

## Susitna-Watana Hydroelectric Project Document ARLIS Uniform Cover Page

<b>Title:</b>  Paleontological resources study, Study plan Section 13.6 : Initial study report		<b>SuWa 207</b>
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<b>Author(s) – Corporate:</b> Prepared by Pacific Rim Geological Consulting, Inc., Northern Land Use Research Alaska LLC, Charles M. Mobley & Associates, [and] URS, Inc.		
<b>AEA-identified category, if specified:</b> Draft initial study report		
<b>AEA-identified series, if specified:</b>  		
<b>Series (ARLIS-assigned report number):</b> Susitna-Watana Hydroelectric Project document number 207		<b>Existing numbers on document:</b>  
<b>Published by:</b> [Anchorage : Alaska Energy Authority, 2014]		<b>Date published:</b> February 2014
<b>Published for:</b> Alaska Energy Authority		<b>Date or date range of report:</b>  
<b>Volume and/or Part numbers:</b> Study plan Section 13.6		<b>Final or Draft status, as indicated:</b> Draft
<b>Document type:</b>  		<b>Pagination:</b> iii, 5 p.
<b>Related work(s):</b>  		<b>Pages added/changed by ARLIS:</b>  
<b>Notes:</b>  		

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**Susitna-Watana Hydroelectric Project  
(FERC No. 14241)**

**Paleontological Resources Study  
Study Plan Section 13.6**

**Initial Study Report**

Prepared for

Alaska Energy Authority



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February 2014 Draft

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## LIST OF ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

Abbreviation	Definition
AEA	Alaska Energy Authority
AHRS	Alaska Heritage Resources Survey
FERC	Federal Energy Regulatory Commission
ILP	Integrated Licensing Process
ISR	Initial Study Report
PFYC	Potential Fossil Yield Classification
Project	Susitna-Watana Hydroelectric Project No. 14241
RSP	Revised Study Plan
SPD	study plan determination

## EXECUTIVE SUMMARY

Paleontological Resources Study 13.6	
Purpose	The purpose of the paleontological resources study is to determine the potential effects of the Project on paleontological resources.
Status	Most of the methods described in the Study Plan are scheduled to occur during the next study season (RSP 13.6.10). For the work planned for 2013 under the Study Plan, AEA began the process of determining geologic units that may be impacted by the proposed Project and the associated Potential Fossil Yield Classification (PFYC). This work, together with the other work initially scheduled for 2013, remains a work in progress. While no paleontological field studies were conducted in 2013, archaeological field crews in 2013 incidentally found and reported four plant fossil finds.
Study Components	<p>This study consists of three components:</p> <ol style="list-style-type: none"> <li>1) Identify potential impacts to paleontological resources by determining the geologic units that may be impacted by the proposed Project and the associated PFYC classes.</li> <li>2) Determine the need for field surveys and monitoring efforts.</li> <li>3) Undertake field surveys.</li> </ol>
2013 Variances	While AEA completed initial literature review relevant to the determination of geologic units that may be impacted by the Project and associated PFYC classes, this work remains ongoing. All other methods described in the Study Plan were deferred until the next study season (RSP Section 13.6.10). AEA will meet the study objectives by completing the remainder of the study in the next study season.
Steps to Complete the Study	As explained in the cover letter to this draft ISR, AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.
Highlighted Results and Achievements	<p>Highlights include:</p> <ol style="list-style-type: none"> <li>1) Developing a map of known fossil finds and assimilating other information in the literature review.</li> <li>2) Finding and reporting four plant fossil finds by the archaeological field crews.</li> </ol>

## **1. INTRODUCTION**

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC) its Revised Study Plan (RSP) for the Susitna-Watana Hydroelectric Project No. 14241 (Project), which included 58 individual study plans (AEA 2012). Section 13.6 of the RSP described the Paleontological Resources Study. This study focuses on locating, documenting, and evaluating paleontological resources within the affected area. Information from these studies will be used to identify appropriate protection, mitigation, and enhancement measures. RSP Section 13.6 provided goals, objectives, and proposed methods for data collection regarding paleontological resources.

On February 1, 2013, FERC staff issued its study plan determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 13.6 was one of the 31 studies approved with no modifications.

