

**South Channel Bridge Project, Unalaska, AK  
Archaeological Data Recovery Plan for  
the Amaknak Bridge Site (UNL-050)  
By the Museum of the Aleutians**

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Introduction

This document outlines an archaeological data recovery plan for the South Channel Bridge Project on Unalaska, AK. The ADOT plan to reconstruct the south channel bridge and reroute Henry Swanson Drive will very significantly impact a known archaeological site – the Amaknak Bridge Site (UNL-55). We estimate that almost 95% of the known site will be destroyed as a result of the bridge reconstruction. In order to mitigate this impact we propose a 20% site recovery plan as detailed below.

Research Questions

There are a large number of possible research questions that can be pursued through the excavation and analysis of the Amaknak Bridge Site. We have chosen four research question areas detailed below in order to integrate this project with the current state of knowledge of Eastern Aleutian prehistory. The site had a preliminary archaeological ADOT study by Glenn Bacon (1977) a preliminary excavation by Knecht and Davis in 2000, and a site boundary survey by Knecht in 2001. These preliminary studies revealed that the site was deeply stratified (more than 2 meters of deposit on the northern exposure) extended over an area of approximately 1,050 sq meters, was dated by C-14 by two determinations between 3300 and 2700 radiocarbon years before present, had excellent faunal preservation in the middens, and fitted into the late Margaret Bay phase of Eastern Aleutian prehistory. The Margaret Bay Phase is a unique manifestation in the eastern Aleutians and represents a link between the older Anangula phase (beginning around 9000 years ago) and the later Amaknak and Aleutian phases which lasted up until contact with the Russian traders. The Margaret Bay Phase is known only from the Amaknak Bridge site and from the Margaret Bay site (UNL-048) located across Iliuliuk Harbor from Amaknak Bridge. The phases may be summarized as follows (after Knecht and Davis 2001).

<b>Phase</b>	<b>Representative Sites</b>	<b>Age Before Present</b>
Late Aleutian	Tanaxtaxak	1000 – 200 BP
Amaknak	Summer Bay	3000 -1000 BP
Margaret Bay	Margaret Bay <b>Amaknak Bridge</b>	4000 – 3000 BP
Late Anangula	Margaret Bay	7000 – 4000 BP
Early Anangula	Ugnaada{ - Hog Island	9000 – 7000 BP

The four research question areas are: culture history, subsistence ecology, household archaeology, and adaptation to environmental change.

### Culture History

The Amaknak bridge site gives us the opportunity to study the range of variation in type and style of artifacts and features of the Margaret Bay Phase. Basically we can try to understand the cultural similarities and differences between the two sites known sites (Margaret Bay and Amaknak Bridge) which overlapped significantly in time. Based on the available C-14 dates and our preliminary artifact analysis from Amaknak and Margaret Bay, we can also see that the Amaknak Bridge site extends right into the following Aleutian phase and we will be able to monitor the transition into this later period. Thus, on a cultural historical plane, the Amaknak Bridge site allows us to answer questions about continuity, variation, and cultural change during a poorly known period of Aleutian prehistory.

### Subsistence Ecology

The preliminary excavations in 2000 revealed that the site had deep shell middens spanning the entire stratigraphic section of the site. These shell middens enable the preservation of bone tools and mammal, fish and bird food remains. The middens are one of the most important features of the site. There are no middens known from this period elsewhere. Thus we will be able to recover a variety of artifacts (e.g. harpoons points, socket pieces, awls, needles, fish hooks and perhaps carved figures) that heretofore have not been seen from this time period. The question here is do the artifacts reflect a relatively smooth continuity of form through time, or do there appear to be significant breaks in the record. Secondly, the food remains from the midden may help us study the question of how ecosystems and subsistence may have changed during the Margaret Bay Phase which overlaps with the cooler Neoglacial times.

### Household Archaeology

A current major area of study is household archaeology, the study of domestic living space. From a close analysis of house floors and associated features it is possible to discern patterns of family organization, behavioral patterns, gendered activity, and overall social structure of the community. We are fortunate to have found three-quarters of one household structure during our 2000 excavations, but we are confident that several other structures await excavation at Amaknak. Ground penetrating radar survey in 2000 revealed evidence of two other structures and a possible third. We have only one other complete structure from this time period at Margaret Bay, so the excavations at Amaknak, therefore will provide extremely valuable data on household organization.

