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Duff sandy loam with organics and less than 20% gravels and pebbles over a yellowish brown compact sandy loam with less than 10% gravels and an irregular lens of charcoal powdery light gray ash in east wall and is most likely root burn over a olive brown compact silty sand with less than 10% gravels	One slate flake fragment, one metasedimentary utilized flake, one metasedimentary complete flake
Judgmental probe-0W/16S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff over a dark brown fine silty loam over a dark yellowish brown sand with less than 10% subrounded to rounded gravels becoming a fine sand with depth	One slate flake
Judgmental probe 0W/18S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	105 cm	Duff-dark brown organics with large fragments of bark over olive brown, compact silty sand with less than 15% gravels and sparse pebbles	One metasedimentary flake in upper 50 cm
Judgmental probe-0W/20S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Duff-very dark brown over dark yellowish brown, compact fine sandy loam with less than 5% gravels and sparse charcoal with a lens of strong brown oxidized sediment from root burn over a compact olive brown, medium sand with less than 5% gravels	One metasedimentary preform
Judgmental probe-2W/6S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	100 cm	Dark yellowish brown, loose fine sandy loam with abundant rootlets and less than 10% subrounded gravels over a compact olive brown, medium sand with less than 5% gravels	None
Judgmental probe-2W/38S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	70 cm	Duff-very dark brown over a dark yellowish brown, compact sandy loam with friable reddish brown iron oxide pellets and less than 5% gravels over a light olive brown, compact sandy loam to sand and less than 5% gravels	None

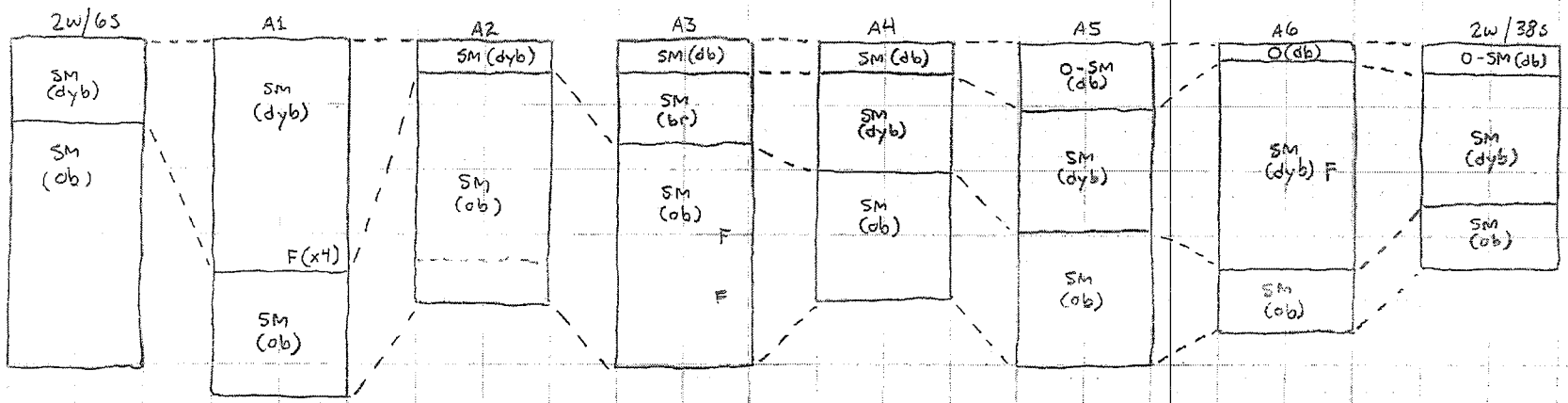
Shovel Probe #	Location	Depth	Soil Description	Cultural Material Identified
Judgmental probe-6W/32S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	80 cm	Duff over a dark brown, fine silty loam over a dark yellowish brown, fine silty loam with abundant roots all the way down	None
Judgmental probe-10W/32S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	120 cm	Duff over dark brown, sandy loam with abundant rootlets over dark yellowish brown, moderately compact fine sandy loam and less than 5% gravels over a very compact olive brown, sandy loam to sand with less than 5% gravels	None
Judgmental probe 10W/14S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff with organics and fine sandy loam over dark yellowish brown, moderately compact sandy loam and less than 5% gravels over a very compact olive brown, silty sand with less than 5% gravels with gravel density decreasing with depth	None
Judgmental probe 0W/22S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff-dark brown loam with 15% gravels over yellowish brown, compact sandy loam with up to 15% gravels over olive brown fine sand with up to 15% gravels	None
Judgmental probe 0W/32S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	65 cm	Duff over a dark brown loam with abundant roots over olive brown, fine sand with 15% gravels	One cryptocrystalline flake between 30 cm and 40 cm, found in screen
Judgmental probe 2W/12S	Location for Sound/ Retaining Wall-Milepost 23.5 to 23.0 Locus VII E	90 cm	Duff with organic-rich loam with charcoal flakes and 45% subrounded to rounded pea gravels over a dark yellowish brown, moderately compact fine sandy loam with less than 5% gravels over olive brown compact fine silty sand with less than 5% gravels	One schist flake, one broken slate flake

