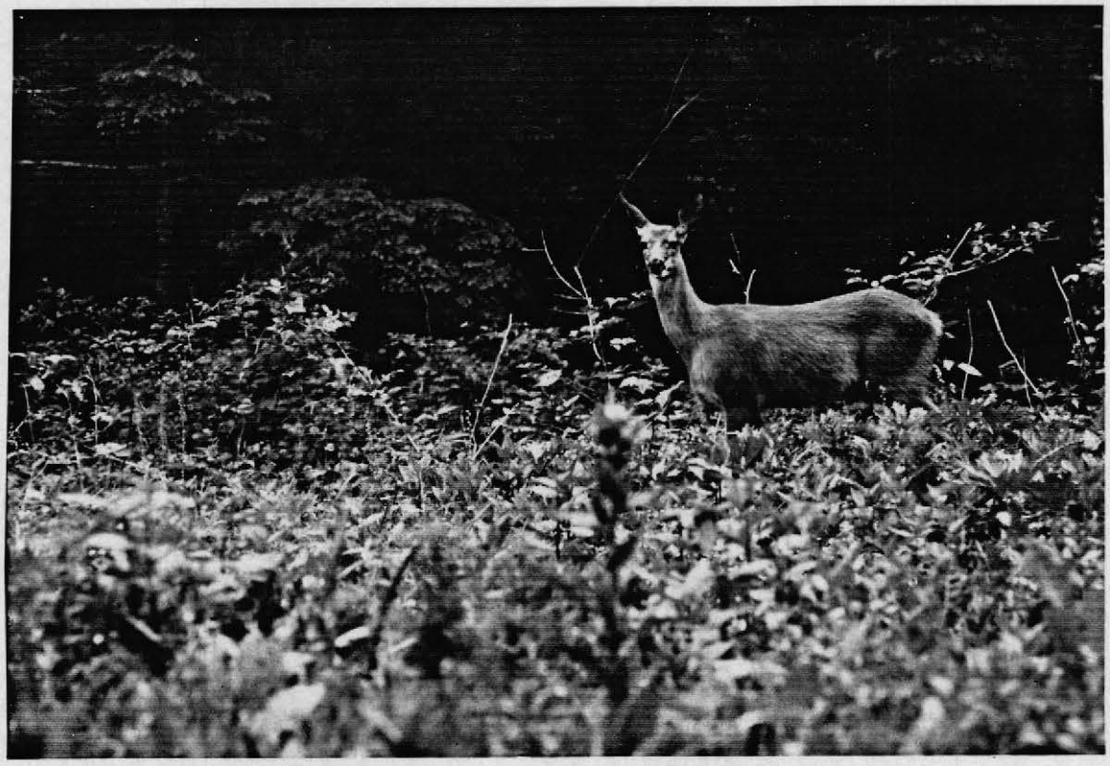
SKAGIT RIVER HYDROELECTRIC PROJECT

FERC No. 553

WILDLIFE HABITAT PROTECTION AND MANAGEMENT PLAN



City of Seattle
City Light Department

APRIL 1991

Skagit River Hydroelectric Project

FERC No. 553

Wildlife Habitat Protection and Management Plan

Submitted by

City of Seattle
City Light Department

April 1991

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SUMMARY

The Wildlife Habitat Protection and Management Plan (hereafter, Wildlife Plan) has been developed to provide enhancement and mitigation for terrestrial wildlife for the term of the new license for the Skagit River Hydroelectric Project (Skagit Project), No. 553. It was prepared by the City of Seattle, City Light Department (City), to meet the requirements of the Federal Energy Regulatory Commission (FERC) as stated in a letter dated October 31, 1988.

The Wildlife Plan is incorporated into the Settlement Agreement Concerning Wildlife (hereafter, Settlement Agreement), one of several such agreements developed for the Skagit Project relicensing. The Wildlife Plan was prepared in consultation with the Washington Department of Wildlife (WDW), the National Park Service (NPS), the North Cascades Conservation Council (NCCC), the Upper Skagit and Sauk-Suiattle tribes and the Swinomish Tribal Community (Tribes), the U.S. Forest Service (USFS), and the U.S. Fish and Wildlife Service (USFWS). Collectively, these are known as the "Parties to the Settlement Agreement".

The Skagit Project consists of three dams, Gorge, Diablo, and Ross, their appurtenant facilities and structures, and the Skagit River Hydroelectric Project Area (Project Area). It was built in several stages during the period 1918-1962, originally under permit from the U.S. Department of Agriculture, and after 1927 under license number 553 issued by the Federal Power Commission. At the expiration of the original license in 1977 the City filed for a new license for the Skagit Project, thereby initiating the relicensing process.

The management program described in this Wildlife Plan will run for the term of the new license. It emphasizes the acquisition of lands for protection and enhancement for wildlife of riparian forest, mixed deciduous/coniferous forest, deciduous forest, mature and old-growth forest, and wetland habitats. These lands are located in several tracts in the upper Skagit River and South Fork Nooksack River basins. A particularly noteworthy feature of the Wildlife Plan is the protection of a corridor averaging 3/4 mile in width for eight river miles along the South Fork Nooksack River.

