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

**Subsistence Resources Study
Study Plan Section 14.5**

Final Study Plan

Alaska Energy Authority



July 2013

14.5. Subsistence Resources Study

On December 14, 2012, Alaska Energy Authority (AEA) filed with the Federal Energy Regulatory Commission (FERC or Commission) its Revised Study Plan (RSP), which included 58 individual study plans (AEA 2012). Included within the RSP was the Subsistence Resources Study, Section 14.5. RSP Section 14.5 focuses on determining the effects of project construction and operation on subsistence harvest and use. RSP 14.5 provided goals, objectives, and proposed methods for subsistence resources data collection and analysis.

On February 1, 2013, FERC staff issued its study determination (February 1 SPD) for 44 of the 58 studies, approving 31 studies as filed and 13 with modifications. RSP Section 14.5 was one of the 13 approved with modifications. In its February 1 SPD, FERC recommended the following:

The Alaska DFG clarified that its request for mapping of subsistence activities has been expanded to include the communities of Cantwell, Chase, Chitna, Gakona, Kenny Lake, McCarthy, Skwentna, Susitna, Talkeetna, and Trapper Creek in 2013, and Copperville, Glennallen, Gakona, Lake Louise, Nelchina, Mendeltna, Paxson, Tazlina, Tolsona, and Tonsina in 2014. Alaska DFG notes that changes to Table 14.5.5 should be made to reflect the additional communities where subsistence mapping would occur and where appropriate harvest surveys should be labeled “one-year mapping” to differentiate those efforts from historical mapping efforts that have been completed in the listed communities.

Alaska DFG also clarified that the list of communities where TLK interviews should be conducted has been modified and expanded from eight to twenty and includes the communities of Cantwell, Chase, Chitna, Gakona, Kenny Lake, McCarthy, Skwentna, Susitna, Talkeetna, and Trapper Creek in 2013 and Copperville, Glennallen, Gakona, Lake Louise, Nelchina, Mendeltna, Paxson, Tazlina, Tolsona, and Tonsina in 2014.

Alaska DFG suggests that RSP Table 14.5.5 Communities Selected for Traditional Knowledge, Subsistence Mapping, and Household Survey be revised to acknowledge TLK interview components of the baseline harvests surveys in the Alaska DFG identified study communities.

Alaska DFG’s recommended modifications would provide the information needed to accomplish the study objectives. Therefore, we recommend AEA implement the study with Alaska DFG’s recommended modifications.

In accordance with the February 1 SPD, AEA addressed the recommended modifications in the Final Study Plan for Section 14.5.

14.5.1. General Description of the Proposed Study

Through a combination of household harvest surveys, mapping interviews, and traditional and local knowledge interviews, the Subsistence Resources Study will collect baseline data and document traditional and contemporary subsistence harvest and use to facilitate the assessment of potential impacts of the Project construction and operation on subsistence harvest and use.

Study Goals and Objectives

The overall goal of this study is to demonstrate whether and, if so, the extent to which communities harvest and use subsistence resources within or near the Project area, use Project

area lands to access other lands for subsistence harvest and use, and/or harvest and use resources that migrate through the Project area and are later harvested in other areas.

The objectives of the Subsistence Resources Study are as follows:

1. Document whether and, if so, the extent to which communities within the Susitna River watershed, as well as communities outside the Susitna River watershed that have subsistence use areas in the watershed, use areas that are within the Project area for subsistence harvests.
2. Document whether and, if so, the extent to which communities within the Susitna River watershed, as well as communities outside the Susitna River watershed that have subsistence use areas in the watershed, use Project area lands to access other lands or waters for subsistence harvest.
3. Document whether and, if so, the extent to which communities within the Susitna River watershed, as well as communities outside the Susitna River watershed that have subsistence use areas in the watershed, use resources that migrate through the Project area and are harvested in other areas.
4. Collect and document traditional and local knowledge of communities within the Susitna River watershed, or who have subsistence use areas within the watershed, to assist in assessing the potential impacts of construction and operation of the proposed Project on subsistence harvest and use. This information will be directly shared with the program leads for other resources, as appropriate.
5. Evaluate Project development plans to identify likely sources of potential impacts on identified subsistence uses.
6. Provide the necessary information needed to support preparation of an ANILCA 810 evaluation.

The data developed through this study will be evaluated along with data from biological and wildlife and cultural resources studies to supplement the subsistence information and put it into context with other related resource conditions.

14.5.2. Existing Information and Need for Additional Information

The intent of the Subsistence Resources Study is to facilitate the assessment of potential Project impacts to subsistence uses by providing current and representative data that will characterize the existing environment of subsistence uses in the proposed Project area. Critical to this assessment is the establishment of baseline indicators of subsistence use that can be used to assess the potential effects of the Project. Existing baseline indicator information that characterizes the subsistence environment is available in the form of harvest data, mapping of subsistence use areas, and traditional knowledge studies. Existing information from harvest data can be used to determine which subsistence resources are harvested by communities either in or outside the Project area and which subsistence resources that migrate through the Project area are harvested in other areas. In addition, harvest data provide information about harvest amounts, harvest participation, and other baseline harvest indicators in potentially affected communities. Existing information from subsistence use area mapping studies can be used to identify which communities utilize areas within the Project area for subsistence harvests or use Project area lands to access other lands for subsistence harvests. Traditional knowledge studies will help provide the cultural basis for why and how community residents engage in subsistence activities and how cultural values and practices are incorporated into and inform present-day subsistence

activities. Traditional knowledge studies also provide information about resources and the environment, all of which is relevant to identifying potential Project impacts and, if necessary, potential protection, mitigation, and enhancement measures. Obtaining pertinent Alaska Natives' statements of subsistence use policy and goals requires identification of each Alaska Native entity potentially involved and documentation and identification of each entity's specific policies or mission statements related to subsistence. This task could be performed during the literature review.

Updated information regarding harvests must be collected for communities lacking current data. Harvest amounts and species that are harvested change over time and are subject to annual variation. Timely data are needed in order to determine what resources are being used by a community to establish baseline conditions and assess effects.

ADF&G harvest surveys contain a one-year mapping component and are useful for comparing multiple data sets; however, as a stand-alone study, the one-year mapping component does not take into account annual variation in use areas. Without multiple one-year use area data sets, it is useful to conduct subsistence mapping that covers a more extensive time period (e.g., a mapping interview that documents residents' last 10-year use area) so that some annual variation is accounted for and the assessment of effects to use areas and user access can consider the variability in use over time and varying resource conditions.