45KI 757 (1/3) 20cm

* ARTIFACTS SHOWN IN DEEPEST PORTION OF PROFILE FROM WHICH SEDIMENT SCREENED







LEGEND

- FCR
- COBBLE
- TESTED PEBBLE/COBBLE
- F(x3) - FLAKE (N=3)
- PF - PREFORM
- T - TOOL
- ----- - CHANGE IN COMPACTNESS

KEY TO SOIL TYPES (ADAPTED FROM USCS CLASSIFICATION)

- CL - CLAYEY SILT TO SILTY CLAY
- GC - FILL (GRAVEL, SAND, CLAY MIX)
- ML - FINE - MEDIUM SAND
- SC - SANDY CLAY
- SM - SANDY SILT TO SILTY SAND
- SW - GRAVELLY SAND TO SANDY GRAVEL
- O - ORGANIC (DUFF)

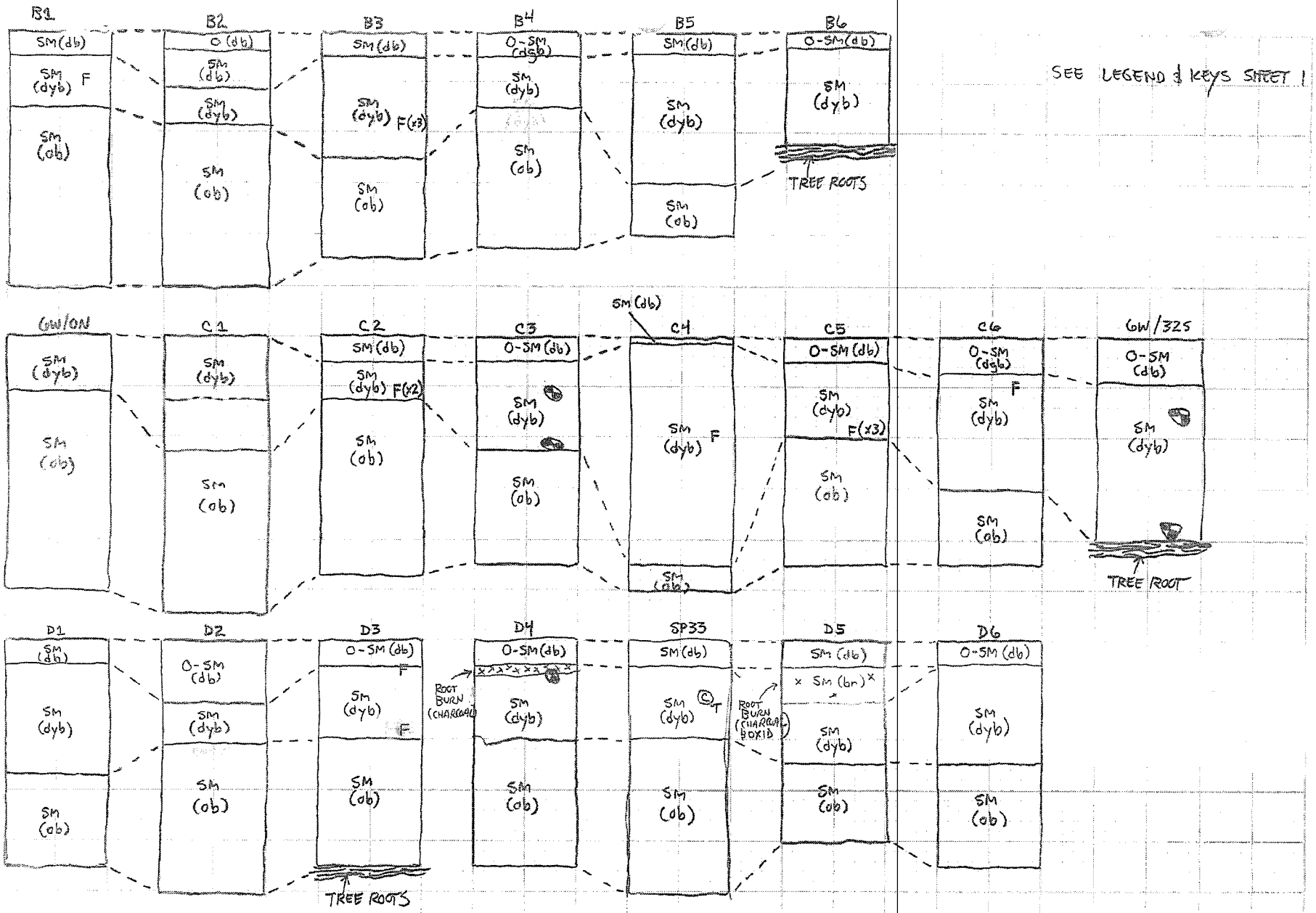
KEY TO SOIL COLORS

- bl - black
- br - brown
- db - dark brown to strong brown
- dgb - dark grayish brown
- dyb - dark yellowish brown
- yb - yellowish brown
- ob - olive brown

[illegible]

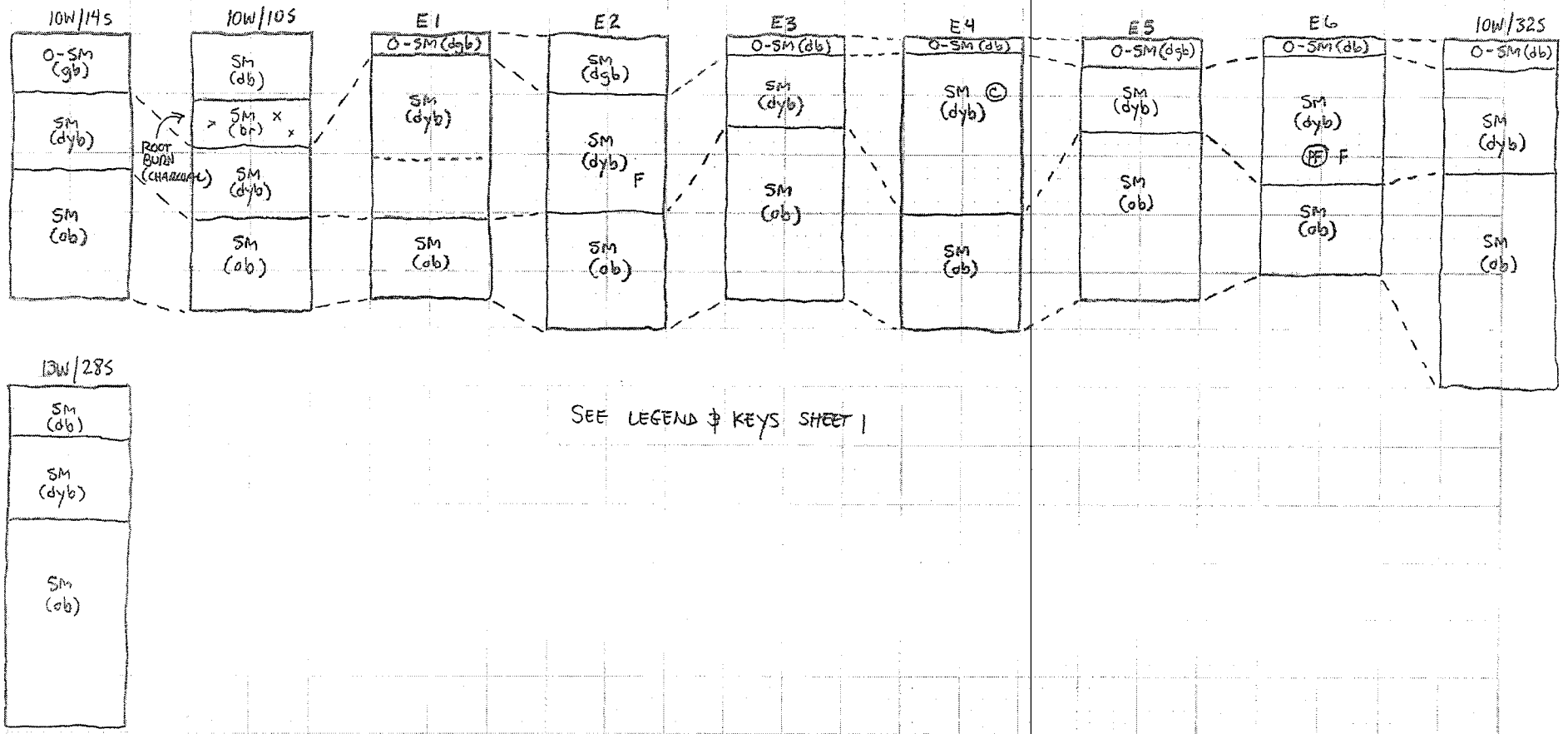
45K1757 (2/3) 20cm.