Following the first study season, FERC's regulations for the Integrated Licensing Process (ILP) require AEA to "prepare and file with the Commission an initial study report describing its overall progress in implementing the study plan and schedule and the data collected, including an explanation of any variance from the study plan and schedule" (18 CFR 5.15(c)(1)). This Initial Study Report (ISR) on the Paleontological Resources Study has been prepared in accordance with FERC's ILP regulations and details AEA's status in implementing the study, as set forth in the FERC-approved RSP (referred to herein as the "Study Plan").

## **2. STUDY OBJECTIVES**

As detailed more fully in RSP Section 13.6.1, the objective of this study is to determine the effects of the proposed Project on paleontological resources by locating, documenting, and evaluating paleontological resources within the study area.

## **3. STUDY AREA**

The study area is described in Section 13.6.3 of the RSP and shown on Figure 3-1. The initial paleontological literature study encompasses a broad region around the Project area, which is co-terminus with the external boundary of the direct and indirect study area for the Cultural Resource Study Plan (Study 13.5). The study area for paleontological survey will be limited to locations (1) where significant paleontological resources are predicted to occur as surface outcrops; and (2) that may be impacted by the construction and/or operation of the Project.

## **4. METHODS AND VARIANCES IN 2013**

### **4.1. Identification of Potential Impacts to Paleontological Resources**

AEA implemented the methods as described in the Study Plan with the exception of variances explained below (Section 4.1.1).

AEA began the process of determining the geologic units that may be impacted by the proposed Project and the associated PFYC classes. The initial literature review study focused on lands within the study area that may contain fossil localities and that may be covered by existing records. Of those lands that may contain fossil localities, the study team evaluated the rock types that are known to be fossil-bearing from past investigations.

The study team identified all previous fossil finds by rock type and location and general land ownership status. Tables and maps were prepared summarizing this literature review.

#### **4.1.1. Variances**

AEA did not complete the analysis of impacts to paleontological resources in 2013. Specifically, AEA did not complete the analysis of the geologic units that may be impacted by the proposed Project and did not ascertain the associated PFYC classes. AEA will meet the Study Plan objectives by completing this work in the next study season.

### **4.2. Determination of Field Survey and Monitoring Needs**

In 2013, AEA did not implement the methods described in the Study Plan related to the determination of field surveys and monitoring needs (RSP Section 13.6.4). While this is a variance from the approved Study Plan, AEA will meet the study objectives by completing this work in the next study season.

### **4.3. Field Survey**

In 2013, AEA did not implement the methods described in the Study Plan related to the field survey (RSP Section 13.6.4). While this is a variance from the approved Study Plan, AEA will meet the study objectives by completing this work in the next study season.

## **5. RESULTS**

The initial paleontological literature review included a geological overview of the Project area and described the potential of selected geological units to contain fossils. The potential fossil-bearing rock units identified in the review included:

- The Wrangellia Terrane
- Kahiltna Flysch
- Windy Terrane

- Susitna Terrane
- Chulitna Group of Terranes
- Quaternary Cover Sequences

A paleontological study spreadsheet was prepared summarizing information from approximately 100 fossil locations in these potential fossil-bearing rock units. The majority of the fossil locales occur in two distinct, northeast-striking belts on the east-central and western portions of the Project area, with a scattering of fossils in other locales. Three fossil localities occur within the area that could be within the inundation zone. Twelve other fossil localities occur within the transportation corridors, as shown in Figure 3-1. Fossil locales on federal lands are generally confined to (1) the northern-most Talkeetna Mountains and the Clearwater Mountains; and (2) a thin corridor of federal lands along the Susitna River from Gracious House on the Denali Highway to the Watana Dam site.

Analysis of the existing paleontological site inventory as derived from the literature search indicates that none of the known fossil finds in the study area are of critical scientific importance.

Archaeological crews performing fieldwork in 2013 incidentally reported four fossil finds in the study area, all of which are plant specimens. The sites were assigned Alaska Heritage Resources Survey (AHRs) numbers and added to the paleontological site inventory.

Data developed in support of this study are available for download at <http://gis.suhydro.org/reports/isr>.

## 6. DISCUSSION

The paleontological literature review used the existing fossil site inventory (Figure 3-1) to begin the process of characterizing PFYC rankings in the study area and determining areas warranting field study. Fieldwork was not conducted in 2013, although the archaeological field crews made incidental findings of four plant fossils, which were recorded. Fieldwork, analysis, and synthesis addressing the paleontological resources potentially affected by Project implementation will take place during the next year of study.

## 7. COMPLETING THE STUDY

[As explained in the cover letter to this draft ISR, AEA's plan for completing this study will be included in the final ISR filed with FERC on June 3, 2014.]