Traditional knowledge is relevant regardless of the time period it was collected, as it is information that is intended to be passed down through generations of subsistence users. Traditional knowledge interviews can potentially identify cultural resources and potentially inform the Project design and/or the assessment of impacts and, if necessary, development of protection, mitigation, and enhancement measures.

The information collected in this study will help to support the assessment of environmental impacts under NEPA as well as an ANILCA 810 subsistence evaluation. Section 810 of ANILCA requires certain federal agencies, when determining whether to permit the use, occupancy, or disposition of public lands, to evaluate:

- The effect of use, occupancy, or disposition to be authorized on subsistence uses and needs
- The availability of other lands for the purposes sought to be achieved
- Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 USC 3120)

The existing information and additional information collected in the form of harvest surveys, subsistence mapping interviews, and traditional and local knowledge interviews will help provide the baseline data that describes the use, occupancy, and disposition of subsistence uses and needs in order to assess the potential effects of the Project on subsistence use.

Existing information has been summarized in the Subsistence Resources Data Gap Analysis (Simeone, Russell, and Stern 2011). Additionally, ADF&G has identified communities outside the non-subsistence area in need of updated harvest information. AEA reviewed the communities selected in the data gap analysis and preliminarily identified by ADF&G for this Project and documented whether the communities had existing subsistence baseline use area data and recent (within last three years) harvest data. See Attachment 14-1 for the results of AEA's review of the data gap analysis and ADF&G-identified communities. After the subsistence study

plan has been filed, AEA will systematically compile existing subsistence data for the selected study communities as part of the baseline description of subsistence uses (see Section 14.5.4.1, Task 1: Compilation of Existing Data).

14.5.3. Study Area

To help inform the selection of study communities and define the study area for this study, AEA reviewed the Subsistence Resources Data Gap Analysis (Simeone, Russell, and Stern 2011) and communities identified by ADF&G as needing updated harvest information. See Attachment 14-1 for the results of AEA's review of the data gap analysis and ADF&G identified-study communities.

For purposes of this study plan, the study area includes the Project area, as well as locations within the Susitna River watershed where the proposed Project could affect natural resources and access conditions upstream and downstream of the Susitna River as well as its associated tributaries. The study area includes the proposed reservoir, road and transmission corridors (including a portion of one corridor adjacent to the Denali Highway that extends outside the watershed), and other Project facility sites (Figure 1.2-1).

AEA developed a list of study communities in order to adequately address potential impacts to subsistence users who use the study area for subsistence activities. This included communities that are located outside the study area but have documented use within the study area. AEA developed the following criteria for inclusion as a study community:

1. The community is located within the Susitna River watershed
2. The community is located outside of the Susitna River watershed but has previously documented subsistence use areas that extend into the watershed; or
3. The community is one of the communities preliminarily identified by ADF&G as needing updated harvest information

Based on the above criteria, AEA has identified 37 study communities whose subsistence uses could potentially be affected by the proposed Project (Table 14.5-1; Figure 14.5-3).

14.5.4. Study Methods

To meet the study objectives and demonstrate whether and, if so, the extent to which communities harvest and use subsistence resources within or near the Project area, use Project area lands to access other lands for subsistence harvest and use, or harvest and use resources that migrate through the Project area and are later harvested in other areas, this Subsistence Resources Study plan proposes to complete the following tasks:

1. Compilation of Existing Subsistence Data
2. Household Harvest Surveys
3. Household Surveys in State-Designated Nonsubsistence Areas
4. Subsistence Mapping Interviews
5. Traditional and Local Knowledge Interviews
6. Study Report Preparation

The methods used to implement the above tasks are described in the following sections.

14.5.4.1. Task 1: Compilation of Existing Subsistence Data

AEA will compile existing data describing the subsistence uses of communities that may be affected by the proposed Project. Communities will include the 37 study communities listed in Table 14.5-1. In addition, to the extent that the ADF&G Winfonet database (i.e., land mammal harvest database) is available, AEA will assess this information to determine whether residents of additional communities use the area for subsistence purposes. Analysis of the Winfonet database will be conducted in coordination with the wildlife resource study. Methods for the compilation of existing data are as follows:

- Use ADF&G's Community Subsistence Information System (CSIS), and identify and compile existing harvest data for the 37 communities listed in Table 14.5-1.
- Compile available subsistence use area data for the 37 communities listed in Table 14.5-1.
- Compile available baseline indicator data (e.g., timing of harvest activities) from available sources.
- Request access to ADF&G's Winfonet database. These data can provide the following information:
 - identification of subsistence users and communities in Alaska who travel to the proposed Project area to participate in land mammal harvest activities; and
 - additional information about study communities' (including those located in nonsubsistence areas) subsistence activities in the Project area.
- Create tables and maps describing the information compiled from the CSIS, Winfonet database, and additional sources.
- Incorporate results of the data review and compilation within the context of the proposed Project into Task 6.

14.5.4.2. Task 2: Household Harvest Surveys

ADF&G's Division of Subsistence will document one year of subsistence harvest and use by households in and around selected census designation place (CDP) communities located in the study area and outside the State-designated nonsubsistence areas (Figure 14.5-2). In addition to the household harvest component, these surveys will have a "one-year mapping" component that documents the study community's previous year's subsistence use areas and a key respondent traditional knowledge interview component. ADF&G has identified the following 12 communities as needing updated harvest data: Chase, Cantwell, Susitna, Skwentna, Glennallen, Gulkana, Mendeltna, Nelchina, Paxson, Tazlina/Copperville, Tolsona, and Tonsina. Other communities in the Copper River and Susitna River watersheds were included in ADF&G's assessment but already have household harvest surveys planned or recently updated in conjunction with other, non-Susitna related efforts. These communities include Chistochina, Chitina, Copper Center/Silver Springs, Gakona, Kenny Lake/Willow Creek, McCarthy, Mentasta, Slana/Nabesna Road, Tyonek, and Beluga.

