SUSITNA HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION
PROJECT No. 7114

DRAFT

TERRESTRIAL PLAN OF STUDY FISCAL YEAR 1985

DRAFT REPORT

ARZA-EBASCO
SUSITNA JOINT VENTURE

MARCH 1984
DOCUMENT No. 1199

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

DRAFT
TERRESTRIAL PLAN OF STUDY
FISCAL YEAR 1985

Report by

Harza-Ebasco Susitna Joint Venture

Prepared for

Alaska Power Authority

Draft Report
March 1984

NOTICE

ANY QUESTIONS OR COMMENTS CONCERNING

THIS REPORT SHOULD BE DIRECTED TO

THE ALASKA POWER AUTHORITY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUSITNA HYDROELECTRIC PROJECT
FISCAL YEAR 1985 TERRESTRIAL PLAN OF STUDY

1.0 INTRODUCTION

The Alaska Power Authority (Power Authority) submitted a license application to the Federal Energy Regulatory Commission (FERC) for the Susitna Hydroelectric Project (Project) on February 18, 1983 (Table 1). Following initial submission of supplemental information and responses to FERC comments, the application was accepted for review by the FERC on July 19, 1983. The application was then sent (by the FERC) to resource agencies for review and comment. This review is now complete. The Power Authority has responded to the agencies' comments and the FERC is preparing a draft environmental impact statement (DEIS), due to be released on May 25, 1984. The final environmental impact statement (FEIS) is due for release on December 18, 1984. The license is tentatively scheduled to be issued by the FERC on March 18, 1987. This date is based on the FERC Susitna Project Status Report (revised on January 1, 1984) which assumes that there will be no substantial delays in the licensing process prior to that date.

Although the license application has been accepted by the FERC for review, various terrestrial studies and activities are still needed to assure that the licensing process proceeds on schedule. This document outlines the draft plans for these studies and activities for fiscal year 1985 (FY85). It is provided at this time so that resource agencies will have an opportunity to review and comment on them prior to actual implementation. The Power Authority has also scheduled a workshop on April 10, 1984, to discuss these plans in detail with the agencies. The agencies will have an opportunity to provide their input and comment at this workshop.

Table 1

SUSITNA HYDROELECTRIC PROJECT

FEDERAL ENERGY REGULATORY COMMISSION

SCHEDULE FOR LICENSING PROCESS*

License application submitted to the FERC	February 18, 1983
Submission by the Power Authority of responses to FERC comments and requests for supplemental information	July 11, 1983
License application accepted by the FERC for formal review	July 29, 1983
Agency review of license application document complete	December 12, 1983
Responses to agency comments submitted by the Power Authority	January 19, 1984
Draft Environmental Impact Statement	May 25, 1984
Final Environmental Impact Statement	December 28, 1984
License issued by the FERC (tentative)	March 18, 1987

*Based on the FERC Susitna Project Status Report - January 1, 1984.

2.0 LONG-TERM GOALS OF THE POWER AUTHORITY

The Power Authority has defined specific long-term goals for terrestrial studies that must be accomplished for the Susitna Project. These goals are:

1. Completion of the DEIS review process
2. Completion of the FEIS process
3. Completion of the Settlement Process
4. Completion of (potential) hearings
5. Receipt of an acceptable FERC license for the Project
6. Acquisition of local, state and federal permits for the Project
7. Continuation of studies that provide integrity to maintenance of the terrestrial program.

Following is a brief description of the Power Authority's role for each of these goals:

1. Completion of the DEIS review process.

   The Power Authority will review the FERC's DEIS and provide any necessary comments on it. The Power Authority also plans to submit reports during this process that provide additional refinement to existing analyses. These reports will include impact assessment and mitigation plan refinement reports, instream flow relationships reports, and specific study reports. The Power Authority may also be requested to provide other information to the FERC for completion or clarification of the DEIS. The comment period for the DEIS should be completed by July 25, 1984.

2. Completion of the FEIS process.

   The Power Authority plans to review and comment on the FEIS and submit any additional information that may be needed.

3. Completion of the Settlement Process.

The Power Authority plans to finish terrestrial impact evaluations and develop detailed mitigation and long-term monitoring plans to complete the settlement process. This will be accomplished through workshops, distribution of information and direct negotiations with the resource agencies. Additional information or analyses resulting from on-going studies will be provided to the agencies during this period.

4. Completion of (potential) hearings.

If there are certain issues that cannot be resolved during the settlement process, there may be a need for hearings. The Power Authority will develop briefs and directly participate in the hearings. If hearings are necessary, they will be initiated in the 1984-85 winter period. Direct testimony will be provided in September 1985 with an administrative law judge decision due on January 25, 1986.

5. License ordered by the FERC.

Following the settlement process (and potential hearings), the FERC will establish articles for the license that stipulate any additional needs for information and study prior to Project initiation. The Power Authority will review these articles and respond to them with any additional information that may have been developed in the interim. The final order granting license should come from the FERC in March, 1987.

6. Acquisition of permits.

Numerous permits will be needed for Project construction and operation. The Power Authority will develop information that is required for these permits.

7. Program Integrity.

Certain studies will need to be continued so there is a continuity of information collected. These include both wildlife (e.g., big game

surveys) and botanical (e.g., browse inventory) data collection. This information will be used to refine existing analyses and to develop baseline information for potential construction and with-project monitoring programs.

3.0 TERRESTRIAL STUDY TEAM PARTICIPANTS

The Power Authority is assisted by various groups and contractors (referred to as the Terrestrial Study Team) in refining impact assessments and mitigation plans and in the formal licensing process. These organizaions and their primary Project responsibilities are:

A. Harza-Ebasco Susitna Joint Venture (H-E) - responsible for providing general support and coordination for impact assessment and mitigation plan refinement and the formal licensing process and monitoring all activities in the terrestrial program to ensure that team members accomplish assigned tasks in a satisfactory manner with respect to budget, schedule, and quality of work.

B. LGL Alaska Research Associates (LGL) - responsible for impact assessment and mitigation plan refinement and for coordination of Terrestrial Team members in that capacity; also responsible for raptor studies.

C. Alaska Department of Fish & Game - Game Division (ADF&G - Game) - responsible for conducting big game studies and participation in impact assessment and mitigation plan refinement.

D. University of Alaska, Dr. P. Gipson - responsible for conducting furbearer studies and participation in impact assessment and mitigation plan refinement.

E. University of Alaska, Dr. B. Kessel - responsible for conducting bird and small mammal studies and participation in impact assessment and mitigation plan refinement.

F. University of Alaska, Palmer - responsible for conducting vegetation studies.

G. R.A. Kreig and Associates - responsible for Project area vegetation mapping.

H. U.S. Fish and Wildlife Service, National Wetlands Inventory (USFWS, NWI) - responsible for Project area wetlands mapping.

4.0 FY85 STUDY DESCRIPTIONS AND PRIORITIZATION

Certain studies must be performed to meet the long-term goals for this Project. This plan specifically addresses those studies proposed for FY85. The study plan has been divided into tasks that address specific objectives to facilitate review and evaluation. Some of these tasks are more important than others because they are either critical to the licensing and settlement processes or are necessary to maintain baseline data collection. Therefore, the study plans have been prioritized by task description with decreasing priority assigned to increasing task number. The prioritization sequence is intended only as a general indicator of relative importance. This prioritization will provide a basis for budget allocation decisions that may have to be made.

These tasks have been divided into four general levels of importance:

Level 1 - The lowest reasonable level of effort which could be undertaken with some probability of maintaining the licensing schedule but with a substantial degree of risk for schedule delay.

Level 2 - An intermediate level of effort between the minimum reasonable (Level 1) and the required level of effort (Level 3).

Level 3 - The required level of effort for maintaining the licensing schedule with an acceptable degree of risk for schedule delay.

Level 4 - The level of effort desired to maintain the present schedule with a higher degree of certainty.

Tasks have been assigned to individual levels and prioritized within levels based on the results of several intensive planning sessions attended by key

representatives from LGL, ADF&G - Game Division, Harza-Ebasco, and the Power Authority.

Each task description contains a rationale, objectives, description, deliverables and schedule section. These are provided to standardize the task descriptions for ease in review and for comparison. The task descriptions have been based on results and analyses from previous studies and other existing sources of information. A listing of all tasks (Table 2) is provided first, followed by a description for each individual task.

Table 2

FISCAL YEAR 1985

TERRESTRIAL PROGRAM TASKS

Level 1

1. Preparation of comments and responses to comments on the DEIS and FEIS and other information for the FERC.
2. Coordination of and participation in workshops and other elements of the settlement process.
3. General coordination of terrestrial program activities.
4. Preparation of materials to support FERC hearings.
5. Preparation of impact assessment and mitigation plan refinement reports (Levels 1 and 2)*.
6. Updating of the tracking and documentation system for impact assessment and mitigation planning.
7. Wetlands mapping.
8. Vegetation mapping and digitizing (Levels 1 and 2)*.
9. Moose calf mortality study.
10. Winter-spring monitoring of upstream moose including severe winter studies (Levels 1 and 2)*.
11. Testing of moose carrying capacity model.

Level 2

12. Detailed assessment of candidate compensation lands.
13. Moose browse inventory.
14. Field evaluation of disturbed areas.

* Task contains work that has been assigned to two or more of the four general levels of importance. See task description.

Level 2 (cont'd)

15. Site specific downstream riparian studies.
16. Moose population model refinement.
17. Brown & black bear monitoring (Levels 2 and 3)*.
18. Beaver field studies (Levels 2, 3, and 4)*.
19 Beaver population model refinement.
20. Survey of middle basin trappers.
21. Bald eagle food habits study.

Level 3

22. Caribou monitoring.
23. Downstream moose monitoring.
24. Transmission corridor trumpeter swan and bald eagle nest survey.
25. Winter bird surveys of impoundment zones.

Level 4

26. Other furbearer field studies.
27. Lower Susitna River bald eagle nest survey.
28. Wolf monitoring.
29. Monitoring of peregrine falcon nest sites.

---

* Task contains work that has been assigned to two or more of the four general levels of importance. See task description.