### Adaptation to Environmental Change

The Amaknak Bridge Site was occupied during an important period of climate change – the end of the Neoglacial and the onset of post Neoglacial warming. The Neoglacial is a widely known period of cooling which began after c. 4000 BP (before

present). Based on faunas known from the Late Anangula phase at Margaret Bay, we can reasonably conclude that the Neoglacial was cold enough to create pack ice which connected most of the Fox Island group of the Eastern Aleutians to the Alaskan Peninsula. Presence of walrus, ringed seal, polar bear all testify to a sea ice habitat (B. Davis 2001). During the subsequent Margaret Bay phase the climate ameliorated and certainly must have had an effect on the local subsistence base. At the Margaret Bay site, unfortunately, virtually no fauna was preserved from this time. Hence the well preserved faunal record in the middens of the Amaknak Bridge Site take on major importance. We will be able to trace the mode of subsistence change during this important transitional period. It is also apparent from our previous work that during the Margaret Bay phase and the following Amaknak phase there was a significant change in technology. The lithic blade and microblade tools which were the basis for the projectile and cutting tool technology gave way to a much elaborated bone tool assemblage during the Amaknak phase. We have not been able to observe this technological transition in full before, because of the poor bone preservation at the Margaret Bay site. With the addition of a large sample from the Amaknak Bridge site, however, we will be able to document for the first time this significant technological change.

#### Research at the Amaknak Bridge Site and the Public Interest

The research themes that we propose are all intended to address issues in the public interest. Preliminary testing (Bacon 1977), has confirmed that the Amaknak Bridge site is spectacularly rich in terms of its research potential. In reconstructing the culture history of the Aleutians, the Amaknak Bridge site is unique in that it has the only site in the region where bone artifacts are preserved from c. 3,000 years BP. There is at least one earlier bone assemblage from the Margaret Bay site (UNL-48) from c. 4,500 years BP and many others in the Aleutians that post date 2,000 years BP, however no well-dated assemblages have been so far recovered from this crucial period of cultural transition. Similarly the site has the only faunal collection from a period when the Bering Sea ecosystem was also in flux. Recovery and analysis of this unique non-fossil faunal assemblage will be important to interdisciplinary research on the modern-day environmental regime shifts now affecting coastal communities throughout Alaska. The Museum of the Aleutians is well poised to take full advantage of the site's research value by integrating the site data into our ongoing research as well as our exhibit and public outreach programs

#### Methodology for Field Work and Analysis

Since our first large scale excavation in 1996, the Museum of the Aleutians has developed extensive experience in the excavation and analysis of stratified sites in the eastern Aleutians. Over the past seven field seasons we have opened more than 900 sq. meters of excavation units, and catalogued more than 20,000 artifacts. The Museum of the Aleutians, located less than a kilometer from the bridge site, has up to date laboratory and storage facilities and an excellent store of excavation and lab equipment and supplies. We are thus well situated to carry out the Amaknak Bridge site excavation.

Before discussing the methodology, an assessment of the scope of the site and volume of archaeological deposit is in order. Based on the boundary survey by Knecht reported to ADOT July 10, 2001, we estimate the total site area to equal 1,050 sq meters. As a result of our 2000 excavation and the backhoe test trenches made during the boundary survey, we estimate the average depth of cultural deposits to equal 0.60 meters. The volume, therefore, we estimate to be about 600 cubic meters. A 20% sample of the estimated site volume equals 120 cubic meters. Meeting this goal means that during the three and a half month field season we will excavate and average of about 8.5 cubic meters of archaeological deposit a week.

Amaknak Bridge Archaeological Site (UNL – 050) Summary Statistics

Areal extent	1,050 sq. meters
Volume	600 cubic meters
Volume to be excavated	120 cubic meters
Age	2700 – 3300 years before present
Type of site	semi permanent habitation with multiple semi-subterranean households

Site Preparation

The first phase in the excavation process will be to clear the entire site of the WWII shot rock overburden. This clearing operation is key to the entire data recovery plan. A skilled heavy equipment operator, working in concert with a monitoring archaeologist, can remove the overburden to within a few centimeters of the site. The monitor for this phase will be co-principal investigator Rick Knecht, who has previous research experience with the site both in excavation and in completion of backhoe testing to determine the boundaries of the site. We expect this clearing operation will reveal a continuous area of prehistoric occupational deposit. Approximately 1,400 sq. yards of shot rock and soil overburden will be removed in the process. Spoils of shot rock and gravel will be disposed of in an off-site location by Northern Mechanical, our locally based contractor. Top soil removed from the site will be disposed of on the grounds of the Museum of the Aleutians.