* ARTIFACTS SHOWN IN DEEPEST PORTION OF PROFILE FROM WHICH SEDIMENT SCREENED



45KI757 (3/3) 20m

* ARTIFACTS SHOWN IN DEEPEST PORTION OF PROFILE FROM WHICH SEDIMENT SCREENED



SEE LEGEND & KEYS SHEET 1

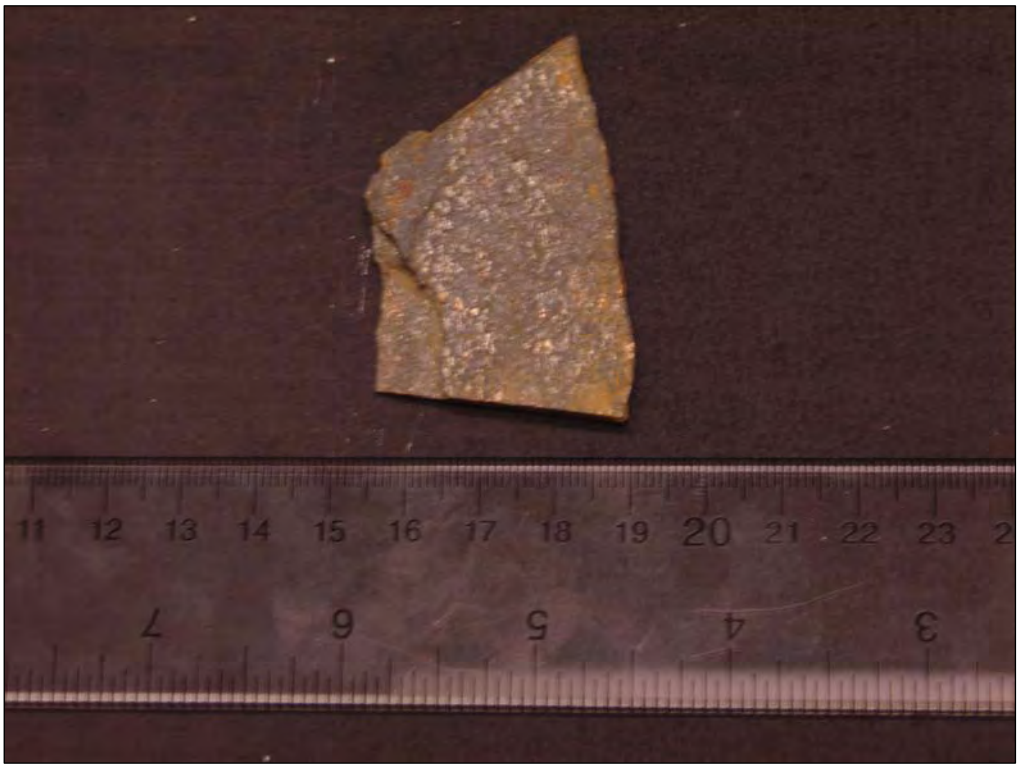
1. Overview of site 45KI757 with pin flags.