TASK 1

PREPARATION OF COMMENTS AND RESPONSES TO
COMMENTS ON THE DEIS AND FEIS AND OTHER INFORMATION
FOR THE FERC

Level: 1

Primary Responsibility: Harza-Ebasco

Rationale

The Power Authority must review and comment on the DEIS and FEIS and on comments on these documents to assure that all analyses and conclusions are based on accurate information, to provide clarifications, and to provide alternative interpretations where appropriate. The Power Authority must also provide supplemental information to the FERC as requested.

Objectives

1. To provide comments on the DEIS and its review.
2. To provide comments on the FEIS and its review.
3. To provide supplemental information to the FERC as requested.

Description

Activities that will lead to completion of the first and second objectives will involve several elements. These elements will consist of correcting inaccuracies and preparing additional information which will strengthen some conclusions, differ from others, and provide clarification for others. Additionally, comments prepared by other agencies and the public will be reviewed to identify those comments and conclusions

with which a substantial difference of opinion remains. These reviews will provide a basis for identifying specific conclusions which may need resolution through the settlement and hearings processes.

The third objective will be satisfied on an as-required basis if and when supplemental information is requested by the FERC.

Deliverables

Major deliverables include the comments on the DEIS and FEIS. Other deliverables may also be scheduled.

Schedule

Comments on DEIS - July 24, 1984
Comments on FEIS - January 25, 1985

TASK 2

COORDINATION OF AND PARTICIPATION IN WORKSHOPS AND OTHER ELEMENTS OF THE SETTLEMENT PROCESS

Level: 1

Primary Responsibility: Harza-Ebasco, LGL

Rationale

This task is necessary to ensure that the settlement process progresses with input from participants that can provide the best information for resolving specific issues.

Objective

To provide the Power Authority with information and support to resolve issues raised by agencies and the public and negotiate acceptable mitigation plans.

Description

An important aspect of the settlement process is the dissemination of information to familiarize agency personnel with project study methodologies, analyses, and results. This process will also facilitate feedback from the agencies which will assist the resolution of impact issues and mitigation plans. The primary means of providing for this information transfer will be through a series of five workshops during 1984 and early 1985 along with monthly coordination meetings with pertinent agency personnel.

Appropriate members of the Terrestrial Study Team will coordinate and participate in these workshops and coordination meetings depending on the particular topics to be covered.

The Power Authority will meet with agencies in order to reach settlement on the various terrestrial issues. Terrestrial Team members will provide various information, analyses, documents, and other support as requested by the Power Authority.

Deliverables

Deliverables will consist of prepared workshop materials and presentations, workshop summaries, coordination meeting notes, and other items needed to support other settlement process elements.

Schedule

Five specific terrestrial workshops are planned for the remainder of FY84 and FY85. In addition, monthly progress review and coordination meetings take place on the first Thursday of every month. The tentative schedule for workshops during the remainder of FY84 and FY85 is as follows:

	Workshop	Date
Workshop 1:	FY85 Terrestrial Program Scoping Workshop	April 10, 1984
Workshop 2:	Impact Assessment and Mitigation Plan Refinement Workshop	June 6, 1984
Workshop 3:	Impact Assessment and Mitigation Plan Refinement Workshop	September 28, 1984

Workshop 4:	Terrestrial Studies Update Workshop	December 12, 1984
Workshop 5:	Mitigation Plan Workshop	April 30, 1985

TASK 3

GENERAL COORDINATION OF TERRESTRIAL PROGRAM ACTIVITIES

Level: 1

Primary Responsibility: Harza-Ebasco, LGL

Rationale

Coordination among terrestrial study groups is a vital aspect of the overall activities necessary to assure satisfactory integration of all the related but separate study components. The importance of this task increases as the project proceeds toward the settlement process and FERC hearings.

Objective

Attain a level of coordination among Terrestrial Study Team members necessary to assure effective and efficient progress toward a set of common goals.

Description

This task requires effort from all members of the Terrestrial Study Team. H-E has an overall coordinating function that includes monitoring all the terrestrial activities to ensure that team members are able to accomplish their tasks and that sufficient progress is being made toward overall study goals. LGL also has a major coordinating function relative to their preparation of impact assessment and mitigation plan refinement reports. Each team member is responsible for maintaining an appropriate level of communication and coordination with other team members who share common, integrated, or related tasks.

Program coordination will be achieved by various means including:

1. Joint preparation of study plans.

2. Monthly coordination meetings.

3. Team-wide dissemination of pertinent information, reports, correspondence, and memos.

4. Frequent meetings and data and information exchange among team members with related tasks.

Deliverables

Written meeting summaries will be prepared for each monthly coordination meeting and other important meetings and distributed to all team members.

Study plan development for FY86 will begin in July 1984. This planning process will produce a Detailed Plan of Study for FY86 as well as specific workscopes for each team member.

There are no other specific deliverables for this task. However, memoranda describing the results of or need for coordination will be prepared when appropriate to effect necessary changes in planned activities, schedules, etc.

Schedule

Monthly Coordination Meetings	1st Thursday of each Month
Begin FY86 Planning Process	July 1984
Begin Preparation of FY86 Plan of Study	February 1985
Draft Detailed Plan of Study for (FY86)	May 1, 1985

TASK 4

PREPARATION OF MATERIALS TO SUPPORT FERC HEARINGS

Level: 1

Primary Responsibility: Harza-Ebasco

Rationale

A major element of the environmental hearings process will focus on the impacts of the Susitna Hydroelectric Project on wildlife and botanical resources and the potential effectiveness of planned mitigation measures. Large volumes of information and data may need to be condensed and summarized into formats appropriate to support the hearings process scheduled to begin December 28, 1984.

Objectives

Prepare materials necessary to support successful completion of the FERC environmental hearings process.

Description

Steps in the hearings process that will require participation by members of the Terrestrial Study Team include the discovery process, filing of direct testimony, filing of rebuttal testimony, possible filing of surrebuttal testimony and cross examination of witnesses. Although most of these steps will not occur in FY85, it is necessary to begin preparation for accomplishing these steps. This is due to the large volume of data and analyses pertaining to terrestrial resources which may need to be summarized and developed into an appropriate form for hearings.

The primary activities which will occur during FY85 include the selection of persons who will testify on behalf of the Power Authority, consultation with Power Authority Licensing Cousel, responses to discovery requests from FERC and intervenors and preparation of written direct testimony.

Deliverables

Specific deliverables to result from the activities of this task include:

1. Designation of expert witnesses to testify on terrestrial resources on behalf of the Power Authority.

2. Position papers by expert witnesses defining areas to be discussed and input required from other participants.

3. Responses to discovery requests.

4. Draft outline of direct testimony from each expert witness.

In addition, the designated expert witnesses will participate in activities leading to deliverables of other terrestrial study tasks.

Schedule

The schedule for accomplishing this task will be coupled with the schedule set by FERC for the environmental hearing process. At the present time, the hearing schedule is as follows:

	Item	Date
1.	FERC orders hearings	2/1/85
2.	Prehearing conference	4/3/85
3.	Discovery request responses	6/24/85
4.	Additional discovery request responses	7/24/85
5.	Filing of direct testimony	9/25/85
6.	Filing of rebuttal testimony	11/27/85
7.	Cross examination of witnesses	12/27/85

In support of the hearing schedule, activities conducted by the Terrestrial Study Team are scheduled as follows:

	Item	Date
1.	Designation of expert witnesses	7/1/84
2.	Position papers	3/31/85
3.	Conferences with legal counsel	Periodically
4.	Responses to discovery requests	6/24/85
5.	Draft outline of direct testimony	4/30/85
6.	Draft direct testimony text	6/30/85

TASK 5

PREPARATION OF IMPACT ASSESSMENT AND MITIGATION PLAN REFINEMENT REPORTS

Level: 1 and 2

Primary Responsibility: LGL, Harza-Ebasco

Rationale

The Alaska Power Authority has identified 19 general wildlife issues based on agency review comments on the February 1983 license application to the FERC. These issues will require further analysis to ensure that all pertinent information, including data collected after submittal of the license application, is incorporated into impact assessments and mitigation plans. Impact assessments must be made as quantitative as existing data will allow, and mitigation plans should set forth objectives, supporting technical rationale, implementation procedures, schedules, and probable costs projected to future years. In addition, mitigation planning for wildlife must be consistent with measures proposed in the fisheries, socioeconomics, and recreational areas and the construction and operating plans for the project.

Objectives

1. To incorporate all appropriate new or additional information into impact assessments, so that the level of precision and quantification is increased to the greatest extent feasible.

2. To increase the precision and detail of mitigation plans for wildlife and wildlife habitat, and to ensure that these plans are consistent with those proposed for fisheries, socioeconomics, recreation, and aesthetics.

3. To provide information on wildlife and wildlife habitat necessary for decisions concerning the selection of alternative instream flow regimes.

Description

The level of effort to be expended on impact assessment and mitigation planning in FY85 will be prioritized and tiered to conform with budget limitations. Four levels of effort are identified on a preliminary basis as follows:

Level 1. Update impact assessments to include all information contained in the annual reports and other reports of principal investigators released since submittal of the license application in February 1983. Obtain from principal investigators pertinent new information not included in reports. Meet with Project hydrologists to obtain the most recent available information on with-Project flow and ice conditions predicted downstream from Devil Canyon.

Level 2. Conduct detailed technical meetings with principal investigators to allow extended discussion of ideas for expanding and improving impact assessments, and to ensure that data presented in the reports of principal investigators are accurately interpreted. Also, conduct a thorough literature review and interviews with agency representatives at the federal, state, and borough levels to ensure that information and ideas appropriate for impact assessment and mitigation planning of a high-latitude major hydroelectric project are fully incorporated. Meet also with representatives of the fisheries, socioeconomics, recreation, and aesthetics programs to allow coordination of wildlife mitigation planning with these groups. At this level of effort, mitigation

planning will result in the preparation of a single draft mitigation plan which is internally consistent with regard to measures proposed for wildlife, fisheries, socioeconomics, recreation, and aesthetics.

Deliverables

The number and topics of reports prepared under this task will be the same at all four levels of effort. However, content and completeness will vary with the selected level of effort, especially with regard to the extent of discussion and coordination with principal investigators and task leaders of other related disciplines.

