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April 30, 1998

VIA FACSIMILE AND MAIL

Robin Michael, Trial Attorney  
U.S. Department of Justice  
Environment and Natural Resources Division  
General Litigation Section  
P.O. Box 683  
Washington, DC 20044-0683

RE: **Kennewick Man**

Dear Robin:

This responds to your recent letters to Campus Counsel Steven Drown requesting that the Davis campus return bone fragments in its possession to the federal government and is further to your discussions with Mr. Drown concerning procedures for handling and storage of these bone fragments. We are still not clear as to why the federal government is demanding possession of this small bone fragment that has been in the possession of the Davis campus for the last year-and-a-half, safely stored and secured pending resolution of the lawsuit concerning scientific study of Kennewick Man. While we concede that, based on the information available to us, the federal government has jurisdiction over the bone, no one has articulated a reason why the federal government requires this small bone fragment now in order to conduct the investigation necessary to determine whether the skeleton is of Native American ancestry.

The Davis campus will, of course, return the bone if required by the federal government. However, this letter makes several different recommendations that would permit Professor Smith to conclude his DNA analysis of the bone in a manner that would best preserve the scientific value of the bone and that, we believe, would be of great benefit to the federal government. If the federal government declines these recommendations for further study, we strongly recommend that, at a minimum, Professor Smith's recommendations for handling the bone be carefully followed in order to minimize the opportunity for contamination or manipulation (e.g., substitution of the bone) that would compromise the scientific value of the bone for future DNA analysis.

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As discussed below, the University wishes to comply with its legal obligations and also to assure, to the fullest extent possible, the scientific integrity of the bone for further DNA analysis.

**A. Background.**

The following represents our understanding of relevant facts. David Glenn Smith, a professor in the Department of Anthropology, University of California at Davis, has possession of fragments of a metacarpal bone that came from a set of human remains discovered in the shallows of the Columbia River near Kennewick, Washington, in July, 1996. Because this portion of the Columbia River is controlled by the United States Army Corps of Engineers, we understand that these remains, including the bone fragment in the possession of the Davis campus, are subject to the jurisdiction of the federal government pursuant to the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. §§ 3001 et seq.).

Dr. James Chatters, an anthropologist, assisted the Coroner of Benton County, Washington, in evaluating the remains. Dr. Chatters excavated and analyzed the skeleton pursuant to an ARPA permit he obtained from the Army Corps of Engineers, Walla Walla District, dated July 30, 1996. We understand that, with the agreement of the Corps, Dr. Chatters sent the left fifth metacarpal bone to the University of California at Riverside for radiocarbon dating of the bone. Thereafter, Dr. Chatters contacted Professor Smith's office at UC Davis and requested that DNA testing be performed on the metacarpal bone in furtherance of his forensic examination of the skeleton.

Upon receiving approximately 1.5 grams of bone fragments from the UC Riverside campus (hereafter collectively referred to as "the bone"), a graduate student in Professor Smith's laboratory commenced DNA testing in early October, 1996, with the objective of determining the presence or absence of mitochondrial DNA segments found in modern Native Americans (haplogroups A, B, C, D, and X). These tests, which require a series of extractions, amplifications, and analyses, would assist in determining whether or not a biological affinity exists between Kennewick Man and modern Native American people.

After completing two extractions and performing related amplifications, Professor Smith halted further study of the bone in compliance with direction he received in late October 1996 from the Army Corps of Engineers and the Benton County Coroner's office. The tests completed at that time did not permit any conclusion regarding whether or not the Kennewick specimen is a member of one of the known five Native American haplogroups. Since that time, no further analysis has been conducted on the bone, and it has been safely and securely stored on the Davis campus in a manner that preserves the integrity of the bone for further DNA analysis.

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**B. Recommendations for Preserving Scientific Value of the Bone.**

Based upon your representations, and information currently available to us, we believe that the bone is the property of the United States government. If required by the government, the University will, of course, transfer the bone in its possession to you and Dr. Michael Trimble, Ph.D., Chief, Curation and Archives Analysis Section, U.S. Army Corps of Engineers, on May 8 in accordance with your request. However, as discussed below, prior to transferring the bone, we request that you consider allowing Professor Smith to conclude his study in accordance with our recommendations. We believe this would be of most value to the federal government and would best assure preservation of the scientific value of the bone. In making these recommendations, we are mindful of the order of United States Magistrate Judge John Jelderks, dated June 27, 1997, in Bonnichsen, et al. v. United States, et al., which requires that the Kennewick Man remains "be stored in a manner that preserves their scientific value."