AEA conducted a review to determine whether additional study communities located in the Susitna River watershed needed updated harvest data, i.e., if harvest data are not available for those communities from within the past three years. Table 14.5-2 depicts all Susitna River watershed study communities that are located outside State-designated nonsubsistence areas. Talkeetna and Trapper Creek are located within a nonsubsistence area but are close to the

nonsubsistence area boundary. Because of residents' close proximity to the boundary, members of these communities likely travel outside the nonsubsistence area regularly for subsistence purposes; therefore, they are also included in Table 14.5-2. None of the nine communities listed in Table 14.5-2 have harvest data from the last three years. Two of the communities listed in Table 14.5-2 are not CDPs and were therefore not selected for harvest surveys. Of the five remaining communities, only two (Lake Louise and Mendeltna) are outside State-designated nonsubsistence areas. Therefore, this study plan adds Lake Louise and Mendeltna to the scope of work for updated harvest surveys. Based on the results shown in Table 14.5-2, this study would involve household harvest surveys in the following 13 communities:

1. Chase
2. Cantwell
3. Glennallen
4. Gulkana
5. Lake Louise
6. Mendeltna
7. Nelchina
8. Paxson
9. Susitna
10. Skwentna
11. Tazlina/Copperville
12. Tolsona
13. Tonsina

Specific study methods to conduct this task include the following:

- Development of a survey instrument to produce updated comprehensive baseline information about subsistence hunting, fishing, and gathering and other topics that address subsistence needs and are compatible with information collected in past household interviews.
- Community consultation to identify community liaisons and seek study support.
- Household surveys to record the following information: demographic information; involvement in use, harvest, and sharing of fish, wildlife, and wild plants in the study year (i.e., 2012 or 2013); estimate of amount of resources harvested in the study year; information about employment and cash income; assessments of changes in subsistence harvest and use patterns based on data available from past study years; and location of fishing, hunting, and gathering activities in the study year.
- Key informant interviews to document traditional knowledge about changes in the environment, hunting and harvesting patterns, and resource availability; key subsistence resources and use areas; and the effects of regulations on hunting and fishing.
- Household surveys conducted in each community by community liaisons contracted and trained by ADF&G, with the goal of interviewing a representative of each year-round household in all the study communities. Participation in the surveys will be voluntary and all individual and household level responses will be confidential. ADF&G staff will conduct the harvest mapping component of the survey with each household. Surveys will be timed to avoid seasonal activities to allow for best participation.
- Collaborative review and interpretation of study findings through data analysis, the production of standard tables and figures, and community review meetings.

- Communication of findings to communities through community review meetings and four-page study finding summaries mailed to all households in each community; and
- Addition of final data to the CSIS and production of a final report summarizing the results of the systematic household surveys and mapping for each study year, including long-term trends for communities with harvest data available in the CSIS.

Attachments 14-2 and 14-3 provide the draft survey instrument for the household harvest surveys and the draft protocol for key informant interviews. Administration of the surveys will be adapted to specific community subsistence patterns.

14.5.4.3. Task 3: Household Harvest Surveys in State-Designated Nonsubsistence Areas

As discussed above, AEA will conduct household harvest surveys in 13 CDP communities that are located outside State-designated nonsubsistence areas; are located in the Susitna River watershed or use the Susitna River watershed for subsistence; and have not had updated subsistence harvest studies within the previous three years (since 2009). In addition, AEA has identified Talkeetna and Trapper Creek for updated household harvest surveys (see Table 14.5-2). These two additional communities are located within a State-designated nonsubsistence area (Figure 14.5-2) and are therefore generally not included in ADF&G Division of Subsistence harvest studies. However, because of their proximity to the subsistence/nonsubsistence boundary and to the Project area, agency and public concern raised during Technical Workgroup meetings, and the lack of recent (last three year) harvest data for these communities, AEA selected Talkeetna and Trapper Creek for additional household harvest surveys.

ADF&G's Division of Subsistence will document one year of harvest and use by households in Talkeetna and Trapper Creek. Methods for the nonsubsistence area household surveys will be consistent with the methodology for surveys in communities identified under Task 2 and include:

- Development and use of a survey instrument and household harvest survey methodology comparable to that used in Task 2 so that data collection, entry, and analysis are compatible with existing methodology (see survey methods described in Section 14.5.4.2)
- Coordination with communities to seek study support and communicate findings
- Collaborative review and interpretation of study findings through data analysis, reporting, and community review meetings
- Incorporation of results of analysis, discussion and reporting of community-level survey, and mapping results within the context of the proposed Project into Task 6

14.5.4.4. Task 4: Subsistence Mapping

AEA will conduct subsistence mapping interviews in selected study communities to document last 10-year subsistence use areas as well as related baseline indicators. Because a primary application of subsistence use area data in impact analyses is to determine whether a direct impact (i.e., caused by the action and occurring at the same time and place as the action) may occur, the study plan is focused on selecting communities whose residents conduct activities in or near the Project area (Figure 1.2-1). AEA assumes that the closer a community is to the Project area, the more likely that community will be to experience subsistence use area impacts of Project construction and operation. Therefore, the study communities closest to the Project

area, including the reservoir, reservoir study area, or any of the three potential road options, were selected for inclusion in the subsistence mapping studies.

Eight communities (Cantwell, Chase, Healy, Talkeetna, Lake Louise, McKinley Park, Trapper Creek, and Petersville) were identified for possible inclusion in the subsistence mapping studies due to their proximity to the Project. Four of these communities (Cantwell, Healy, Lake Louise, and McKinley Park) have documented subsistence use area data showing use of the Project area. Available use area data for these four communities are all at least 10 years old. For the remaining four communities (Chase, Talkeetna, Trapper Creek, and Petersville), subsistence use area data are not available. AEA will refine the list of identified subsistence mapping communities based on additional information (e.g., consultation with communities and agencies, adequacy of existing data, need for updated data, or suitability of community for subsistence mapping efforts).