The following reports will be prepared:

1. Final Wildlife Habitat/Instream Flow Relationships Report - this report will update and refine our assessment of the effects of altered flows downstream of the Project on wildlife and wildlife habitat and will provide input to the Aquatic program's Instream Flow Relationships Report (see Task 4A in the Draft Aquatic Plan of Study for FY85).

2. Economic and Environmental Comparisons Report input - this input will provide an assessment of the effects of alternative instream flow regimes on wildlife and wildlife habitat (see Task 5A in the Draft Aquatic Plan of Study for FY85).

3. FY85 Impact Assessment Refinement Report - this report will represent a compilation of impact assessment updates and refinements based on recently collected data and analyses directed at resolving issues.

4. FY85 Mitigation Plan Refinement Report - this report will provide a detailed description of each aspect of the mitigation plan including a description of options where appropriate.

5. Recommended Mitigation Plan - this document will be prepared by Harza-Ebasco based on subcontractor input and will recommend a detailed and specific mitigation plan, based on consideration of all reasonable options, that is consistent with plans proposed by the Aquatic and Social Science Programs and project construction and operation plans.

Schedules

1. Final Wildlife Habitat /Instream Flow Relationships Report - July 27, 1984.

2. Draft Sections of Instream Flow Comparisons Report - March 1, 1985

3. Final Sections of Instream Flow Comparisons Report - Fall 1985

4. Draft FY85 Impact Assessment Refinement Report - October 31, 1984

5. Final FY85 Impact Assessment Refinement Report - November 30, 1984

6. Draft FY85 Mitigation Plan Refinement Report - January 31, 1985

7. Final FY85 Mitigation Plan Refinement Report - February 28, 1985

8. Draft Recommended Mitigation Plan - March 31, 1985

9. Final Recommended Mitigation Plan - May 31, 1985

TASK 6

UPDATING OF THE TRACKING AND DOCUMENTATION SYSTEM FOR IMPACT ASSESSMENT AND MITIGATION PLANNING

Level: 1

Primary Responsibility: LGL

Rationale

A "bookkeeping" system is being maintained and applied to the terrestrial biology program, so that the current status of impact assessment, mitigation planning, and resolution of each impact issue can be tracked and easily determined as the program progresses. During FY84, an original and the first revision of an Impact Assessment and Mitigation Planning Summary for Wildlife and Botanical Resources will be prepared. This document is a matrix which summarizes impact assessment and mitigation planning as it evolves through the spring of 1984.

The matrix is organized so that the development of impact assessment and mitigation planning can be followed horizontally across each page. The major column headings from left to right allow steps in the planning process to be tracked as follows:

I. Affected Species or Group: Lists the species or group of species of concern in the Project area and surrounding region;

II. Impact Mechanism: Describes the predicted effects of Project actions and features on each species or group.

III. Impact Assessment Status: Provides a summarized evaluation of the expected extent of impact, including its viewed importance to the species or group in question, and the extent of quantification developed for the assessment;

IV. Additonal Information Required: Provides a synopsis of baseline data that are forthcoming or may still be required to assess more fully the impact in question or to refine mitigation strategies:

V. Proposed Mitigation Options (FERC License Application): Summarizes mitigation options proposed in Exhibit E, Chapters 3 and 4 of the license application; and

VI. Mitigation Plan Refinement: Shows the current state of mitigation planning for each impact mechanism, including options under consideration since submittal of the FERC license application.

During FY85, additional refinements and changes will be made to impact assessment and mitigation planning (see Task 5). It will be necessary to document these refinements in successive revisions of the Impact Assessment and Mitigation Planning Summary.

Objective

To document refinements to impact assessments and mitigation planning made during FY85.

Description

Revisions will be made approximately quarterly to the Impact Assessment and Mitigation Planning Summary to document refinements accomplished during the FY85 program. Refinements contained in various FY85 project reports, including the impact assessment and mitigation planning refinement reports, will be shown in the successive revisions. In

particular, it is expected that category VI, Mitigation Plan Refinement, will show substantial expansion during FY85.

Deliverables

1. The tracking document entitled "Impact Assessment and Mitigation Planning Summary for Wildlife and Botanical Resources" will be updated and published as sequential revisions as deemed appropriate.

Schedules

1. Revision 2 will be published in October 1984. Subsequent revisions will be published approximately quarterly or as deemed appropriate.

TASK 7

WETLANDS MAPPING

Level: 1

Primary Responsibility: U.S. Fish and Wildlife Service

Rationale

Existing wetland maps of the immediate project area represent potential wetlands based on interpretation of general vegetation maps rather than actual wetlands. Wetlands mapping would permit better quantification of wetland impact assessments and permit refinement of facility siting to avoid or minimize wetland impacts. Wetland mapping will be initiated in FY84, and will need to be continued to completion in FY85 in order to maintain program integrity.

Objective

Prepare wetland maps of all areas potentially covered by or adjacent to the impoundment, dams, camps, villages, borrow pits, access roads, and the transmission line between the dams and the Intertie, between Healy and Fairbanks, and between Willow and Anchorage.

Description

Project area wetlands mapping will be conducted as part of the National Wetlands Inventory in a cooperative effort between the U.S. Fish and Wildlife Service and the Power Authority. Data will be collected and 13 wetland maps at a scale of 1:63, 360 will be produced. The area to be covered is shown in the following figure. National Wetlands Inventory Mapping is already in progress or is completed for the Willow

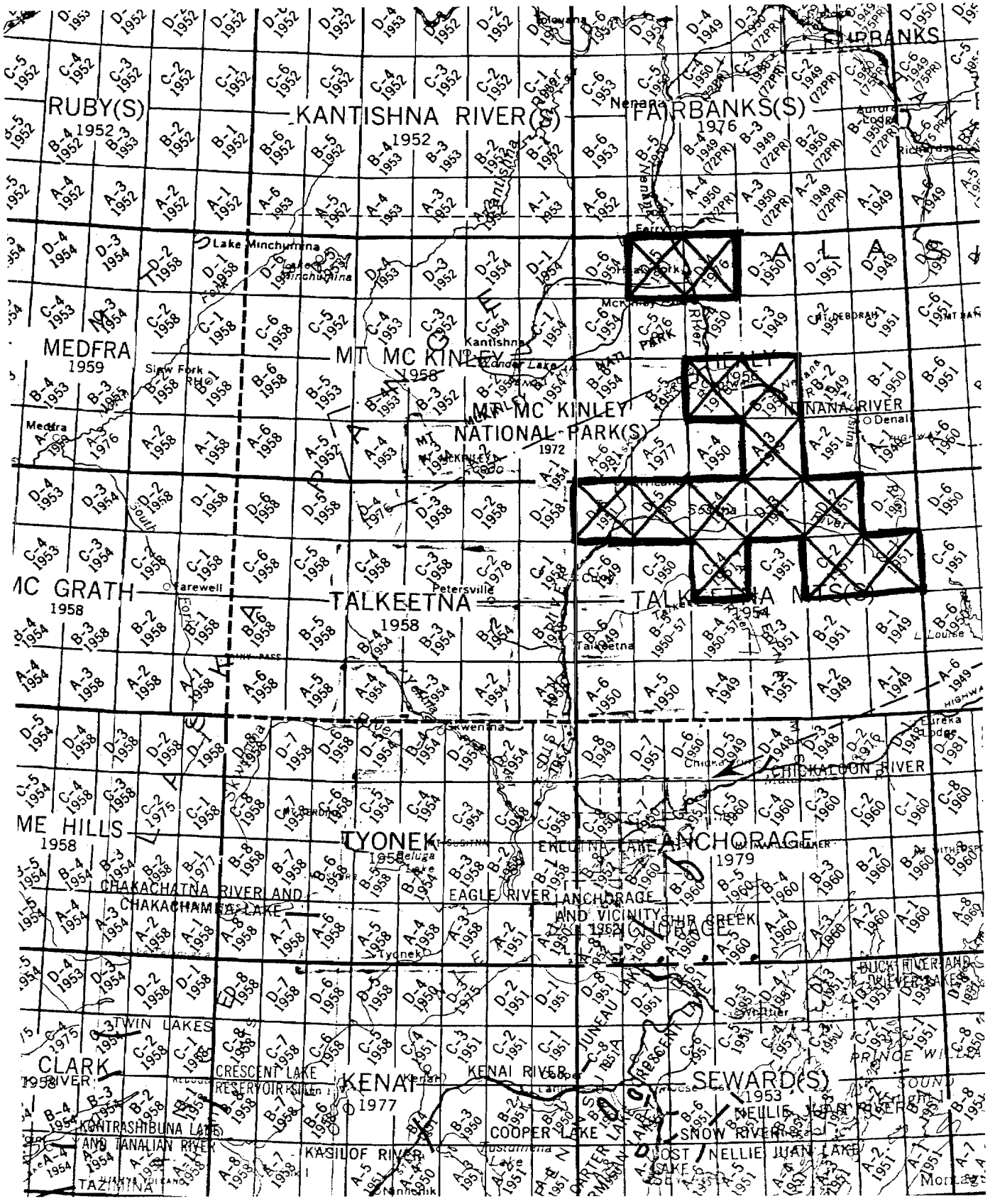

Figure 1

WETLANDS MAPPING AREAS

to Anchorage and Healy to Fairbanks transmission line routes except for the Healy D-4 and D-5 quads which are included in the 13 maps to be produced under this task.

Mapping is to be performed through sterescopic interpretation of high altitude color infrared aerial photographs with detailed ground sampling. Wetlands will be classified according the the U.S. Fish and Wildlife Service's "Classification of Wetlands and Deepwater Habitats of the U.S." (Cowardin et al. 1979). A minimum mapping polygon size of 2 to 4 acres for wetlands will be utilized.

Schedule and Deliverables

Photo interpretation and field work completion date:	Sept. 30, 1984
Draft map production completion date:	Jan. 31, 1985
Final map production completion date:	June, 30, 1985

TASK 8

VEGETATION MAPPING
AND DIGITIZING

Level: 1 and 2

Primary Responsibility: R.A. Kreig & Associates.

