

# Susitna-Watana Hydroelectric Project Document ARLIS Uniform Cover Page

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**1.1. Rare Plant Study**

**1.2. Requestor of Proposed Study**

Alaska Energy Authority (AEA) anticipates a resource agency will request this study.

**1.3. Responses to Study Request Criteria (18 CFR 5.9(b))**

**1.3.1. Describe the goals and objectives of each study proposal and the information to be obtained.**

The primary goal of the rare plant survey for the Susitna-Watana Hydropower Project (SWHP) is to identify any of the more rare plant species in the region that are currently being tracked in the database of rare plants in Alaska, which is managed by the Alaska Natural Heritage Program (AKNHP 2008). The survey is designed to identify habitats where rare plants may occur and to locate rare plant populations present in the Project area. These data will be used to inform project design, construction, and operations planning.

The specific objectives of the rare plant study are to:

- locate populations of the more rare plant species that occur in the Project area;
- assess the potential effects on rare plant species from development of the proposed Project; and
- develop [the basis for](#) appropriate avoidance and mitigation measures, as needed, to minimize impacts to rare plant species during Project construction and operations.

**1.3.2. If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied. [Please include any regulatory citations and references that will assist in understanding the management goals.]**

The Aleutian shield fern (*Polystichum aleuticum*) is the only plant species listed as endangered under the federal Endangered Species Act (ESA) (USFWS 2010), and it is restricted to two islands (Adak and Atka) in the central Aleutian Island chain. The State of Alaska does not list any plant species as threatened or endangered (ADFG 2010). Portions of the Project area, however, are managed by the Bureau of Land Management (BLM), and the BLM maintains a Special Status Species list, which was created from the AKNHP's Rare Vascular Plant Tracking List (AKNHP 2008). The BLM list is designed to identify species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. The results of the rare plant survey will help identify vegetation types or habitats that may be important for supporting rare plant species. The data obtained in the rare plant survey also will improve statewide knowledge of Alaska's rare and sensitive plant species.

**1.3.3. If the requestor is a not resource agency, explain any relevant public interest considerations in regard to the proposed study.**

Alaska Energy Authority (AEA), as the license applicant, assumes that this study will be recommended by resource management agencies during the study plan development process.

**1.3.4. Describe existing information concerning the subject of the study proposal, and the need for additional information.**

The AKNHP maintains a database with collection locality and habitat information for rare and/or endemic vascular plants in Alaska; this database, known as the Rare Vascular Plant Tracking List, currently includes 354 taxa (AKNHP 2008). A review of rare plant collections in a broad region surrounding the SWHP area (AEA 2011) identified 19 species with S1 (critically imperiled) and S2 (imperiled) rankings. Species that are rare (5 or fewer occurrences or very few remaining individuals) or that are especially vulnerable to extinction are given a S1 ranking, whereas species with 6 to 20 collections in the state are given a S2 ranking (Lipkin and Murray 1997).

An aquatic species known as flatleaf pondweed or Robbins pondweed (*Potamogeton robbinsii*) was recorded in the SWHP project area in Watana Lake in the 1980s (McKendrick et al. 1982). This collection represented a second recorded observation for the species in the search area (the only other record was near the Summit airstrip in 1953). *Potamogeton robbinsii* is listed as S1S2 (critically imperiled or imperiled in Alaska) and as G5 (demonstrably secure globally), indicating that populations are more numerous outside Alaska. Characteristic of most rare species, many of the of 19 listed rare plant taxa identified in the data review (for a broad region surrounding the Project area) often occur in a narrow range of habitats (e.g., *Artemisia dracuncululus* on exposed bluffs). Given the wide array of habitats present in the SWHP project area (e.g., alpine, forest, meadows, wetlands); it is possible that other rare plant taxa besides *P. robbinsii* may occur in the SWHP project area. A rare plant survey will be needed to locate any additional populations of rare plants in the Project area.

**1.3.5. Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements.**

The direct and indirect effects of Project construction and operations may result in the loss or degradation of habitats that support rare plant species. Assessing the extent to which rare species are present, and documenting the locations of populations or individuals will allow for the development of project plans that minimize, to the extent possible, impacts to those plant populations. ~~A map of rare plant locations will also provide a basis for developing monitoring programs for the health of rare plant populations in the area as the project moves into the operational phase.~~

The rare plant study will help address the following issue identified in the PAD (AEA 2011):

- potential changes in rare plant populations related to the development of the reservoir, access road and transmission line facilities, and construction and operation activities, including erosion and dust deposition.

**1.3.6. Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.**

No standardized protocols for conducting rare plant surveys in Alaska have been developed, but the reconnaissance sampling methodology used by the AKNHP (Carlson et al. 2006, modified from Caitling and Reznicek 2003) seems appropriate for the rare plant study proposed for the Project. The reconnaissance methodology identifies survey areas based on site-specific criteria, including regional or unique geological features, habitats of concern, logistical feasibility, and areas with high environmental gradients to maximize the potential of documenting rare species.

The specific field methods proposed for the rare plant survey in the SWHP area includes:

- selecting field personnel who are skilled at taxonomic plant identification through personal experience and ability to use taxonomic keys such as Flora of Alaska (Hultén 1968) and (Lipkin and Murray 1997);
- developing a list of key species expected to be found in the area using the statewide database maintained by the AKNHP;
- surveys are to be conducted at multiple times during the year and will be focused on specific habitats expected to support the identified potential species (rare plant observations will be compiled as a secondary product of the wetlands and vegetation surveys);
- to reduce logistical costs, intensive and focused surveys for rare plants will be conducted only within the actual project footprint boundaries and within a buffer where habitats are likely to be disturbed;

- voucher specimens may be collected if the surveyor is certain that the removal of plants will not significantly reduce the population; and
- the study report will include a map of the survey area with coordinates of all plant species found, photos of survey site, survey methodology, names and experience of surveyors, and description and floristic inventory of habitats where rare plants were found.

**1.3.7. Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.**

To prioritize the field effort, data gathered during the 2012 wetlands and vegetation field surveys will be used to identify areas with low, medium, and high potential for supporting rare plants. Some areas might not have suitable imagery available for identifying target habitats in 2012, so further assessments will be made in 2013 and 2014. The goal is to determine which habitats could support rare plants and then to survey those areas, if possible, as part of the wetland and vegetation/wildlife habitat mapping studies. This procedure will limit the need to conduct additional surveys in only those areas where additional field searches are warranted. The approximate projected cost for this study is on the order of \$300,000.

An office-based study of the existing rare plant data in the Project area has already been conducted (AEA 2011), in which collections of 19 rare taxa were found in a broad region surrounding the Project area. Further office-based studies would not be appropriate for identifying rare species, given that they are typically confined to small, unique habitats and therefore, not easily identified on aerial photography. In addition, since no concerted effort has been made to identify rare plants in the project area to date, no database exists to determine whether they are present in the project area and what high priority habitats should be surveyed.

**1.3.8. Literature Cited**

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