The subsistence mapping studies will use the following methods to document subsistence use areas and related baseline indicators for the selected study communities:

- Coordinate with tribal governments and Alaska Native entities as appropriate to seek community support for the interviews
- Identify active and knowledgeable harvesters in each study community through consultation with coordinating organizations and by asking study participants to nominate other active and knowledgeable harvesters
- Work with coordinating organizations or local liaisons to contact respondents and schedule interviews
- With two staff members present, conduct subsistence mapping interviews with active and knowledgeable harvesters to document resource-specific subsistence use areas within the last 10 years, along with related indicators (e.g., harvest timing, transportation method) on a U.S. Geological Survey (USGS) 1:250,000 map
- Conduct post-field data processing, including editing of notes, data entry, digitizing of mapped data, and quality control checks of all data entry and digitizing
- Conduct analysis and prepare community and resource-specific maps of subsistence use areas and related indicators
- Conduct analysis and prepare tables and figures describing baseline indicators
- Review findings with study communities
- Incorporate results of analysis from the subsistence mapping interviews, supplemented by respondent observations, within the context of the proposed Project, into Task 6

Attachment 14-4 provides the draft protocol for the subsistence mapping interviews. The protocol is subject to change through consultation with study communities.

14.5.4.5. Task 5: Traditional and Local Knowledge Interviews

AEA will conduct workshops with knowledgeable residents in selected study communities to document traditional and local knowledge about the physical, biological, and social environment as it relates to the proposed Project. To select study communities for the traditional and local knowledge research, AEA considered the following criteria:

- The study community is located within the Susitna River watershed; or,
- The study community's use area is located within the Susitna River watershed;

and

- At least 50 percent of the community is Alaska Native; or
- A federally recognized tribe is affiliated with the community.

AEA's criteria were based on consideration of the likelihood that the community has knowledge about the Project area (proximity of community or use area to the Susitna River watershed), as well as consideration of the presence of long-term knowledge held by at least a portion of the community (Alaska Native population or affiliation of a federally recognized tribe). As depicted in Table 14.5-3, the following eight communities meet the criteria for inclusion in the traditional and local knowledge studies:

- Cantwell
- Chickaloon
- Chitina
- Copper Center
- Eklutna
- Gakona
- Gulkana
- Tyonek

The traditional and local knowledge studies will use the following methods to document knowledge of the physical, biological, and social environment with the selected study communities:

- Coordinate with tribal governments and Alaska Native entities as appropriate to seek community support for conducting the interviews
- Consult with program leads for other resources (e.g., cultural resources, wildlife, fish, vegetation, water quality, air quality, socioeconomics) to identify key topics and questions for the traditional and local knowledge workshops
- Develop a workshop protocol, incorporating input from program leads for other resources, that covers the following basic topics:
 - Physical Environment
 - Biological Environment
 - Social Environment, including health
 - Issues and Concerns
- Work with coordinating organizations in each community to schedule and arrange workshops and to identify knowledgeable residents to participate in the workshops
- With two staff members present, conduct multiple traditional and local knowledge workshops in each selected community to document knowledge about the physical, biological, and social environment
- Following the workshops, identify key respondents for follow-up Traditional Cultural Property (TCP) and Health Impact Assessment (HIA) interviews by AEA;
- Conduct post-field data processing by editing notes and compiling and organizing quotes by topic and subtopic
- Review findings with study communities

- Incorporate results of the traditional and local knowledge workshops in each selected community, supplemented by respondent observations, within the context of the proposed Project into Task 6

Attachment 14-5 provides the draft protocol for the traditional knowledge community workshops. The protocol is in draft form and is subject to further refinement through consultation with study communities.

Table 14.5-5 summarizes the communities selected for each field-based task: traditional knowledge workshops, subsistence mapping, and household harvest surveys.

14.5.4.6. Task 6: Study Report Preparation

AEA will prepare an Initial Study Report by February 2014 that documents progress to date and describes the methodology and field results of Tasks 1-5. AEA will prepare an Updated Study Report by February 2015 that details the methodology, analysis, and synthesis of all data collected for Tasks 1-5.

14.5.5. Consistency with Generally Accepted Scientific Practice

The ADF&G Division of Subsistence will conduct harvest and use studies using standard Division of Subsistence methodology involving systematic household surveys conducted by community-based survey technicians in cooperation with Division of Subsistence resource specialists. Methods for subsistence mapping and undertaking traditional and local knowledge interviews will be similar to those employed on other recent projects involving federal approvals. These include traditional knowledge interviews to support the EPA's National Pollutant Discharge Elimination System (NPDES) permit (SRB&A 2011); subsistence mapping and traditional knowledge interviews to support the NEPA EIS for the Red Dog Mine Extension, Aqqaluk Project (EPA 2009); and subsistence mapping for Bureau of Ocean Energy Management (BOEM) oil and gas leases on the Outer Continental Shelf (SRB&A 2009). Related to projects under FERC's purview, traditional knowledge interviews were recently conducted in 2012 for the Alaska Pipeline Project and it is proposed that the subsistence interview process for the Susitna-Watana Hydroelectric Project would employ similar methods as those accepted for use for that project.

AEA will be guided by the research principles adopted by the Interagency Arctic Research Policy Committee (1990). These principles include informing community organizations of planned research in their communities, gaining community consent, informing all project participants of all positive and negative implications of participating in the study, and protecting the anonymity of study participants. AEA will coordinate with each community to conduct research and provide each study participant with an informed consent form to read and sign. The informed consent will note any risks and benefits of the study, agree to protect the anonymity of participants, and agree to show data only in an aggregated form.

14.5.6. Schedule

Table 14.5-4 presents the anticipated schedule for the Subsistence Resources Study plan by primary tasks. Key dates (e.g., meetings, deadlines) are also presented for each calendar year.

Also, Initial and Updated Study Reports documenting actions taken and data collected to date will be issued in February 2014 and 2015, respectively.

14.5.7. Relationship with Other Studies

The flow of information into and out of the Subsistence Resources Study is anticipated to occur over the two year study period through an iterative process. As relevant data are collected, they will be disseminated from the Subsistence Resources Study to the Health Impact Assessment (Section 15), Cultural and Paleontological Resources (Section 13), Fish and Aquatic Resources (Section 9), Wildlife Resources (Section 10), Social Conditions and Public Goods and Services (Section 15), and others as requested. Relevant data could include traditional knowledge specific to each resource (e.g., information about wildlife habitat, cultural important places), harvest amounts, subsistence use areas, and timing of harvest activities. These interdependencies are identified in Figure 14.5-4. The milestone data deliveries of the 2013 Initial Study Report, which will incorporate results of the Traditional and Local Knowledge workshops, and the Updated Study Report will be delivered and disseminated to all licensing participants in Q1 of 2014 and Q1 of 2015 respectively. Analysis and synthesis of data in the Subsistence Resources Study will incorporate and integrate results from other studies (Figure 14.5-4).