## **8. LITERATURE CITED**

AEA (Alaska Energy Authority). 2012. Revised Study Plan: Susitna-Watana Hydroelectric Project FERC Project No. 14241. December 2012. Prepared for the Federal Energy Regulatory Commission by the Alaska Energy Authority, Anchorage, Alaska. <http://www.susitna-watanahydro.org/study-plan>.

## **9. FIGURES**

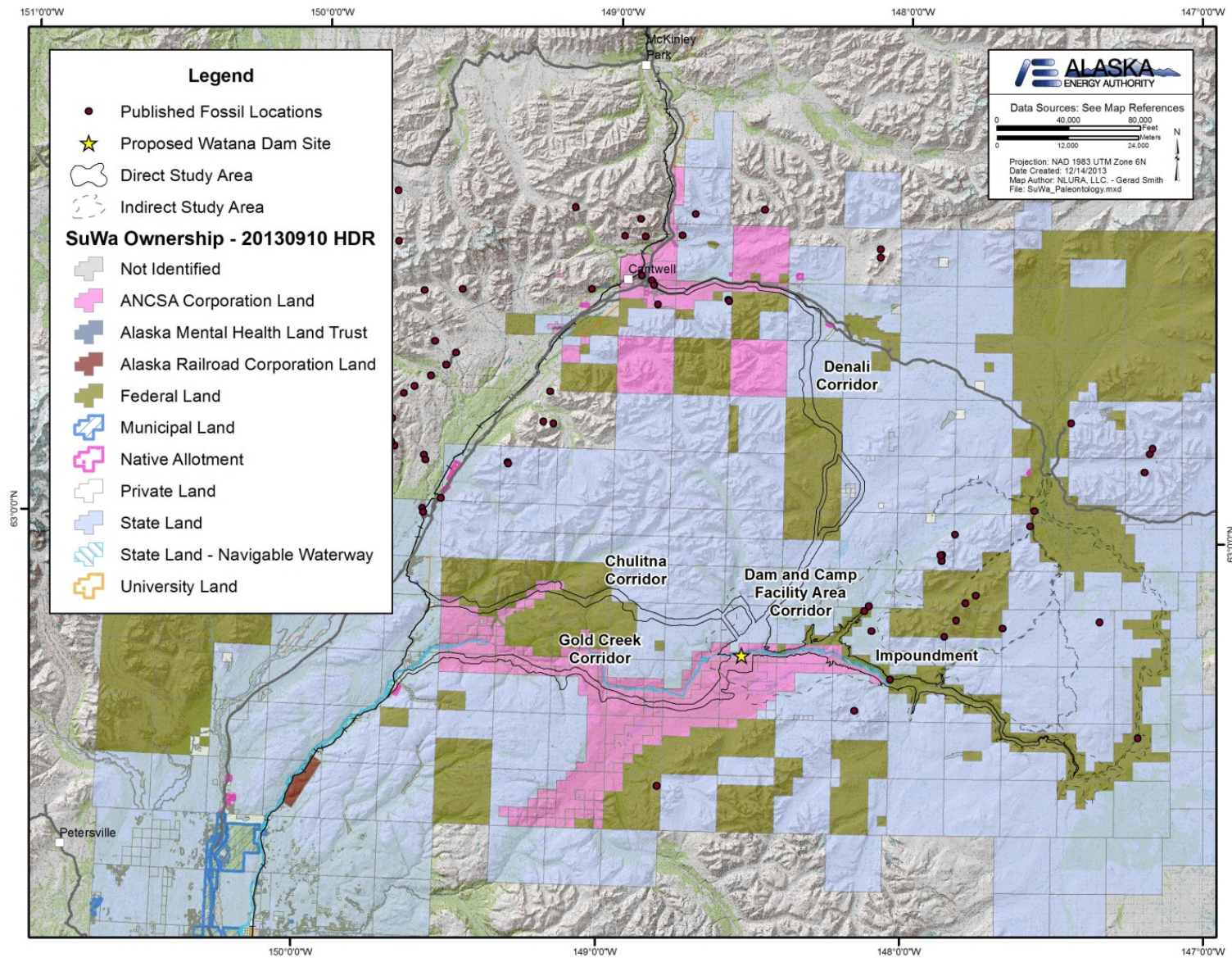


Figure 3-1. Study Area for Paleontological Resources Showing Known Fossil Locations (map 9/10/13).