Rationale

Detailed vegetation mapping is necessary to support habitat-based impact assessment and mitigation plan refinement. A detailed map will provide the basis for improving the efficiency and precision of the moose browse inventory to be conducted during the summers of 1984 and 1985 (Task 13). It will also provide a means for comparing the browse production obtainable in different vegetation types. In addition, it will form the basis of more detailed habitat utilization analyses for several wildlife species. Existing mapping at a scale of 1:63,360 or larger does not extend beyond 10 miles on each side of the Susitna River between the Tyone River and Gold Creek; however, the browse inventory study area does in some cases. In addition, this mapping does not contain a high degree of resolution relative to important moose browse species abundance. Detailed vegetation mapping will result in more quantitative impact assessments and will facilitate the development of specific mitigation plans based on informed decisions regarding compensation lands.

Objective

The objective of this task is to prepare a detailed and accurate 1:63,360 scale photobase map of vegetation within the area shown in the following figure, along with a concise and explicit user guide.

Figure 2

VEGETATION MAPPING AREAS

Description

The boundary of the area, within which vegetation is to be mapped at a scale of 1:63,360, is delineated on the figure on the previous page. Available 1:24,000 true color and 1:60,000 CIR aerial photography in combination with other photography will be utilized. Mapping procedure will include stereoscopic interpretation of vegetation, delineation of vegetation type boundary lines, and labeling of the resulting polygons.

Mapping of vegetation will employ the classification system of Viereck et al. (1982). The entire area within the delineated boundary will be mapped, including waterbodies, unvegetated terrain, and disturbed areas. All vegetation types will be mapped to at least Classification Level III. Forest, tall shrub, and low shrub communities will be mapped to Classification Level IV. For open forest, woodland forest, tall shrub, and low shrub the percent cover of willow, shrub birch, and alder will be indicated.

Following production of the preliminary mapping based on photointerpretation, field studies will be conducted to eliminate ambiguity and to provide greater detail and accuracy of vegetation coverage. It is expected that ground-truth data will provide categorical detail beyond the limitations of the photography.

Digitization of the final map product will be conducted to facilitate its use for browse inventory planning, habitat utilization analyses, and other applications.

Vegetation mapping was assigned to the Level 1 category of importance while map digitization was assigned to Level 2.

Deliverables

As an interim product, a draft map of several test areas will be prepared. This test map will permit terrestrial team members to have a preview of mapping products and thereby allow for appropriate modifications to be made at an early stage.

Preliminary draft maps of the entire mapping area will be submitted in phases beginning on May 15, 1984 and ending on June 15, 1984. These maps will be sufficiently accurate to permit their use for planning FY85 browse inventory work.

The final map product will be on a photobase and will be accompanied by a concise report (user guide) which will describe in detail the techniques used to produce the map, including a discussion of the limitations and accuracy of the mapping. The report will also provide an explicit definition of the vegetation types which appear on the map, including a key in tabular format which will allow direct conversion between each vegetation type mapped and the corresponding types used in other project area vegetation mapping.

Schedule

Test Area Map	April 16, 1984
Preliminary Draft Maps	May 15 - June 15, 1984
Draft User Guide	November 15, 1984
Final Draft Maps	December 1, 1984
Final Maps	January 31, 1985
Digitization	April 30, 1985

TASK 9

MOOSE CALF MORTALITY STUDY

Level: 1

Primary Responsibility: ADF&G

Rationale

Bear predation on moose calves is known to be a significant factor in the dynamics of the middle and upper Susitna Basin moose population. Habitat loss is likely to alter moose numbers and hence predator/prey ratios. Predictions of population change generated by the moose population model will be sensitive to these ratios. As the project may alter black bear numbers more than brown bear numbers, the relative importance of these two species as predators is an important factor in the prediction of moose population changes.

Objective

To determine the causes and rate of moose calf mortality.

Description

Newborn moose calves will be collared with mortality transmitters and monitored daily in FY84. Dead calves will be examined on the ground as soon as possible and cause of death determined. A sample of radio-collared bears will be monitored simultaneously in an effort to determine rates of kill. Monitoring of calves and bears will continue into early FY85. Data will be incorporated into the moose population model.

Deliverables and Schedules

Preliminary report	12/1/84
Final Report (in ADF&G Annual Report)	4/1/~~84~~ 85

TASK 10

WINTER-SPRING MONITORING OF UPSTREAM MOOSE INCLUDING SEVERE WINTER STUDIES

Level: 1

Primary Responsibility: ADF&G

Rationale

Previous studies indicate that moose in the upstream study area use habitats in or near potential impact areas most in winter and spring. Degree of use varies annually; a wide range in numbers of moose using the Watana impoundment area was observed during the first three years of study. Based on observations in adjacent areas, it has been hypothesized that greater numbers may use these areas during a severe winter.

Objective

To monitor habitat selectivity of moose using the upstream primary impact zone.

Description

Level: 1

Existing radio-collared moose that have historically resided in the upstream primary impact zone will be monitored at a level that will allow only a crude comparison of movements with those observed in previous years. A count of moose in the impoundment areas in March will be made. This level will only allow investigators to judge if there are major deviations from documented patterns.

If the winter is judged to be "severe" based on snow data and movements of moose, a severe winter contingency plan will be implemented. This plan will include more frequent relocations of radio-collared moose, a distribution survey, snow measurements, examination of kills, and monitoring changes in patterns of predation on moose by wolves.

Level: 2

This level includes the same basic scope of work as Level 1, except that the intensity of effort will be great enough to provide a reliable comparison with previous years, and the number of point locations will be sufficient to improve the quality of the habitat selectivity analysis that will be conducted when new vegetation maps are digitized (Task 8).

Deliverables and Schedule

1. Data and brief reports will be provided to Harza Ebasco and LGL as needed for incorporation into Tasks 1, 2, 4, and 5.

2. Annual report: April 1, 1985.

TASK 11

TESTING OF MOOSE CARRYING CAPACITY MODEL

Level: 1

Primary Responsibility: ADF&G

Rationale

A nutritionally based carrying capacity model will be used to estimate changes in moose carrying capacity of the primary impact zone (see Task 13). This model is being field validated under controlled conditions by the Alaska Department of Fish and Game at the Kenai Moose Research Center.

Objective

To field validate a nutritionally based moose carrying capacity model.

Description

A field validation of the carrying capacity model is being conducted at the Kenai Moose Research Center by the Alaska Department of Fish and Game. The U. S. Fish and Wildlife Service and Alaska Power Authority are providing financial assistance. The project involves quantifying the available browse in four 1 $mi.^2$ pens and estimating the carrying capacity. The pens are then stocked with moose at various levels. The physiologic condition of the moose is monitored and the vegetation sampled the following spring to determine if the moose have responded and plants been utilized as the model predicted.

This procedure is being repeated two years. The first year will be completed in spring 1984 and the second in spring 1985.

Deliverables and Schedules

Progress Report	June 1, 1984
Final Report	October 1, 1985

TASK 12

DETAILED ASSESSMENT OF CANDIDATE COMPENSATION LANDS

Level: 2

Primary Responsibility: LGL

Rationale

To mitigate losses of wildlife habitat resulting from impoundment and facility construction, the Power Authority will identify compensation lands for habitat improvement and retention. The desired locations, acreages, and physical and botanical characteristics of these lands must be defined with care before selection begin. In 1983, preliminary candidate lands were identified on maps through the application of selection criteria developed in coooperation with the Alaska Departments of Natural Resources and of Fish and Game. These criteria pertained largely to moose habitat requirements; land use constraints were also considered to assure compatibility with the Susitna Area Plan. A report documenting candidate lands selection will be available in draft form in April 1984.

To facilitate subsequent decisions concerning land selection and acquisition, candidate lands identified on a preliminary basis should be defined in greater detail with respect to:

1. Optimal locations relative to wildlife use and human access;

2. Physical and botanical characteristics required to support a satisfactory diversity of appropriate wildlife species in appropriate numbers;

3. Potential for habitat improvement for certain species and for adverse tradeoff effects of enhancement measures on other species;

4. Feasibility of implementing various habitat alteration techniques on the lands in question; and

5. Present or future conflicts with other land uses.

These studies should be conducted during FY85 to provide with a minimum of delay, information pertinent to the settlement process and to license application evaluation. Recommendations for acquisition of compensation lands cannot be final until results of the ongoing moose carrying capacity modeling become available in FY86. However, outer bounds can be estimated for those results, and the highest-priority lands for acquisition can be identified before the results are final. These will be lands which, because of specifically-defined characteristics relevant to other species as well as moose, we know should be acquired whatever the moose modeling results. Once those results are available, we will have a pool of lands to which they can be applied, and selection refinements can be made efficiently and promptly.

Objective

To provide specific recommendations to the Power Authority concerning tracts of land to be considered for wildlife habitat compensation, with detailed technical documentation supporting the recommendations.

Description

Studies conducted within this task will have two components: (1) a detailed office analysis, including extended discussions with principal investigators and other project wildlife and habitat specialists; and

(2) a fixed-wing aerial reconnaissance of candidate lands identified as a result of the preceding study component.

The identification of lands with characteristics optimal for habitat compensation will require the synthesis of results from ongoing impact assessment and mitigation planning refinement efforts. Wildlife species for which habitat compensation will be an appropriate and effective means of impact mitigation will be identified in coordination with the principal investigators responsible for those species, and the supporting technical rationale clearly documented. Habitat attribute criteria will be developed for the species of concern, so that physical and biological requirements of lands to be selected for habitat compensation can be defined and the criteria systematically applied. Proximity to existing populations of target wildlife species will be an important consideration.

The results of the FY84 habitat enhancement procedures review and follow-up FY85 studies (e.g., Task 12) will be studied and applied to existing habitat characteristics of lands under consideration. Enhancement procedures will be reviewed with respect to the kinds of habitat with which they are most effective, logistic requirements for implementation, and tradeoffs among various target species requiring habitat compensation. Potential adverse effects of habitat enhancement procedures on target and non-target species will be identified. Applicability criteria for habitat enhancement procedures will be developed as a result of this review.

Candidate lands will be selected through the systematic merging of habitat attribute criteria for target wildlife species, applicability criteria for habitat enhancement procedures, and consideration of present and intended future land use patterns. The latter will be necessary to help assure that habitat compensation efforts and expenditures for habitat enhancement are not offset by future imcompatible activities on or near selected lands.