Data collected and compiled through the Subsistence Resources Study tasks (Sections 14.5.4.1 through 14.5.4.5), will be used in the License Application to conduct an impact analysis and, if necessary, identify potential protection, mitigation, and enhancement measures. The analysis will include assessment of potential impacts to subsistence use areas, user access, resource availability, resource competition, costs and time associated with subsistence activities, and culture. AEA will review other resource studies as appropriate to inform the analysis of potential changes to the environment that might yield insight into the types and levels of potential impacts on subsistence uses. AEA will review the findings of the Socioeconomic and Transportation Resources (Section 15) to incorporate data on potential changes in demographics, nutrition, employment levels, and other relevant information. The findings of the Fish and Aquatic Resources (Section 9), Wildlife Resources (Section 10), and Botanical Resources (Section 11) may inform impacts to subsistence uses related to changes in resource abundance, health, or distribution/migration. In addition, information provided by community residents during the traditional and local knowledge workshops will inform the impact analysis.

14.5.8. Level of Effort and Cost

For information related to level of effort, see Table 14.5-4 for a description of tasks that will occur by month. Section 14.5.4, "Study Methods," provides additional information regarding the level of effort for each task. The estimated effort to implement this study plan, including field studies, data collection, analysis, and reporting over the two-year study period for Tasks 1-6 is approximately \$2.3 million.

14.5.9. Literature Cited

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14.5.10. Tables

Table 14.5-1. Study Communities.

Number	Study Community	Community in Watershed	Use Area in Watershed	ADF&G Identified Study Community
1	Beluga		X	
2	Cantwell		X	X
3	Chase	X	No Data	X
4	Chickaloon		X	
5	Chistochina			X
6	Chitina		X	
7	Copper Center		X	
8	Copperville		No Data	X
9	Denali Hwy Households	X	No Data	
10	Eklutna		X	
11	Gakona		X	
12	Glennallen		X	X
13	Gulkana		X	X
14	Healy		X	
15	Kenny Lake		X	
16	Lake Louise	X	X	X
17	McCarthy		X	
18	McKinley Park		X	
19	Nelchina		No Data	X
20	Mendeltna	X	No Data	
21	Mentasta Lake			X
22	Nabesna			X
23	Parks Hwy Households (Chulitna, Gold Creek, Hurricane/Broad Pass)		No Data	
24	Paxson		X	X
25	Petersville	X	No Data	
26	Skwentna	X	X	X
27	Slana			X
28	Susitna	X	No Data	X
29	Talkeetna	X	No Data	
30	Tazlina		No Data	X
31	Tolsona		No Data	X
32	Tonsina		X	X
33	Trapper Creek	X	No Data	
34	Tyonek		X	
35	Wasilla ¹	X	No Data	
36	Western Susitna Basin		X	
37	Willow	X	No Data	

¹Wasilla includes the outlying CDPs of Big Lake, Buffalo-Soapstone, Fishhook, Houston, Knik-Fairview, Meadow Lakes, Point MacKenzie, and Tanaina.

Stephen R. Braund & Associates, 2012.

Table 14.5-2. Susitna Watershed Household Harvest Survey Added Study Communities.

Study Community ¹	Census Designated Place	Existing ADF&G Study Community	Additionally Selected for Household Harvest Surveys	Selected Nonsubsistence Household Surveys for Area Harvest
Chase	X	X		
Denali Hwy Households				
Mendeltna	X		X	
Lake Louise	X		X	
Parks Hwy Households (Chulitna, Gold Creek, Hurricane/Broad Pass)				
Skwentna	X	X		
Susitna	X	X		
Talkeetna ²	X			X
Trapper Creek ²	X			X

¹Table includes only communities located within the Susitna River watershed outside of a State designated nonsubsistence area, with the exception of Talkeetna and Trapper Creek.

²Talkeetna and Trapper Creek, while located in a State designated nonsubsistence area, are included in this table because of their proximity to the nonsubsistence area boundary. Residents from these communities are presumed to travel outside the nonsubsistence area regularly to participate in subsistence activities.

Stephen R. Braund & Associates, 2012.

Table 14.5-3. Traditional Knowledge Criteria and Selected Study Communities.

Study Community	Community in Watershed	Documented Use Area in Watershed	50 Percent or more Alaska Native Population	Federally Recognized Tribe	Selected Traditional Knowledge Study Community
Beluga		X			
Cantwell		X		X	X
Chase	X	No Data			
Chickaloon		X		X	X
Chistochina			X	X	
Chitina		X		X	X
Copper Center		X	X	X	X
Denali Hwy Households	X	No Data	No Data		
Eklutna		X	No Data	X	X
Gakona		X		X	X
Glennallen		X			
Gulkana		X	X	X	X
Healy		X			
Kenny Lake		X			
Lake Louise	X	X			
McCarthy		X			
McKinley Park		X			
Mendeltna	X	No Data			
Mentasta Lake			X	X	
Nabesna					
Parks Hwy Households (Chulitna, Gold Creek, Hurricane/Broad Pass)	X	No Data	No Data		
Paxson		X			
Petersville	X	No Data			
Skwentna	X	X			
Slana					
Susitna	X	No Data			
Talkeetna	X	No Data			
Tonsina		X			
Trapper Creek	X	No Data			
Tyonek		X	X	X	X
Wasilla ¹	X	No Data			
Western Susitna Basin		X	No Data		
Willow	X	No Data			

¹Wasilla includes the outlying CDPs of Big Lake, Buffalo-Soapstone, Fishhook, Houston, Knik-Fairview, Meadow Lakes, Point MacKenzie, and Tanaina.

Stephen R. Braund & Associates, 2012.

Table 14.5-4. Schedule for implementation of the Subsistence Resources Study.