Removing the overburden and exposing the entire site surface will enable us to select the most data-rich 20% of the site, based on preservation of faunal materials and dwelling features. It will also make it possible to reach basal deposits within allowable OSHA approved depth limits (four feet) for excavations without shoring. Clearing the entire site will also allow us to recover more than the minimum 20% if the opportunity presents itself, either during or after the field season. If the project attracts the level of

volunteer support that the Museum has enjoyed in the past, we may well be able to increase our recovery to well over 20%.

After the excavation phase of the site is completed, plans call for removal of the unexcavated remainder of the site to the grounds of the Museum of the Aleutians, where artifacts can be salvaged, rather than have them destroyed or picked up by collectors during the subsequent road construction. This process will be far more efficient with the site surface exposed and the boundaries well delineated by our work during the site preparation phase.

### Excavation Phase

All work on this project will meet or exceed the standards set for in the Secretary of Interior Standards and Guidelines for Archaeological Documentation (48 FR 44734-37). The primary field excavation plan will be to open large block excavation units, with locations based upon previous work. This strategy is designed to uncover intact large features such as household structures and to reveal the pattern of artifact and feature distribution. This excavation strategy was effectively employed at the Margaret Bay site. We plan to open at least two large block excavations, one in the northeast corner of the site which will be linked to the 2000 excavations, and a second block excavation in the northwest corner of the site where structural remains were discovered during the boundary survey. Smaller test squares (2 x 4 m) will be opened on the south end of the site. We are confident that this placement of excavation units will provide a meaningful sample of the structures, midden and artifact remains of the Amaknak bridge site.

All soils removed from excavation units will be water screened through ¼" wire cloth. In previous work we found that finer mesh would clog with the remains of decomposed mussel shell, however a 1/8" inch screen will be used to screen house floor deposits and other features as appropriate. The water source is fresh, from a City owned hydrant. Backdirt and slurry will be channeled into the low area on the north edge of the site and not allowed to cover the roadway or enter the adjacent marine channel. The same methods were used with good effect by us in the 2000 season excavations. Water screening has additional advantages in that it gives faunal remains and lithics a good preliminary cleaning, substantially decreasing the amount of time spent cleaning in the lab.

### Data Recording and excavation

All units on the excavation grid will be shot in with the total station and all features and artifacts will be point provenienced with the same instrument. Excavation will be with hand tools (trowels) and all backdirt will be wet screened through a ¼" wire cloth. Bulk samples at 10 cm intervals will be taken in at least two midden columns in order to recover fish and marine invertebrate remains. We will make a total recovery of mammalian and bird bones from all the excavated units. All lithic tools will be point

provenienced and all lithic artifacts will be bagged. Special attention will be paid to mapping features on the site, particularly dwellings and associated house floors.

Photographs will be taken with both conventional and digital equipment. Special restricted access will be accorded to any photographs of human remains as stipulated in the MOA. Field notes and associated documentation will be accorded the same care in terms of cataloging and curation as any other part of the collection.

#### Direction and Supervision

The project will be under the overall direction of the Co-Principal investigators, Dr. Rick Knecht, and Dr. Richard Davis. Knecht and Davis have worked together on large scale excavations of prehistoric sites in Unalaska Bay for the past seven field seasons. They also directed testing at the Amaknak Bridge site in 2000. Their CVs are attached. Knecht will supervise the site preparation phase of the project, both Knecht and Davis the excavation phase. Analysis of the lithic artifacts will be done by Davis at Bryn Mawr College, the bone artifacts and other materials by Knecht at the Museum of the Aleutians. Knecht and Davis will also co-author all reports. Project fiscal and logistics management will be centered at the Museum of the Aleutians under the direction of Knecht.

Excavation plans will be made by the Co-PIs in light of daily excavation results. One supervisor will oversee the work in the excavation units, and the other will be in charge of all data recording, digital imaging, and mapping. Co-PI Knecht will be oversee the work during the entire project; Co-PI Davis will be on site for at least 30 days. Two site supervisors will assist the PIs in the excavation phase. Dr. Kathryn Woodhouse-Beyer has six years of Alaska excavation experience in coastal Alaska. Charles Bello holds an MA in anthropology and has been a cultural resource management professional for more than 20 years. Bello will also serve as our safety officer as described below.