When office activities have proceeded as far as possible in defining optimal candidate lands, a reconnaissance will be flown with a fixed-wing aircraft to view and photograph the lands in question. The reconnaissance will be conducted by the investigators most closely involved with the target species of concern, along with a habitat enhancement specialist. The results of the aerial reconnaissance will be used to refine the earlier office work to the point that specific tracts of land can be defined on maps and prioritized for selection.

Deliverables

A detailed report with accompanying maps will be prepared. The report will provide definitive recommendations for the selection of specifically identified compensation lands and document the supporting technical rationale.

Schedule

Draft Report	January 31, 1985
Final Report	February 28, 1985

(1) Want to assure that other wildlife species are taken into account — want to compensate for as many other species as possible

(2) Evaluate negative impacts to wildlife & use of the enhancement or acquired areas

How's about a tiered approach to selecting lands Alt 1
Alt 2
Alt 3

TASK 13

MOOSE BROWSE INVENTORY

Level: 2

Primary Responsibility: LGL, ADF&G

Rationale

An important issue in assessing predicted impacts of the proposed Susitna Hydroelectric Project is the extent to which carrying capacity for moose will be reduced as a result of the project. Loss or alteration of available moose habitat in the middle Susitna Basin, and particularly loss of winter range in the impoundment areas, has been predicted to be the primary adverse impact of the project on moose. Therefore, estimating pre-project and with-project middle Basin carrying capacities for moose, especially during the population-limiting winter months, is a major effort of the project's impact assessment refinement program.

As explained in greater detail in the Project license application (Exhibit E, pp. E-3-412 through E-3-414), a simulation model of ruminant energy and nitrogen balance has been adapted to moose. This model, as adapted, predicts the daily energy and nitrogen requirements of an adult moose based on diet digestibility and nitrogen concentration. Through incorporation of data on quantity and quality of available forage, and on the food habits of middle Basin moose, the model will be used to estimate daily forage intake and changes in lean body mass and body weight during the winter months.

Using this model, carrying capacity of known geographic areas of the middle Susitna River Basin can then be estimated based on knowledge of the quantity and availability of forage in important vegetation types.

For this effort to proceed, it will be necessary to obtain four types of data input in addition to information on moose physiology:

a. The areal extent of each vegetation type important for providing moose forage within a defined area of the middle Basin including the impoundment zones and major project facilities. The study area of primary impact to moose has been defined on the basis of moose home ranges. A detailed vegetation mapping program in the middle Susitna River Basin was started in spring 1984, and the aerial extent of important vegetation types will be quantified from these maps (see Task 8). The vegetation maps will be digitized to facilitate overlay of elevation, slope, and aspect modifiers.

b. Detailed information on winter food habits of moose. A food habits study to provide this information will be completed in spring 1984.

c. The nutritional quality of shrub species important as moose browse. The nutrition-based carrying capacity model requires estimates of nitrogen, gross energy, in vitro dry matter digestibility, and metabolizable energy for plants important as moose forage. Plant samples will be collected in October 1984, January 1985, and February 1985 for the in vitro digestion trials to supply this information.

d. Standing crop biomass estimates of important winter foods for moose. Standing crop biomass will be obtained by sampling vegetation types known to be important for moose forage in the middle Basin. Sampling will be further stratified by elevation, slope, and aspect to document the importance of the impoundment zones.

The following task description addresses the acquisition of the standing crop biomass estimates.

Objective

Provide accurate and statistically defendable estimates of standing crop biomass of winter forage for moose in the middle Susitna Basin. Sampling efforts will be prioritized based on available vegetation maps, vegetation types known to contain important winter browse species, aerial extent of important vegetation types, cost-benefit ratio of sampling intensity to statistical accuracy, and logistic feasibility. A biometrician will work closely with the project leader and work crews to assure the statistical validity of the sampling effort.

Description

Sampling efforts will be undertaken during July and August of the summers of 1984 (FY85) and 1985 (FY86). Preliminary vegetation maps of selected areas in the middle Basin will be used to stratify the samples during 1984. The final digitized vegetation maps of the entire designated study area will be available during 1985. At randomly located sites within vegetation types stratified by elevation, slope and/or aspect, approximately twenty 1-m^2 quadrats will be clipped. Current annual woody growth of browse species important in winter moose diets will be clipped and bagged by species. Samples will be oven-dried and weighed to determine the weight of browse available per unit area by vegetation type. Previous studies have shown that clipping plots is likely to be the most time-efficient and statistically defendable method to sample browse quantity in vegetation types of the middle Susitna Basin (Steigers and Helm 1984).

Deliverables

Results from summer 1984 field studies will be presented in draft and final reports. Reports will include documentation of browse quantity for sampled vegetation types, and recommendations for summer 1985 site stratification based on digitized vegetation maps. Recommendations for sampling intensity during summer 1985 to achieve the desired statistical accuracy will be addressed. The final report will also recommend final stratification plans for elevation, slope, and aspect modifiers to mapped vegetation types.

Schedule

Draft report	March 15, 1985
Final report	April 30, 1985

TASK 14

FIELD EVALUATION OF DISTURBED AREAS

Level: 2

Primary Responsibility: LGL, ADF&G, Harza-Ebasco

Rationale

Aerial surveys of the Susitna River floodplain downstream from Devil Canyon have documented concentrations of moose in previously cleared areas. However, only certain disturbed areas are used intensively by moose; other apparently similar disturbed areas do not receive heavy use. It is not known why this inconsistency exists.

Because mechanical disturbance or prescribed burning of vegetation to increase available moose browse is proposed to compensate for Project-related habitat loss, it is important to learn why some disturbed areas are used more intensively than others by moose. Knowledge of these factors will aid decisions concerning the selection of compensation lands and the habitat enhancement procedures to be used on such lands.

Objective

To identify factors determining differential use of cleared areas by moose.

Description

There are two categories of factors that must be considered: 1) Those which affect the vegetative response (qualitative as well as

quantitative). These include site characteristics such as existing vegetation, soils, topography, etc.; 2) Those factors which affect the moose population's ability to take advantage of increased forage quantity or quality. These include geographic and climatic factors that affect availability of forage, non-nutritional factors that limit the rate of increase of the existing population, movement patterns of the existing population that might prevent or delay use of new areas of higher forage production, and factors that might create secondary problems such as attracting moose to areas of high human/moose conflict.

The first step in the evaluation of enhancement procedure was a review of literature and other available information on the response of vegetation to mechanical disturbance and burning conducted in FY84. The second phase will be an examination of existing disturbed sites in an effort to identify and assess the factors that influence their usefulness to moose. Sites which are believed to be used lightly by moose as well as those used heavily by moose will be examined.

The initial review of sites will be made based on available information. This will be followed by preliminary field evaluations of moose use and vegetation characteristics. More detailed quantitative studies of selected sites may be designed later.

Deliverables and Schedule

A report will be prepared documenting the results of the evaluation in draft form by October 31, 1984, followed by a final report by November 30, 1984.

What exactly will be done to address the moose population

TASK 15

SITE-SPECIFIC DOWNSTREAM RIPARIAN HABITAT STUDIES

Level: 2

Primary Responsibility: LGL, University of Alaska

Rationale

In July 1984, a final Wildlife Habitat/Instream Flow Relationships Report will be submitted. That report will provide updated impact assessments for vegetation and wildlife of riparian habitats downstream of the Project. The updated impact assessments will be based on meetings with Project hydrologists and refined hydrologic calculations relative to proposed alternative instream flow regimes. In addition to providing updated impact assessments which incorporate current estimates regarding the timing and extent of changes in flow and ice conditions, the Relationships Report will provide recommendations for the selection of Project instream flow regimes from the standpoint of minimizing adverse impacts on wildlife and habitat.

The discussions and analyses leading to preparation of the Relationships Report will determine the probable magnitude of downstream impacts on wildlife and habitat. As a result of those analyses, it may be advisable to conduct field studies aimed at greater definition of downstream impacts, and to develop or refine a simulation model of downstream changes through the life of the project.

If a need for FY85 downstream studies and modeling is indicated, such studies should be site-specific, i.e., detailed analyses of precisely defined and limited floodplain locations rather than general studies

of the entire floodplain. Specific locations known to provide habitat for species such as moose or beaver, and recognized to be typical or representative situations for those species, would be studied. By analyzing in detail how a few very specific habitat locations and their use by wildlife would change through time with and without the Project it may be possible to arrive at more definite and detailed predictions than through a more general approach. With appropriate conditions imposed, site-specific analyses could be generalized to other similar situations elsewhere in downstream riparian habitats.

Objective

1. To assess the need for additional downstream field studies and simulation modeling of specific floodplain locations, based on findings of the Wildlife Habitat/Instream Flow Relationships Report.

2. To develop detailed study plans and to implement such studies, if warrented.

Description

Specific downstream floodplain locations would be selected for study and modeling, based on their habitat characteristics and known use by wildlife. One means of providing control for site-specific studies to be conducted through time would be to employ one or more of the river transect locations established by R&M Consultants. Study would be intensive, with detailed attention given to habitat characteristics and wildlife use of specific locations, coupled with computer modeling of these same locations to simulate conditions during the life of the project.

Deliverables and Schedule

To be determined.

TASK 16

MOOSE POPULATION MODEL REFINEMENT

Level: 2

Primary Responsibility: ADF&G

Rationale

Moose in the upstream study area are expected to be exposed to a variety of impact mechanisms. Several mechanisms may have cumulative effects and most will affect the population differently under different environmental conditions and population levels. A population model which simulates changes that have occurred since 1975 has been developed. This model has been selected as a tool for evaluating the relative importance of various impacts and portraying moose population changes that might occur during the construction or operation of the project.

Objective

To refine the moose population model and implement it as a tool for impact assessment and mitigation planning.

Description

The moose population model is a relatively simple computer model which was adapted to an adjacent area where predator-prey studies were conducted form 1975 to 1980. This model is being adapted to the project primary impact zone using data from the November 1983 census. Calf mortality components of the model will be adjusted based on the 1984 calf mortality study.