**1. Opportunity for Further Study by Professor Smith.**

Professor Smith, a professor of anthropology in the Department of Anthropology at the University of California, Davis, and a research professor with the California Regional Primate Research Center at the Davis campus, is one of the foremost authorities on the use of DNA analysis in the study of archaeological remains. Professor Smith heads the UC Davis Molecular Archaeology Program, where he has a research emphasis on human and primate evolutionary biology. Professor Smith had already invested substantial time and effort in the DNA analysis of the Kennewick Man bone fragment, before he halted his study at the request of the federal government. Professor Smith would like an opportunity to conclude his study of the bone, with assurances that the bone has been cared for in a manner that preserves its scientific integrity for DNA analysis.

One of the most significant concerns in conducting DNA analysis on archaeological remains is ensuring that the bone sample has not been contaminated.<sup>1</sup> Professor Smith is particularly concerned about ensuring the scientific integrity of the bone sample in his possession, as he is confident that this bone has been handled and stored in a manner that limits the possibility of contamination for further DNA analysis. He does not have the same level of confidence for other bones of Kennewick Man that have been handled and stored by others. In his view, the bone specimen in his possession is the only bone of Kennewick Man for which scientifically reliable DNA analysis can be conducted. Obviously, the risk of contaminating a bone rises significantly in relation to the amount of handling and to the number of people who handle the bone. Ungloved handling of the

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<sup>1</sup> In fact, during Professor Smith's analysis of the bone, a second extraction had been initiated, but the analysis was not completed because the extraction was determined to be contaminated.

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bone by a person transfers DNA from that person to the bone, thus contaminating it for future DNA analysis.

In this regard, we have the following recommendations in declining order of preference. We also believe the order of recommendations reflects a corresponding decline in value to the government and assurances that the scientific value of the bone will be preserved.

- a. **First Preference: Permit Professor Smith to Complete His Study Now:** We understand that the federal government will likely require that DNA analysis of Kennewick Man be conducted in order to make a determination as to whether the remains are of Native American ancestry in accordance with the requirements of NAGPRA. For the reasons stated above, we believe that Professor Smith is best qualified and best situated to assist the federal government in this endeavor. Further, by maintaining possession of the bone until his study is concluded, the risk of contaminating the bone is substantially lessened. Professor Smith has indicated that he would be pleased to work in coordination with Corps archaeologists in conducting further study of the bone and to share his results with the federal government. Professor Smith has agreed to finish his study at no cost to the federal government.
- b. **Second Preference: Split the Bone Sample:** If the foregoing recommendation is unacceptable, Professor Smith recommends that the bone sample in his possession be split, with a portion remaining with him to conclude the study proposed above, and the remaining portion transferred to the federal government for handling in accordance with the protocols recommended below.
- c. **Third Preference: Opportunity for Future Study by Professor Smith:** If the federal government insists upon custody of the bone, but elects to conduct DNA analysis of Kennewick Man in the future, Professor Smith requests that he be provided with a split sample of the bone currently in his possession to enable him to conclude his studies. The other portions of the bone could be sent by the government to different laboratories, resulting in multiple DNA analyses, thereby increasing the defensibility of the lab results. Under this scenario, Professor Smith would recommend that the bone be handled and stored in accordance with the protocols described below in order to ensure that the scientific integrity for DNA analysis is preserved to the maximum extent feasible, for whomever conducts the DNA analysis.
- d. **Fourth Preference: Professor Smith Be Considered for Use as an Expert:** At the very least, we request that he be considered by the federal government when selecting experts to conduct DNA analysis on Kennewick Man. In the event that Professor Smith is selected, he would request that he be permitted to study

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the same bone that is currently in his possession and that the protocols described below be followed to help assure its scientific integrity for future DNA analysis.

**2. Recommended Protocols for Ensuring the Scientific Value of the Bone for Future DNA Analysis.**

Thank you for providing the Davis campus with a copy of the procedures recommended by Dr. Trimble for transportation of the bone from the Davis campus to the Battelle Pacific Northwest National Laboratory in Richland, Washington, for storage with the rest of the Kennewick Man remains. The following recommendations of Professor Smith are designed to (1) ensure the scientific integrity of the bone for future DNA analysis, and (2) permit easy tracking (ensuring its identity) and retrieval of the bone in the event future DNA analysis is performed on the bone.