A designated screen supervisor will oversee the wetscreening operation and record the volume of material processed. A designated senior crew member will oversee the volunteer workers and guide visitors around the site. Two of the field crew will operate the total station and map features. At any given time we expect that 40 sq meters of excavation units might be open and this will necessitate careful monitoring and recording of the excavation.

In the event that human remains are recovered or suspected, they will be evaluated by crew member Donald Sharp. Sharp holds a Masters degree in Forensic Sciences and has extensive experience in osteological analysis of human skeletal remains. His resume is attached. Sharp will be assisted by Woodhouse-Beyer, who serves as Deputy Team leader for the Brown University Forensic Archaeology Group. Having this level of expertise on-site will insure that we are able to fully and speedily comply with Section IV of the Memorandum of Agreement.

All volunteer and student participants in archaeological site work will be considered under the same regulatory umbrella as any of the paid employees. First, we meet or exceed all OSHA regulations when excavating. For every summer since 1996, we have had an on-site safety officer. Chas Bello is a professional archaeologist as well as an EMT. His resume is attached with a list of his certificates in hazardous materials, construction safety, emergency medical services, and search and rescue. The Amaknak Bridge site is within 100 feet of the roadway and crossings of Henry Swanson Drive which lies between the site and the parking area will be required. All crew members will be provided with reflective raingear and/or work vests during the excavation. Safety orientations and weekly safety meetings will be held and an on-site EMT medical kit will be on hand for the use of our EMT. It should also be noted that the site is a short distance from Unalaska Public Safety offices as well as a community clinic.

#### Analytical Phase

The excavation of the Amaknak Bridge site as outlined above will produce a large quantity of artifacts and faunal material. Based on our previous work at the site, we calculate a recovery of more than 25,000 lithic and bone tools will be recovered and 100 Hollinger boxes of faunal remains in a recovery of 20% of the site.

Two full time laboratory staff will be working in the Museum of the Aleutians laboratory during the excavation phase and for much of the analytical phase of the project. Experience has taught us that this is the only way to keep up with the large volume of material that has delayed timely reporting of many a project in the Aleutians. In addition, the excavation crew will work in the laboratory under the direction of the laboratory staff during periods when inclement weather prevents work at the site. At least one member of the laboratory crew will hold a graduate degree in Anthropology and have professional experience in managing an archaeological laboratory. Primary duties of the laboratory staff during the excavation phase will be to document incoming material with a bag and sample catalog. They will also clean, dry and sort artifacts and faunal material in preparation for further analysis. During the analysis phase the laboratory staff will put catalogue numbers on artifacts, do preliminary sorting of faunal material, and help with data entry. Paid and volunteer laboratory crew will be supervised by Knecht at the Museum of the Aleutians, and by Davis at Bryn Mawr College.

In order to expedite the analysis of the faunal remains, we have asked Pacific IDs, located in Vancouver, Canada for a quote to process most of the material. In the event that a closer, Alaska-based firm is available to analyze the faunal data they will be invited to submit a quote for this work. At present however, Pacific IDs is the nearest organization equipped to handle the anticipated volume of material within a reasonable time frame. They are well staffed, have access to excellent comparative collections and can meet our goal of completing the faunal analysis by January 1, 2004. Whenever practical we will utilize the services of other specialists to expedite the analysis and timely reporting of this large collection. NRF Taxonomic Services under the direction of

Nora Foster will analyze the shellfish in the collection. Dr. David Yesner of the Department of Anthropology at UAA will analyze the bird bone and help coordinate the faunal sampling strategies in the field, and write a synthesis of the faunal data.

Chipped stone tools will be analyzed by the typology developed in Unalaska over the last seven years (Knecht, Davis, and Carver 2001). Lithics will be catalogued in an Access data base, digitally imaged, and weighed and measured. This operation will be carried out at the archaeological laboratory, Department of Anthropology, Bryn Mawr College by the Co-PI Davis during the winter of 2003-04 and will be returned to the custody of the Museum of the Aleutians no later than the summer of 2004. Bone tools as well as ground stone and others will be analyzed by Co-PI Knecht at the Museum of the Aleutians using methods and typology developed in Unalaska over the last seven years.