The model will be used to place bounds on the range of effects of impact mechanisms that cannot be precisely quantified by entering a range of values for any one factor and projecting population changes attributable to that one factor. In other cases, several mechanisms will be modified at once to evaluate possible cumulative effects. Mechanisms that are expected to change over time, such as those related to project construction, can be evaluated by developing population curves spanning the periods of change under varying potential environmental conditions.

Composition count data will be used to adapt the model to the approximate range of population sizes and environmental conditions that have occurred since the mid-1950's. This period includes a population peak, varying predator levels and winters of varying severity. This version of the model will be used to compare various scenarios of how the population might have fluctuated during that time had the project been built during that period.

Deliverables and Schedules

The model will be used as a tool for impact assessment and mitigation planning. Results will be incorporated into various reports prepared under Tasks 1, 2, 4, and 5. Results, including specifics of the model refinement, will be presented in ADF&G's annual report to be submitted on April 1, 1985.

Developed for pop of moose adjacent to the impacted pop

will crank in carrying capacity - mortality etc.

- May be some difficulty in adapting model to areas outside the Primary impact zone.

TASK 17

BROWN AND BLACK BEAR MONITORING

Level: [redacted] and [redacted]

Primary Responsibility: ADF&G

Rationale

Previous studies indicate that both brown and black bears will be exposed to a variety of Project-related impacts. Wide annual variations have been observed in the way both bear populations use the Project area. Availability of specific seasonal foods and black bear denning habitat appear to be key factors. Some foods become important only in years when preferred foods are less available. Project features which alter the availability of a seasonal food source may affect the bear population only in years when alternative foods are less available. Therefore, it is important to understand the range of combinations of foods that can occur and how bears exploit them spatially and temporally.

Objectives

1) To document habitat use and determine timing and magnitude of use of seasonal bear concentration areas.

2) To determine the location and characteristics of den sites.

3) To determine food habits of bears using seasonal concentration areas.

Description

Level: 2

Radio-collared bears will be relocated only at a level which will permit detection of major changes from previous years in movement patterns and home ranges at key seasons. Emphasis will be on spring habitat selection and use of Prairie Creek for brown bears and spring and late summer habitat selection and den sites for black bears.

Level: 3

The level of monitoring will be increased to provide a full comparison of bear habitat selection with that of previous years.

Deliverables and Schedule

Annual Report	April 1, 1985

TASK 18

BEAVER FIELD STUDIES

SUBTASK 1

BEAVER CACHE SURVEYS

Level: 2

Primary Responsibility: University of Alaska

Rationale

An important task for the furbearer study team will be continuation of beaver population surveys based on autumn cache counts. Beaver population and impact assessment models are dependent upon counts of beaver caches in the aquatic habitats along the Susitna River. To ensure accurate and precise projections of project impacts on beavers, information obtained by cache counts through several years with varying water conditions is necessary.

Objective

To obtain accurate counts of beaver caches in each type of aquatic habitat that will be influenced by the Susitna Hydroelectric Project.

Description

Counts of beaver caches will be made from a helicopter during September and/or early October.

Emphasis will continue to be placed on the region between Devil Canyon and Talkeetna. Cache counts will be made on key tributary streams,

such as Deadman and Portage creeks, and in representative segments of the Susitna River downstream from Talkeetna. A survey for caches will also be made along the Susitna River in the proposed impoundment zones to verify that few resident beaver are present in these areas.

Deliverables

1. A preliminary report of findings will be available by October 30, 1984.

2. A final report on cache surveys will be included within the final report on beaver field studies.

Schedule

1. Preparation: September 10-12, 1984

2. Conduct Surveys: approximately 5 days will be required, but exact timing depends on leaf fall and water levels September 15 - October 10, 1984

3. Analyze data and prepare report: October 15-30, 1984

SUBTASK 2

BEAVER LIFE HISTORY STUDIES

Level: 3 and 4

Primary Responsibility: University of Alaska

Rationale

To refine the beaver impact assessment model and to assess mitigation plans, additional information about the life requisites and behavior of beavers would be useful. A key is gaining insight into mechanisms that influence cache formation and to relate the number of beavers in a colony to the size of the cache constructed by that colony. The Susitna Hydroelectric Project will bring changes downstream from Devil Canyon in water levels, water temperatures, ice conditions, and riparian vegetation. Recent research in Montana (J. Wildlife Manage. 47: 697-703) has suggested that beavers may stop constructing caches below dams where releases from the dams keep rivers open through the winter and where food is available. At present, our beaver population estimates are based upon cache counts. It would be valuable for us to understand mechanisms that influence cache construction so that we can evaluate probable responses of beavers to changes that will result from the Project. We also need to be able to assign approximate numbers of beavers to colonies in a way that is based on cache size. Our present estimate of 5 beavers per colony is based on average colony size reported by researchers working in different parts of Alaska.

Objectives

1. Relate number of beavers in a colony to size of the cache established by that colony.

2. Evaluate how cache formation relates to water level, water temperature, ice formation, vegetation availability and growth changes, day length, ambient temperature, and other environmental factors.

3. Determine home range sizes of beavers in study colonies.

4. Determine foraging areas and vegetation harvested.

5. Relate vegetation harvested to cache composition.

Description

Representative beaver colonies will be selected for study in each of the seven aquatic habitat types (as defined by the Alaska Department of Fish and Game, Aquatic Studies Group) except Type 6, Tributary Mouth Habitat, because this type does not appear to be used as overwintering habitat by beavers. Beavers will be studied by direct observation and with the aid of radio-telemetry. Vegetation and caches will be surveyed directly by the study team.

Twelve colonies will be selected, ranging in size from two or three individuals to 10 or more. Direct observations will be made to count the beavers present. Some individuals may have to be live-trapped and marked with colored ear tags or tail tags to aid in counting large colonies. Caches constructed by these colonies will be measured and photographed. A correlation analysis will then be conducted to relate size of cache to number of beavers in the colony.

Adult, yearling, and juvenile beavers will be live-trapped and radio-tagged in two colonies to determine home range size, foraging areas, and relationships between plants harvested and plants stored in caches.

Radio-tagged beavers will be located periodically through winter and the following spring to determine winter movements, overwinter survival, and dispersal. Environmental conditions including day length, ambient and water temperatues, ice conditions, and vegetation characteristics will be assessed throughout the study period.

Deliverables.

A final report of findings will be prepared by June 30, 1985.

Schedules

1. Preparation: July 9-13, 1984

2. Field Studies: July 16-27, 1984; August 20-30, 1984; September 10-21, 1984; December 10-14, 1984; February 10-14, 1985; March 10-14, 1985; April 10-14, 1985; May 10-14, 1985; June 4-10, 1985;

3. Data Analysis: January 12-28, 1985; and

4. Report Prepareation: June 14-30, 1985.

SUBTASK 3

BEAVER OVERWINTER AND BREAKUP SURVIVAL STUDIES AND MUSKRAT SURVEYS

Level: 3

Primary Responsibility: University of Alaska

Rationale

Beavers have been selected as the key furbearer for modeling probable impacts of the Susitna Hydroelectric Project. Understanding dynamics of the beaver population is essential to the modeling effort. Beaver cache surveys were conducted during the autumns of 1982 and 1983 to provide an estimate of beaver numbers associated with major aquatic habitats between Devil Canyon and Talkeetna. The next step in understanding beaver population dynamics in this region is to assess the survival of beavers at representative sites through the winter and during breakup. This proposal outlines work designed to determine beaver survival through these critical periods. In addition, population estiamtes of muskrats could be easily accomplished concurrently with beaver survival surveys and would provide a population index for future monitoring efforts.

Objective

To determine the survival rate of beavers and muskrat after the winter season and to assess the effects of breakup on beaver survival.

Description

The study team will visit beaver colony overwintering sites between Talkeetna and Devil Canyon prior to and following breakup to determine if the beavers survived. Physical features of successful and failed sites will be indentified and compared.

Two beaver caches and adjacent dens were marked with steel rods and colored flagging during autumn cache surveys in 1983. These overwintering sites were along main channels of the Susitna River and they appear to be vulnerable to destruction by spring flooding and breakup ice. The study team will visit these sites and other known wintering sites prior to and following breakup in spring 1984 to check for evidence of recent beaver activity and trapper activity. Measurements of ice thickness and depth of water below ice will be made at several locations around both successful and failed sites. Overwintering success at surveyed sites will be related to availability of open water areas during winter as determined by hydrologists and fishery study teams. This effort will be repeated in spring 1985 if warranted based on results of FY84 studies.

Deliverables

1. A preliminary report on beaver survival and muskrat populations will be prepared.

2. A final report for this task will be included within the report of other beaver field studies.

Schedule

1. Preparation: April 16, 1985

2. Field surveys: April 18-20, 1985

3. Data analysis and report preparation: April 23-26, 1985.

TASK 19

BEAVER POPULATION MODEL REFINEMENT

Level: 2

Primary Responsibility: LGL

Rationale

Several data gaps and potential areas of refinement to the beaver population model were identified following the February - March 1983 Terrestrial Environmental Workshop. Updating of the model using information gathered from the literature, from review of project vegetation and hydrology studies, and from field studies of beaver is needed to refine impact assessment and mitigation planning.

Objective

To refine the beaver population model to the greatest extent feasible using available information sources.

Description

Refinements to the beaver model were identified in the Terrestrial Environmental Workshop Report. Additions to the model will concentrate on further specification of beaver carrying capacity and intrinsic growth rates. Other refinements will include beaver movement and recolonization potential, trapping mortality rates, and other mortality sources, the effect of plant succession changes on beaver habitat, and channel alteration effects on beaver activity and population levels.

What about ice staging

Deliverables

A final report on the beaver population model and refinement of impact assessment and mitigation planning efforts will be produced.

Schedule:

Model refinement and assessment efforts will follow beaver field studies (Task 18) which may continue through spring 1985.

Final report: June 30, 1985.