Activity	2012				2013				2014				2015
	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q	2 Q	3 Q	4 Q	1 Q
Subsistence Study Plan		—	—	—									
Task 2: ADF&G Household Surveys Pre-field Planning - Year 1			—	—									
Task 1: Compilation of Existing Data					—	—	—						
Task 2: ADF&G Household Survey - Year 1					—								
Task 2: ADF&G Reporting and Community Review - Year 1					—	—	—	—					
Task 2: ADF&G Household Surveys Pre-field Planning - Year 2								—					
Task 3: Household Surveys in Nonsubsistence Areas					—								
Task 5: Traditional and Local Knowledge Interviews					—	—							
Task 1-3, 5: Prepare 2013 Study Report and Community Reviews							—	—					
Initial Study Report								—		△			
Revise Study Plans (as needed)								-----		-----			
Task 2: ADF&G Household Survey - Year 2									—				
Task 2: ADF&G Reporting and Community Review - Year 2									—	—	—	—	
Task 4: Subsistence Mapping Interviews									—	—			
Task 4-5: Additional 2014 Subsistence Data Collection as needed									-----	-----			
Task 2-5: Prepare 2015 final Updated Study Report and Community Reviews											—	—	▲
Consultation	—	—	—	—									

Legend:

- Planned Activity
- Follow up activity (as needed)
- △ Initial Study Report
- ▲ Updated Study Report

Table 14.5-5. Study Communities Selected for Traditional Knowledge, Subsistence Mapping, and Household Harvest Surveys.

Number	Study Community	Traditional Knowledge Study Community (2013)	Subsistence Mapping Study Community ² (2014)	Household Harvest Survey Study Community ³	
				2013	2014
1	Beluga			X ⁴	
2	Cantwell	X	X	X	
3	Chase		X	X	
4	Chickaloon	X			
5	Chistochina			X ⁴	
6	Chitina	X		X ⁴	
7	Copper Center	X		X ⁴	
8	Copporville				X
9	Denali Hwy Households				
10	Eklutna	X			
11	Gakona	X		X ⁴	
12	Glennallen				X
13	Gulkana	X			X
14	Healy		X		
15	Kenny Lake			X ⁴	
16	Lake Louise		X		X
17	McCarthy			X ⁴	
18	McKinley Park		X		
19	Mendeltna				X
20	Mentasta Lake			X ⁴	
21	Nabesna			X ⁴	
22	Nelchina				X
23	Parks Hwy Households (Chulitna, Gold Creek, Hurricane/Broad Pass)				
24	Paxson				X
25	Petersville		X		
26	Skwentna			X	
27	Slana			X ⁴	
28	Susitna			X	
29	Talkeetna		X	X	
30	Tazlina				X
31	Tolsona				X
32	Tonsina				X
33	Trapper Creek		X	X	
34	Tyonek	X		X ⁴	
35	Wasilla ¹				
36	Western Susitna Basin				
37	Willow				

¹Wasilla includes the outlying CDPs of Big Lake, Buffalo-Soapstone, Fishhook, Houston, Knik-Fairview, Meadow Lakes, Point MacKenzie, and Tanaina.

²AEA will refine the list of identified subsistence mapping communities based on additional information (e.g., consultation with communities and agencies, adequacy of existing data, need for updated data, or suitability of community for subsistence mapping efforts).

³ADF&G household harvest surveys include a "one-year mapping" component and a key respondent traditional knowledge component.

⁴Communities have recently been surveyed or will be surveyed by ADF&G for other projects or by other agency requests
Stephen R. Braund & Associates, 2012.

14.5.11. Figures

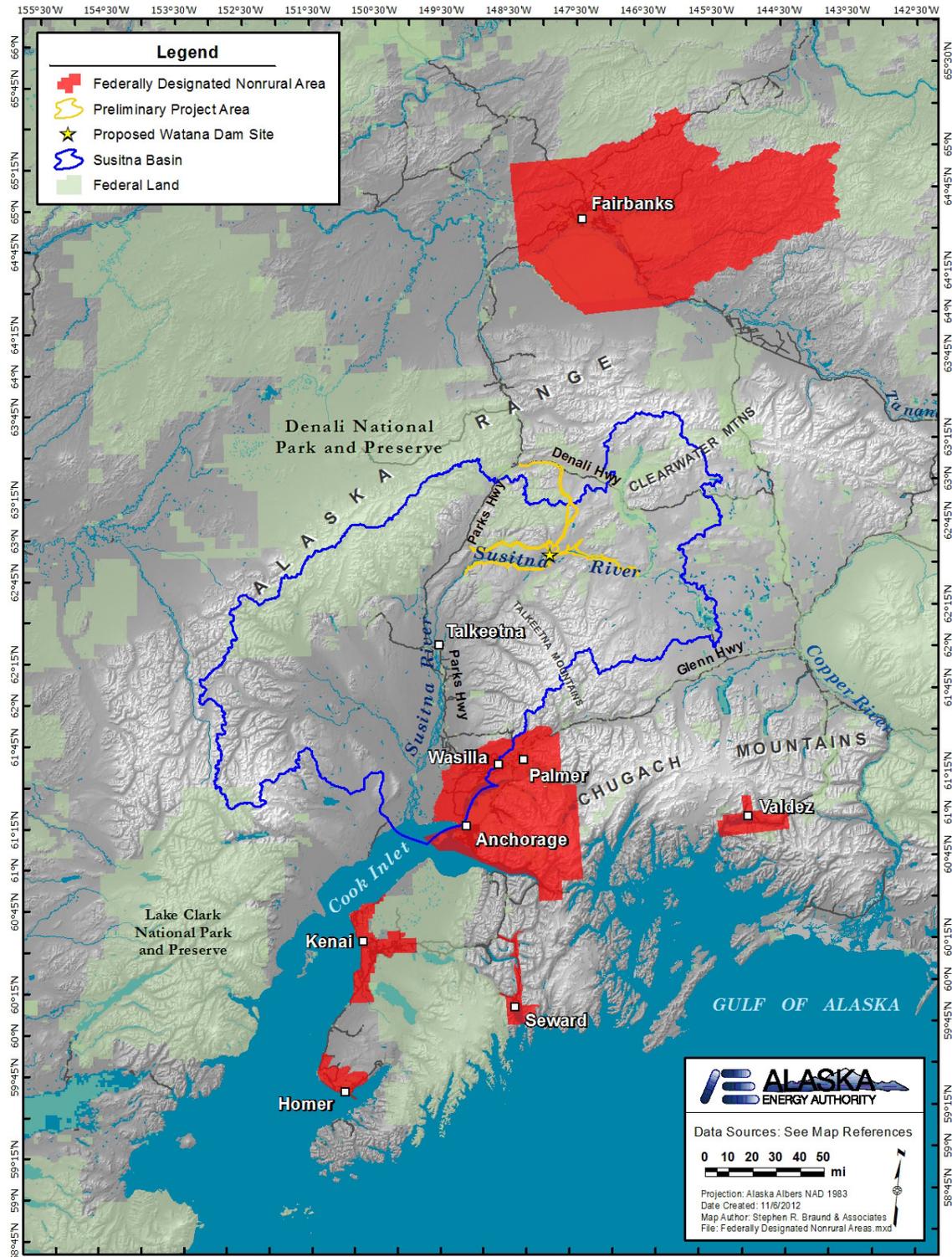


Figure 14.5-1. Federally Designated Nonrural Areas.