**a. Status of the Bone.**

The bone fragment received by the UC Davis campus from UC Riverside has been handled in three different ways. Approximately 0.5 grams of the bone has not been used for any extraction (the "unused bone") and has been split into two equal parts, with each part placed in a separate 2 milliliter Eppendorf tube. Each Eppendorf tube has been closed by flame sealing the tops of the tubes, and both tubes have been placed inside a 50 milliliter Coming (polypropylene) tube.

Another approximately 0.5 gram portion of the bone was that portion from which samples, on two separate occasions, were removed for the previous two extractions ("the extraction bone"). It remains in a 50 milliliter Coming polypropylene tube.

The last fraction of the bone has been already extracted using phenol chloroform and represents the residue left from the previous analyses ("the residue bone"). Professor Smith believes this portion of the bone is of no use for further DNA analysis. This fraction of the bone remains in two 15 milliliter Coming polypropylene tubes sealed with parafilm.

The plastic tubes have been wrapped in bubble wrap and placed inside a Tupperware container. The Tupperware container is locked in a fire-proof safe in Professor Smith's office; the safe requires both a key and an electronic combination to open.

**b. Recommendations.**

Professor Smith finds acceptable the protocols for packaging, transporting, cataloguing, and storing the bone described in the two "memorandums for record" by Dr. Trimble,

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dated April 7 and April 17, 1998, respectively (enclosed), except to the extent they are inconsistent with the following recommendations:

1. The Tupperware container containing the bone fragments should be opened only to verify its contents and only by someone wearing uncontaminated plastic gloves.

2. Thereafter, the two 50 milliliter Corning polypropylene tubes should not be removed from the Tupperware container until the samples are prepared for shipping for DNA testing.

3. The container holding the bone fragments should be transported and stored in an environment that is not excessively hot (excessive heat damages DNA).

4. In the event future DNA analysis of Kennewick Man is required, the DNA analysis should be conducted on the bone fragments in the two 50 milliliter Corning polypropylene tubes. Professor Smith recommends the following actions when the samples are prepared for shipping for DNA testing:

- The "extraction bone" currently contained in one 50 milliliter Corning polypropylene tube should be split and placed in two separate 2 milliliter Eppendorf tubes and the lids of the tubes flame-sealed.
- One Eppendorf tube containing one portion of "unused bone" and one Eppendorf tube containing one portion of "extraction bone" should be placed in a 50 milliliter Corning polypropylene tube. This 50 milliliter tube should be sealed with a screw cap that is glued shut with Super Glue. This 50 milliliter tube should then be wrapped in bubble wrap and placed in a Tupperware container.
- The same process should be completed for the remaining sample of "unused bone" and "extraction bone."
- If and when further DNA testing is required, one 50 milliliter Corning polypropylene tube containing bone fragments should be sent to one DNA testing facility, and the other 50 milliliter Corning polypropylene tube should be sent to another DNA testing facility.
- In the event that further DNA testing of Kennewick Man is allowed, Professor Smith should be allowed to conduct DNA testing using

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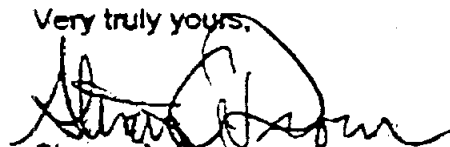
one of the 50 milliliter Coming polypropylene tubes containing a portion of the "unused bone" and a portion of the "extraction bone."

- Under no circumstances should ventilation holes or identification labels be placed in any container holding the bone fragments (contrary to the recommendation of Dr. Trimble in paragraph 4.a. of his April 7, 1998 "memorandum for record"), as this would increase the risk of contamination of the bone samples. Labeling should be limited to the external surfaces of the Eppendorf and 50 milliliter Coming polypropylene tubes.
- The handling of the bone fragments in preparation for shipping for further DNA testing should be conducted only by a qualified scientist who has experience in DNA testing of archaeological remains.

We believe that compliance with the foregoing recommendations will preserve the scientific value of the bone to the maximum extent feasible and is, therefore, in the best interests of the federal government and of the scientific community which is closely following this situation.

Thank you for your careful consideration of these recommendations.

Very truly yours,



Steven A. Drown  
Campus Counsel



Kevin M. Smith  
Vice Chancellor-Research

Enc.

c: David Glenn Smith, Ph.D.  
University Counsel Fred Takemiya

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