TASK 20

SURVEY OF MIDDLE BASIN TRAPPERS

Level: 2

Primary Responsibility: University of Alaska

Rationale

Trappers operating in the Susitna drainage make firsthand observations of wildlife resources in the region and most trappers maintain informal records of the furbearers they capture. A major source of mortality for many furbearers is the effect of trapping efforts. To estimate more precisely the level of mortality on beaver (and other furbearers) in order to refine population estimates and modeling procedures, a survey of local trappers is being conducted in FY84 and is planned for FY85. Data gathered during these surveys will be designed also to aid socioeconomic studies associated with the Susitna Hydroelectric Project, and coordination between these two efforts will be maintained.

Objectives

1. Estimate the numbers and locations of furbearers harvested in the upper Susitna drainage.

2. Record furbearer observations made by trappers.

3. Provide information on economic value of pelts harvested and efforts expended on trapping for use in socioeconomic studies.

Description

Trappers operating in the upper Susitna region will be visited by personnel of the furbearer study team and interviewed in person. Questions concerning sightings of furbearers, extent of trapping efforts, etc., will be presented to each participant. Trappers not available for personal interview will be interviewed by telephone if possible.

Deliverables

A report will be prepared summarizing the 1984-85 harvest of furbearers in the upper Susitna drainage.

Schedule

1. Interview trappers: April 1-20, 1985

2. Analyze data and prepare report: April 23-26, 1985

3. A final report will be prepared by April 30, 1985.

TASK 21

BALD EAGLE FOOD HABITS STUDY

Level: 2

Primary Responsibility: LGL

Rationale

Food habits of bald eagles nesting in the Susitna River drainage have not been studied. Data on the diets of pairs nesting in the middle Susitna Basin will provide information on: (1) where these pairs may be hunting; and (2) the relative importance of the Watana and Devil Canyon impoundment zones as hunting habitat for these pairs. Observations of the directions taken in flight by a pair of bald eagles nesting along the section of river upstream of Devil Canyon at several intervals during the breeding season may also provide valuable insights as to whether or not birds currently nesting within the inundation zones tend to: (1) hunt along the river course below the fill level, or above the fill level in wetlands to either side of the river course; and (2) hunt in the immediate vicinity of their nests or range farther away to forage at more distant locations. Information on the diets and likely hunting areas of middle basin bald eagles will be useful to the refinement of mitigation plans.

Objective

1. To collect and identify prey remains at active bald eagle nesting locations in the middle basin of the Susitna River.

2. To observe flight directions taken by one pair of foraging bald eagles nesting in the middle basin of the Susitna River.

Description

The collection and identification of prey remains will be made by an experienced raptor biologist assisted by a second biologist.

The nesting locations within and adjacent to the impoundment zones will be visited by helicopter. The helicopter will land at distances away from the nesting locations sufficient to prevent undue disturbance (these distances may vary depending on local topography).

Each nesting location will be visited three times: once during mid- to late June after any young present are capable of thermoregulation; once during July; and once during late August or September after young have fledged. During the first two visits, prey remains will be collected from beneath the nesting sites and perches. During the third visit, prey remains will be collected from the nests and from the ground beneath the nests and perches. Three nests will be accessed with the aid of climbing spurs and safety lines. The single cliff-nest will be accessed by standard rappelling techniques. Entries and exits from nests will be performed in a manner which will avoid damaging the nests.

Prey remains will be dried, sorted, and identified using representative study collections at the University of Alaska Museum.

One pair of adult bald eagles nesting in the Susitna River valley of the middle basin will be watched continously for about 48 hours prior to the initial visit in June to collect prey remains. The observers will attempt to document the directions and total times taken by the eagles during their hunting forays. The observations will be made with the aid of high-power binoculars and spotting scopes from a vantage point along the valley side well above the nesting location. The vantage point will be selected to afford a closer view upstream and downstream in the valley, and of wetlands south and north of the valley.

Selection of the nest will depend on which of four proposed study locations are occupied by bald eagles in 1984. These locations include BE-2 (T29N, R11E, Section 10), BE-3 (T30N, R10E, Section 16), BE-4 (T31N, R8 E, Section 11), and BE-5 (T31N, R7E, Section 2). Similar watches will be conducted at the selected nest in July and August.

Deliverables

1. A draft report, including lists of prey remains identified from each nest and maps showing foraging directions taken by the study pair of eagles, will be provided by November 15, 1984.

2. A final report will be provided by December 15, 1984.

Schedule

1. Mobilization, Data Collection, and Demobilization: June 15-30, 1984; July 20-31, 1984; and August 25 to September 20, 1984.

2. Data Analysis: June 3 to September 30, 1984.

3. Draft Report Preparation: November 15, 1984.

4. Final Report Preparation: December 15, 1984.

TASK 22

CARIBOU MONITORING

SUBTASK 1

MONITORING OF MOVEMENTS

Level: 3

Primary Responsibility: ADF&G

Rationale

A potential impact of the Susitna Hydroelectric Project on caribou is impedance of movements. Proposed access routes and the proposed Watana impoundment cross historically important caribou range and migration routes. Caribou have used these areas differently in recent years than they did 20 years ago.

Objective

To determine the movement patterns of the main Nelchina caribou herd and the Susitna-Nenana subherd in relation to impoundment areas and proposed access routes.

Description

Radio-collared caribou will be periodically relocated. Intensity of monitoring will only be sufficient to monitor gross movements of the herd and subherd but will be intensified when the herd is in the vicinity of the project area.

Deliverables and Schedule

Annual Report	April 1, 1985

SUBTASK 2

UPPER SUSITNA-NENANA SUBHERD CENSUS

Level: 3

Primary Responsibility: ADF&G

Rationale

Early in Susitna caribou studies, a previously undocumented subherd was found to inhabit the area north of the proposed impoundments. This area will be crossed by the proposed Denali access route. The size of this subherd is uncertain.

Objective

To estimate the size of the upper Susitna-Nenana caribou subherd.

Description

The dispersed nature of this subherd and the occasional presence of elements of the main Nelchina herd make traditional post-calving census techniques impractical.

A minimum estimate will be made based on direct counts during the rut. Observations of radio-collared caribou, tracks in snow and an analysis of seasonal habitat use will be used to ensure that major portions of the herd are not missed.

Deliverables and Schedule

Annual Report	April 1, 1985

TASK 23

DOWNSTREAM MOOSE MONITORING

Level: 3

Primary Responsibility: ADF&G

Rationale

Riparian habitats important to moose may be altered by project-induced changes in ice and flow regimes. Increased presence of open water in winter may block access by moose to portions of their winter range.

Objective

To determine the characteristics of moose use of riparian habitats downstream from Devil Canyon.

Description

Moose use of the downstream floodplain will be monitored through relocations of radio-collared moose and periodic winter censuses of the floodplain. The specific design and scope of this work will depend on the outcome of an interdisciplinary review of effects of project flows on downstream habitats under Task 5.

Deliverables and Schedule

Annual Report	April 1, 1985

TASK 24

TRANSMISSION CORRIDOR TRUMPETER SWAN AND BALD EAGLE NEST SURVEY

Level: 3

Primary Responsibility: LGL

Rationale

Trumpeter swans are of special concern because of their past history of significant human impact on population size, sensitivity to human disturbance, and restricted distribution. Recent surveys of trumpeter swan breeding habitat identified use areas of swans throughout Alaska in 1980, and in selected portions of the state in 1981, 1982, and 1983. In order to avoid disturbance of nesting swans due to construction activities along the transmission corridors, identification of nest sites and early summer use areas should be confirmed prior to detailed design and construction of the transmission lines. Surveys of all trumpeter swan breeding areas in Alaska will be conducted in the late summer of 1985 by the U.S. Fish and Wildlife Service. However, such surveys are designed to measure productivity of swans and consequently are usually flown too late in the season to make identification of nest sites possible.

Bald eagle nest sites which may be in the vicinity of the proposed transmission corridor may also be subject to disturbance. These nests should be located and their positions confirmed during the same survey flown for trumpeter swans. The activity status of each nest should be checked, and any new or previously unreported nests should be added to the Project data base. Updated information on eagle nest locations will allow existing records to be confirmed or modified.

Objectives

1) To determine nest sites and concentrated use areas of all trumpeter swans along the proposed transmission corridor.

2) To confirm the locations of previously recorded bald eagle nests near the proposed transmission corridor, and to identify and locate geographically any new or previously unreported nest sites.

3) To determine the activity status of bald eagle nests along the proposed transmission corridor.

Description

Aerial surveys of trumpeter swan breeding habitat (as determined from the 1980 USFWS swan census) and bald eagle nest sites along the proposed transmission corridors will be conducted in May 1985 prior to tree leaf-out. Observers will record locations of swan nests and groups of non-breeders on topographic maps. Bald eagle nests sites will be similarly recorded, and their activity status checked. Distances from the transmission corridor and detailed maps of swan and eagle nest sites, swan use areas, and swan brood habitat will be compiled and will incorporate 1985 USFWS survey results for trumpeter swans.

Deliverables

Two sets of 1:63,360 USGS topographic maps of trumpeter swan nest sites and use areas in relation to the proposed transmission corridor will be provided. Similar maps showing all identified bald eagle nest sites along the proposed corridor will also be provided. The maps will be accompanied by a brief report summarizing activities.

Schedule

The aerial surveys will be flown in May 1985. Maps and a report of findings will be submitted by November 30, 1985 (or earlier depending on USFWS schedules).

TASK 25

WINTER BIRD SURVEYS OF IMPOUNDMENT ZONES

Level: 3

Primary Responsibility: University of Alaska, LGL

Rationale

The time of major competitive interference and limited food supplies for most birds occurs in winter. For passerines and other species nesting in the middle Susitna Basin and wintering in temperate or tropical areas of the New World, competition for food and space is most limiting on the wintering grounds where clearing of forests for agriculture and other human developments have greatly restricted available habitat for birds. Once on the expansive boreal forest breeding grounds, habitat availability probably becomes a less important influence. However, for resident species (i.e. those remaining all year in the middle Susitna Basin), habitat availability is probably a critical population-limiting factor. Information on winter habitat use patterns of birds in the vicinity of the impoundments would be useful in refining impact assessments and in determining habitats of greatest value to resident birds. This information may also be useful in defining appropriate characteristics for candidate compensation lands proposed to mitigate project impacts involving habitat loss.

Objective

To estimate populations of birds using the impoundment zones in winter (November - March) and to identify habitats of highest value to birds.