2. Tested cobble from SP 33 at site 45KI757.

I-405, SR 520 to I-5 Improvements Bothell, Washington	**Selected Site Photographs**	Figure 4

LANDAU ASSOCIATES

7/23/07 \\Edmdata\projects\244\043\FileRm\R\I405 520-I5_TechMemo\Appendices\Appdx E Archaeological Site Forms\Site 45KI757\I-405 SR 520 to I-5 Improvements Figure 4.doc



3. Schist knife from SP 33 at site 45KI757.

4. Planview of SP 33 in site 45KI757 where original tested cobble and schist knife were observed.

7/23/07 \\Edmdata\projects\244\043\FileRm\R\I405 520-I5_TechMemo\Appendices\Appdx E Archaeological Site Forms\Site 45KI757\I-405 SR 520 to I-5 Improvements Figure 5.doc

LANDAU ASSOCIATES

I-405, SR 520 to I-5 Improvements
Bothell, Washington

Selected Site Photographs

Figure 5

5. Two metasedimentary flakes and one slate flake from SP 0-14S from site 45KI757.

7/23/07 \\Edmdata\projects\244\043\FileRm\R\I405 520-I5_TechMemo\Appendices\Appdx E Archaeological Site Forms\Site 45KI757\I-405 SR 520 to I-5 Improvements Figure 6.doc

Site 45KI757-GPS Coordinates

(Readings taken with Garmin GPSmap 60CSx with +/- 25 foot accuracy)

Shovel Probe #	GPS Coordinates	Comments
Datum	N 47 44.976 W 122 11.166 2nd coordinates taken on 7/11/07 N 47 44.977 W 122 11.169	Datum located at Kirkland State 2 landslide well XL 2326 KLS-3-05
A1	N 47 44.975 W 122 11.171	Corner of grid
A6	N 47 44.971 W 122 11.173	Corner of grid
E1	N 47 44.966 W 122 11.177	Corner of grid
E6	N 47 44.961 W 122 11.179	Corner of grid
Judgmental probe 6W/0N	N 47 44.976 W 122 11.171	Judgmental probe
Judgmental probe 2W/6S	N 47 44.975 W 122 11.172	Judgmental probe
Judgmental probe 0W/16S	N 47 44.972 W 122 11.170	Judgmental probe
Judgmental probe 0W/20S	N 47 44.970 W 122 11.174	Judgmental probe
Judgmental probe 5E/20S	N 47 77.971 W 122 11.170	Judgmental probe
Judgmental probe 13W/20S	N 4744.969 W 12211.181	Judgmental probe
Judgmental probe 2W/38S	N 47 44.957 W 122 11.175	Judgmental probe
Judgmental probe 6W/32S	N 47 44.168 W 122 11.176	Judgmental probe
Judgmental probe 10W/10S	N 47 44.973 W 122 11.180	Judgmental probe
Judgmental probe 10W/32S	N 47 44.966 W 122 11.182	Judgmental probe
Judgmental probe 10W/14S	N 47 44.973 W 122 11.179	Judgmental probe
Judgmental probe 2E/12S	N 47 44.973 W 122 11.171	Judgmental probe <3M-F

Shovel Probe #	GPS Coordinates	Comments
Judgmental probe 0W/14S	N 47 44.972 W 122 11.172	Judgmental probe
Judgmental probe 0W/18S	N 47 44.974 W 122 11.175	Judgmental probe
Judgmental probe 0W/22S	N 47 44.972 W 122 11.176	Judgmental probe
Judgmental probe 0W/32S	N 47 44.967 W 122 11.174	Judgmental probe
Judgmental probe 4E/30S	N 47 44.965 W 122 11.173	Judgmental probe
Judgmental probe 2E/28S	N 47 44.967 W 122 11.173	Judgmental probe
Judgmental probe 6E/34S	N 47 44.965 W 122 11.173	Judgmental probe
Judgmental probe 6E/24S	N 47 44.969 W 122 11.167	Judgmental probe