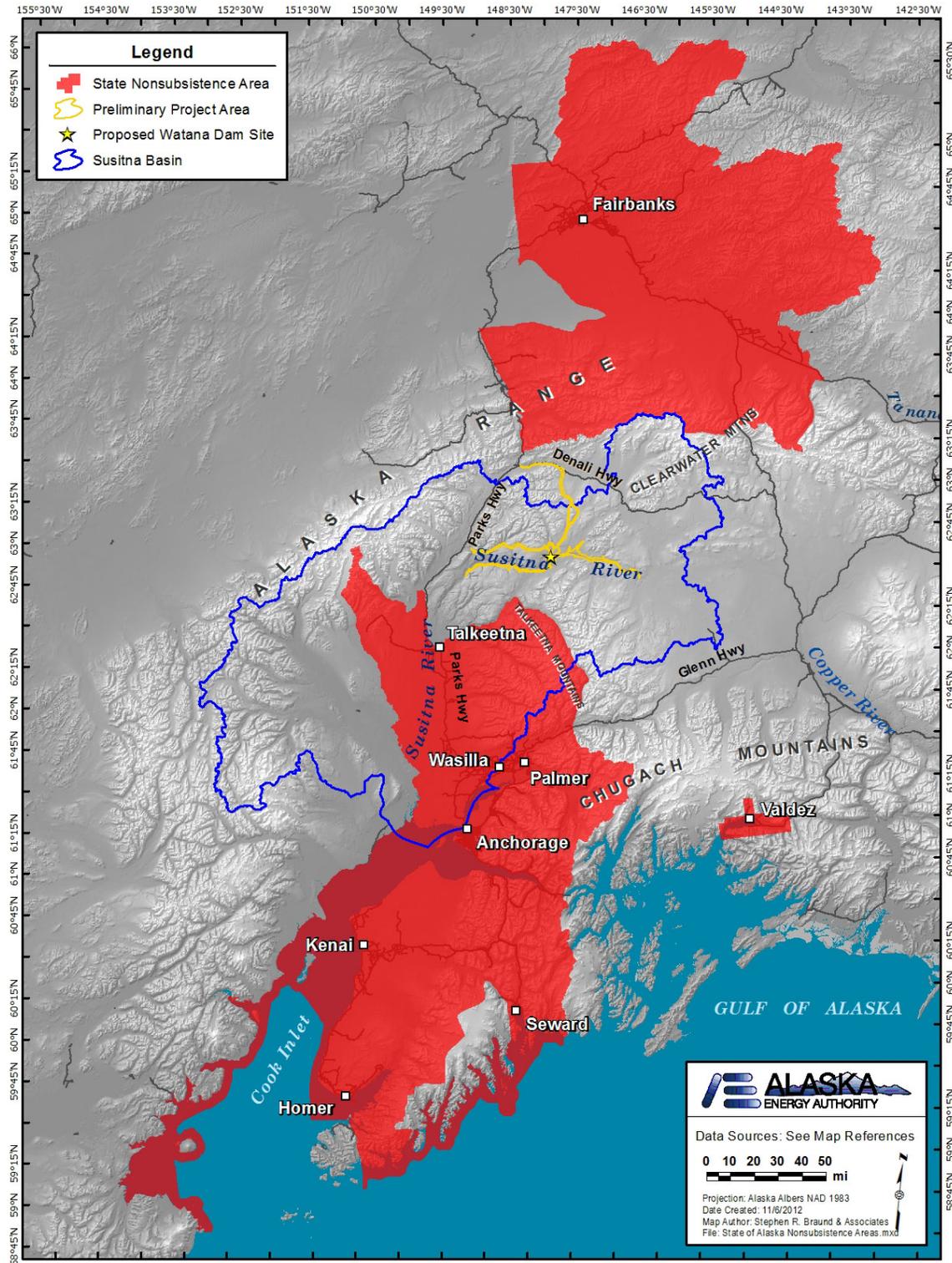


Figure 14.5-2. State of Alaska Designated Nonsubsistence Areas.