Description

A series of transect surveys for bird population estimation will be conducted in all major habitat types within the impoundment zones. Survey routes will be plotted on vegetation maps of the study area (see Task 8) and bird sighting information cataloged by habitat type to determine habitat preferences of resident birds. In addition, numbers and estimated ages of ptarmigan tracks and notes on food preferences of ptarmigan will be recorded on all surveys as an index of ptarmigan abundance and habitat use.

Deliverables

A report on survey results will be provided. This report will include recommendations on habitat types of greatest value to resident birds to provide guidance in mitigation planning for compensation lands.

Schedule

A. Field periods
   1. Late November 1984
   2. Mid January and early March 1985

B. Report
   Final report submittal: April 30, 1985

TASK 26

OTHER FURBEARER FIELD STUDIES

SUBTASK 1

FURBEARER DISTRIBUTION SURVEYS

Level: 4

Primary Responsiblity: University of Alaska

Rationale

Quantitative surveys of furbearers downstream from Devil Canyon have not been conducted. Annual changes in relative abundance of furbearers in the impoundment zones and downstream have not been assessed for all species. The Furbearer Transect Survey developed for the impoundment zones could be expanded to include downstream areas. The Furbearer Transect Survey would be flown in autumn to provide information on distribution and changes in abundance of furbearers along the Susitna River within the impoundment zone and downstream from Devil Canyon. During summer, the distribution of furbearers along the Susitna River would be determined from boat and on foot downstream from Devil Canyon.

Objectives

1. Determine the distribution and relative abundance of furbearers downstream from Devil Canyon to Talkeetna.

2. Monitor annual furbearer population changes in the impoundment zones and in the downstream area.

3. Identify furbearer habitat relationships.

Description

The study team will conduct aerial transect surveys for sign of furbearers in snow in early winter (late October - early November) along the Susitna River between the Tyone River and Talkeetna. Data will be computer coded and analyzed. Furbearer distribution, habitat preference, relative abundance, and population trends will be calculated.

Existing transects in the impoundment zone are 6 miles long and perpendicular to the river. The transects extend 3 miles south and 3 miles north of the Susitna River. There are 14 transects at intervals of 6 miles from Portage Creek to the Tyone River. A similar transect system is envisioned for the lower river, with similar transect design from Portage Creek to Talkeetna. To survey the transects, a helicopter carrying two observers and a third person to record observations is flown along the transect at 15-20 mph at the lowest safe altitude, generally 30-60 feet. Tracks of furbearers are observed and counted as crossed along the flight path. The following are recorded each time the trail of a furbearer is crossed: the species, the vegetation type, and the 100-foot elevation contours between which the trail was found. To determine accuracy of track identification, ground truth checks will be conducted. Checks for furbearer sign on sandbars and mudbanks during summer will be used to verify that furbearers are present along the river throughout the year.

Deliverables

A final report of survey findings will be prepared and incorporated in a General Furbearer Field Studies final report.

Schedule

1. Preparation: October 15-18, 1984

2. Fly transects: October 20 - November 10, 1984 (contingent upon weather conditions)

3. Data analysis and report preparation: November 15 - December 15, 1984

4. Preparation: July 10-13, 1984

5. Conduct sandbar survey: July 15-21, 1984

6. Data analysis and report preparation: July 25 - August 10, 1984

7. Final report due: December 15, 1984

SUBTASK 2

OTTER AND MINK AUTUMN CONCENTRATION SURVEYS

Level: 4

Primary Responsibility: University of Alaska

Rationale

In November 1980, concentrations of otter and mink tracks were noted on shelf-ice along the Susitna River in the proposed impoundment zones. A survey was carried out in which 37 points on the river between Portage Creek and the Oshetna River were exmained for the presence of otter tracks. Forty-three otter tracks were present at 17 of these points. The significance of these tracks is not clear. They may represent upriver or downriver movements of otters prior to freeze-up. Another possibility is that otters were concentrated along the river to feed on grayling as they left tributaries at freeze-up to overwinter in the Susitna River. A total of 54 mink trails were observed at 31 points. Autumn foraging sites that are important to the overwinter survival of otters and possibly mink may exist along this section of the Susitna River. We propose to determine if otter and mink movements and concentrations such as those observed in 1980 are an annual event. The next step would be to determine the reasons for the observed annual concentrations of otter and mink.

Objectives

1. Determine if there is an annual autumn concentration of otters and mink along the Susitna River in the proposed impoundment zones.

2. Determine if track counts made in separate years indicate relative abundance.

Description

Samples points established in 1980 will be surveyed in early November 1984. A similar survey design will be developed for representative downstream sections of the river.

Past concentrations of otter and mink tracks were observed along the river in early November. The study team will survey sample points established in 1980 and establish new points down-river. Data collected will be analyzed to determine the distribution and intensity of suspected movements.

Deliverables

A final report of findings will be included with the Genearl Furbearer Field Studies Report.

SUBTASK 3

FOX DEN SURVEYS

Level: 4

Primary Responsibility: University of Alaska

Rationale

This project will monitor the relative abundance and breeding success of red foxes in the middle Susitna Basin. Each active fox den, during May, represents the home site, or rearing area, for a family of foxes. A count of active fox dens is the most efficient method of determining the relative abundance and breeding success of foxes. These data will also be necessary to update den location information available to project planners and design engineers.

Objectives

1. Survey existing dens to determine annual use.

2. Locate other traditional dens.

3. Compare past and present usage to determine relative abundance an trends.

Description

Dens known or suspected to have been active in the past will be visited to determine present use. An effort will be made to locate previously undiscovered dens.

Known and prospective dens in the impoundment zones will be visited in early May to determine present use and status. On-site project personnel and local residents will be interviewed to locate new dens. New dens and those previously located will be examined to determine use. Present and past usage will be compared to determine population trends and breeding success.

Deliverables

A final report of findings will be submitted with the General Furbearer Field Studies final report.

Schedule

1. Preparation: May 7, 1985.

2. Field surveys: May 8-11, 1985.

3. Data analysis and report preparation: May 15-20, 1985.

TASK 27

LOWER SUSITNA RIVER BALD EAGLE NEST SURVEY

Level: 4

Primary Responsibility: LGL

Rationale

A survey of bald eagle nests along the lower Susitna River could be conducted to update the available information on the number and locations of nests in this area. Discrepancies with regard to locations of some bald eagle nests along the lower Susitna River have been noted among the results of earlier surveys. In addition, data collected in recent years by ADF&G could be correlated with the results of the earlier surveys, and any new nest sites identified.

Objective

To recheck and verify the physical locations of all reported bald eagle nests in the Susitna River floodplain between the mouth of the Indian River and Cook Inlet.

Description

The reported locations of bald eagle nests will be verified by an aerial survey, and additional nest locations will be recorded. The aerial survey will be conducted prior to leaf-out by an experienced raptor biologist using either a helicopter or fixed-wing aircraft.

Deliverables

1. Two sets of 1:63,360 USGS topographic maps with all nesting sites and nesting locations plotted on them will be provided by June 30, 1985.

2. A draft report will be provided by May 31, 1985.

3. A final report will be provided by June 30, 1985.

Schedule

1. Mobilization: April 20, 1985

2. Data Collection: April 21-22, 1985

3. Demobilization: April 23, 1985

4. Data Analysis: early May, 1985

5. Draft Report Preparation: May 15-31, 1985

6. Final Report Preparation: June 15-30, 1985

TASK 28

WOLF MONITORING

Level: 4

Primary Responsibility: ADF&G

Rationale

Six or seven wolf packs inhabit the moose primary impact zone. These wolves are largely dependent on moose that will be subjected to project impacts. They are also an important factor in the dynamics of the moose population which is being modeled to assess impacts.

Objectives

To map territories of wolf packs using the upstream moose primary impact zone and to monitor changes in the size of each pack.

Description

Even if this task is not funded, existing radio-collared wolves will be monitored incidentally to other work. Observations of wolves or wolf tracks will be noted. This level of effort is likely to merely confirm the existence of some previously studied packs and provide limited information on numbers and den sites.

If Task 28 is funded, monitoring will be increased to a level that should provide a more detailed estimate of the number of wolves inhabiting the moose primary impact zone and allow comparison of territory boundaries and areas of seasonal habitat use with those of previous years.

Deliverables and Schedule

Annual Report	April 1, 1985

TASK 29

MONITORING OF PEREGRINE FALCON NEST SITES

Level: 4

Primary Responsibility: LGL

Rationale

The proposed Healy-to-Fairbanks transmission corridor centerline shown in License Application Exhibit G, Plate 650, and in Exhibit E, Figures E.3.49 and E.3.50, passes within 1 mile of two historic peregrine falcon nest sites located near the Tanana River about 3.5 miles northeast of Nenana. The proposed corridor centerline passes with 2 miles of a third historic nest site located along the Tanana approximately 5 miles northeast of Nenana. Under provisions of regulations pursuant to the Endangered Species Act of 1973 as amended, seasonal restrictions may apply to project-related field activites in the vicinity of these nest sites.

In June 1984, Project biologists will confirm the precise locations of the sites in question. One of them was, until recently, unknown to the U.S. Fish and Wildlife Service and is not known to have been observed since its discovery by C. White in 1963. This site was not ground-truthed by White at the time of its discovery, and its current status is unknown. It is not known whether the two nests sites closest to the transmission corridor centerline represent two mated pairs of birds or, more likely, alternate nest sites within a single nesting location for one pair.

If one or more of the nest sites is found in June 1984 to be active, the status of the nests should be monitored in the future, starting in June 1985.

Objective

To monitor the activity status of three peregrine falcon nest sites near the proposed transmission corridor centerline in the vicinity of Nenana.

Description

An experienced raptor biologist accompanied by a second biologist will spend one day observing the nests in question. The trip will be made in June 1985, during the nesting period and prior to fledging. The sites will be reached via the Tanana River by travel in a Zodiac boat from Nenana. The three nest sites and surrounding habitat will be photographed, and on-site notes will be taken concerning the active or inactive status of the nests.

Deliverables

A concise letter report will be prepared following the day-trip and will be submitted with 8x10-inch color photographs of the nest sites and their settings.

Schedule

Letter Report: June 28, 1985