In a final report on the project we will integrate data from the two previous investigations at the site. We will re-analyze the 1977 collection of about 3,000 artifacts partially reported by Glenn Bacon (1977, 1980). We will seek a temporary loan of that material from the UAF museum. We will also integrate the data from our 2000 excavations, which has been already processed, but not yet included in a computer database.

#### Public Outreach

The Amaknak Bridge site is highly visible, perched on a knoll top adjacent to Unalaska's busiest roadway. Public interest in the project will be particularly high and we can safely expect large numbers of visitors during the workday. In the past we have found that this number averages between 20-30 people a day. This naturally affords an excellent opportunity for public educational outreach, as well as a source of volunteer temporary labor on the site. Two members of the field staff with appropriate training will be designated to lead tours and answer questions for visitors on an alternating basis in addition to their regular technical duties.

A university level field school is being held in conjunction with the project under the auspices of the Museum of the Aleutians. There are two one-month sessions scheduled, one for June 15-July 15, the other July 15- August 15. A maximum of 10 students will be accepted for each session. Instruction of the field school students will be shared by the three PhD crew members, with one PhD instructor designated for lectures during the off-hours. The professional crew will thus be on site for 30 days before and 14 days after the field school. Volunteers will be accepted at any time, however will only be allowed to work on the water screens. Field school students will only excavate under a one-to-one supervisory basis with one of the paid excavation staff.

The Museum of the Aleutians will create a temporary exhibit to display artifacts and information concerning the ongoing work within 30 days after the notice to proceed. In addition, Museum visitors will be able to watch the ongoing laboratory work through a

window into the permanent exhibit gallery. At the conclusion of the project, presentations will be made for the public at the Museum in conjunction with Alaska Archaeology Month.

#### Reporting Schedule

Beginning one month after the notice to proceed from ADOT, we will submit a monthly progress report to all interested parties. A proposed schedule follows, based on a notice to proceed on or about May 1, 2003. A final draft report will be submitted for 30 day review no later than January 31, 2004. Monthly progress reports will be the responsibility of Knecht at the Museum of the Aleutians. Knecht and Davis will co-write the final report, compiling the contributions of others as appropriate.

#### Curation

All artifacts and associated documentation generated by this project will be housed at the Museum of the Aleutians. Lithic and faunal collections will be analyzed at off-site locations but will be returned to the Museum before the conclusion of the project in March of 2004. The Ounalashka Corporation (OC) will retain ownership of the collection, and will receive a cataloged inventory as a basis of a long term loan agreement. Several major collections owned by OC are already curated in the Museum. We calculate that there will be about 150 Hollinger boxes of material from the site to be stored under the terms of this agreement. Our normal rate for storage of a Hollinger box is \$250 each, for a total cost of \$37,500. The Museum is willing to waive this fee, consistent with our other curation agreements with OC. We are therefore only including the estimated costs of archival quality storage boxes and materials for the collection in the budget estimate. The curation agreement will be concluded before the end of the project.

**Amaknak Bridge Archaeological Project Milestones  
(Contingent on a May 1, 2003 Notice To Proceed)**

May 1, 2003	<b>Site preparation phase begins</b>
May 10, 2003	WWII overburden removed from site
May 14, 2003	<b>Site preparation phase complete</b> , excavation units staked
May 15, 2003	<b>Excavation phase begins</b>
June 15, 2003	Progress Report #1 submitted
July 15, 2003	Progress Report #2 submitted
August 15, 2003	Progress Report #3 submitted
August 31, 2003	Field work complete, demobilization
September 7, 2003	<b>Excavation phase complete, Analysis phase begins</b>
September 15, 2003	Progress Report #5 submitted,
October 1, 2003	Faunal material delivered to sub-contractor for analysis
October 15, 2003	Progress Report #6 submitted
November 1, 2003	C-14 samples submitted
November 15, 2003	Progress Report #7 submitted
December 15, 2003	Progress Report #8 submitted
January 1, 2004	Artifact catalog, computer database complete
January 15, 2004	Progress Report #9 submitted
January 31, 2004	<b>Draft Final Report submitted for review</b>
February 1, 2004	Curation agreement with OC complete
February 15, 2004	Progress Report #10 submitted
February 28, 2004	Comments received on Draft Final Report
March 15, 2004	<b>Final Report submitted, Project Complete</b>
April, 2004	Public Presentation of results, Alaska Archaeology Month

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