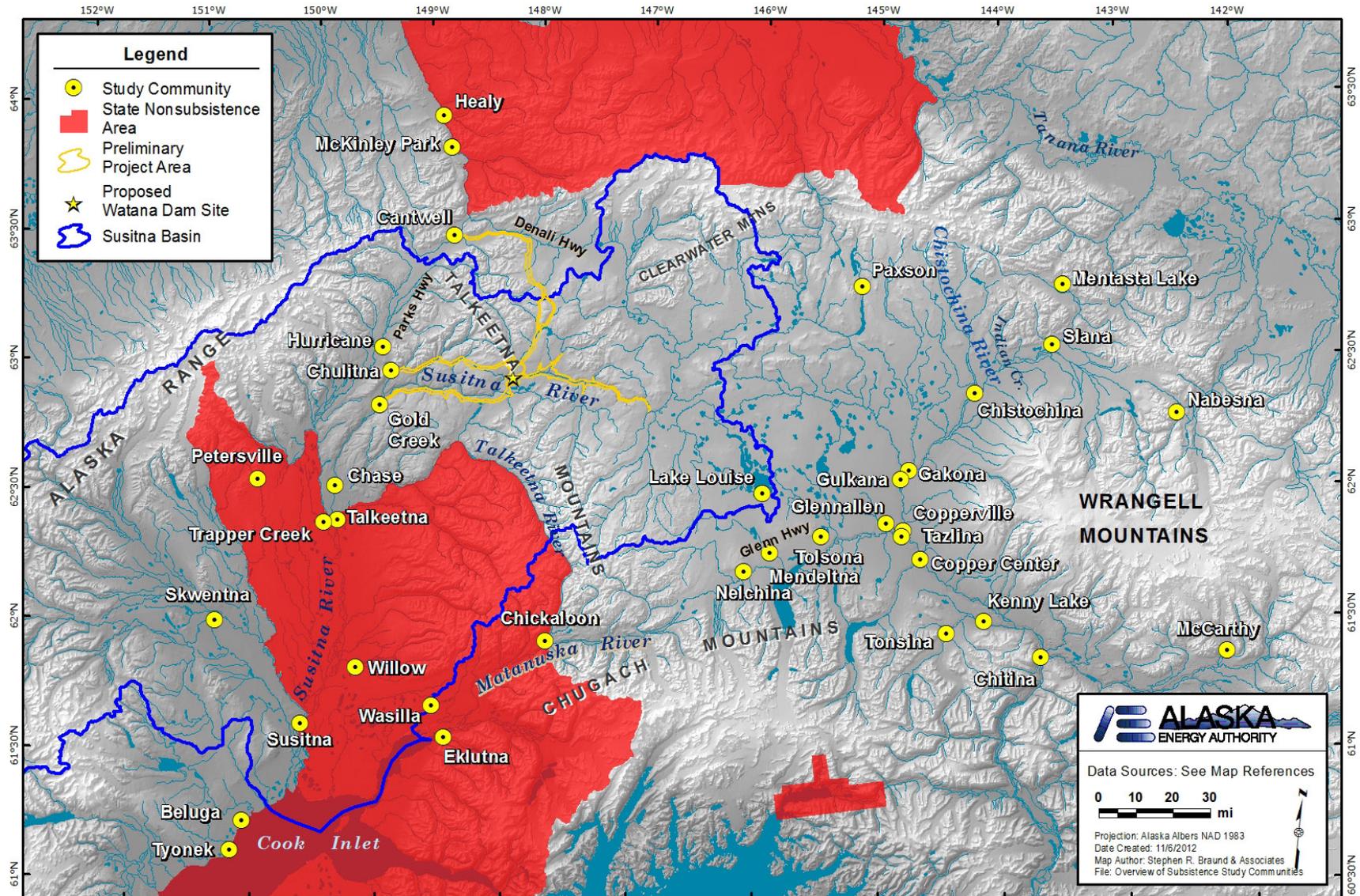


Figure 14.5-3. Overview of Subsistence Study Communities.

STUDY INTERDEPENDENCIES FOR SUBSISTENCE BASELINE DOCUMENTATION STUDY

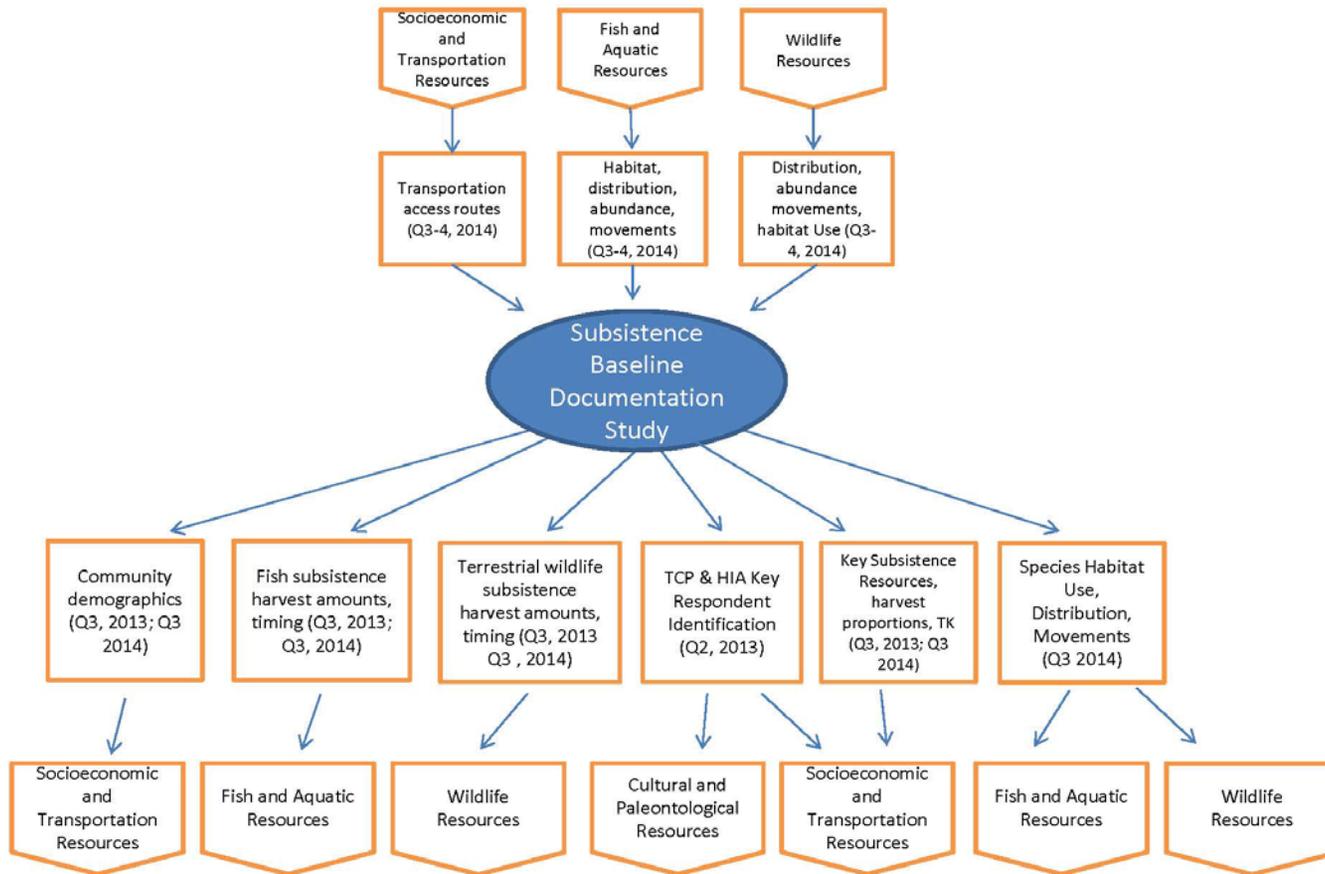


Figure 4.5-4. Study interdependencies for subsistence baseline documentation study.