In addition to protecting land, some of the land in the South Fork Nooksack River basin which had been logged prior to acquisition will be managed to retain the land in grass/forb condition to provide forage habitat for elk. Additional habitat enhancement will include the rehabilitation of wetlands.

The City is entering into a Memorandum of Understanding (MOU) to consult with the NPS regarding management activities on its fee-owned non-residential lands in the Ross Lake National Recreation Area, including those lands which are not part of the Skagit Project Area. Provisions have also been included in the Settlement Agreement which provide a mechanism for response to human-wildlife conflicts in the Project Area and for taking anticipatory action in order to avoid or minimize such conflicts in the future.

The City is making a major commitment in cooperation with the NPS to develop a plant propagation program which will support and facilitate the Skagit Project Erosion Control Plan (and

Skagit Project Settlement Agreement on Recreation and Aesthetics) as well as provide additional habitat value for wildlife. The City will also, as part of its transmission right-of-way planning, incorporate greater sensitivity to wildlife and other environmental values in its management, particularly in the Ross Lake National Recreation Area.

A new North Cascades research program will be established which will provide a building and funding for wildlife and ecosystems research during the new license period. The City will also provide funds for wildlife- and ecosystems-related educational programs and materials in connection with the North Cascades Environmental Learning Center to be established as part of the Skagit Project Settlement Agreement on Recreation and Aesthetics.

1.0 INTRODUCTION

The City of Seattle, City Light Department owns and operates the Skagit River Hydroelectric Project (FERC No. 553). The original license for the Project, which includes the Gorge, Diablo, and Ross dams and associated facilities and project area, expired in 1977. Since that time the City has been engaged in discussions with state and federal agencies, treaty tribes, and public groups (twelve of whom formally intervened in the proceeding and are collectively referred to as the "Intervenors") leading to the relicensing of the Project. In the course of these discussions several areas of interest were identified, prominent among which was the wildlife resource.

In this document the City presents a plan and program for the Skagit Project to provide for the enhancement of and mitigation of impacts to terrestrial wildlife and plants. This Wildlife Plan will run through the period of the new license.

In the development of this program, the City has conferred with interested intervenors and other knowledgeable parties and considered the many issues and priorities which were expressed during the course of the relicensing proceedings, including land acquisition interests and habitat priorities, continuing effects of the Skagit Project, the availability of lands in the Project vicinity and nearby areas to provide wildlife benefits, educational and research support, and human-wildlife conflicts in the Project Area. The varying importance assigned to individual program components by different intervenors has also been considered in the development of the program and its different elements.

1.1 BACKGROUND

The City of Seattle is the licensee for the Skagit River Hydroelectric Project (FERC No. 553) on the Skagit River in Whatcom County, Washington. The Skagit Project includes the Gorge, Diablo, and Ross dams and associated facilities and project area. The three dams currently provide a maximum power generating capacity of 784 megawatts and approximately 25 percent of the City's electrical power requirements, as well as recreation and flood control.

A permit for Gorge Dam was issued by the Department of Agriculture in 1918, and the Gorge Diversion Dam (a timber crib structure) was constructed between 1919 and 1924. In 1927 the City was granted a license from the Federal Power Commission for Diablo Dam, a concrete arch dam. This dam was constructed between 1927 and 1929, and began operation in 1936. Ross (originally, Ruby) Dam was constructed in several stages between 1937 and 1967. Gorge Diversion Dam was reconstructed in concrete in 1950; the new Gorge High Dam, a concrete arch and gravity dam, was constructed slightly downstream of the diversion dam in 1961.

The license for the three dams expired in 1977, at which time the City applied for a new license. Since that time the City has operated the Skagit Project under an annually renewed license from the FERC while it has conducted studies and considered the issues with the intervenors.

In October 1988 the FERC sent the City an Additional Information Request (AIR). FERC directed the City to provide further information in nine areas of environmental concern, and to submit

mitigation and enhancement plans for the several environmental resources. In item #6 of the AIR the FERC requested that the City provide mitigation and enhancement measures for wildlife resources in consultation with the wildlife agencies. In addition, in this AIR the FERC requested the development of updated information for federally listed threatened and endangered species, particularly the wintering bald eagle population.

In its responsive filing of October 1989 the City submitted extensive studies and new data for wildlife, recreation, visual quality, and other resources, together with the review comments of the Intervenors and the City's responses to those comments. This information was accepted by the FERC on January 10, 1990, at which time the City was given until November 30, 1990 to submit its final resource plans, including a plan for the wildlife resource. By letter of December 3, 1990, the FERC extended this deadline until May 1, 1991.

A Preliminary Agreement on basic principles for environmental mitigation and enhancement plans was reached between the City and the intervening parties and signed in September 1990. This agreement included the basic principles on which the Wildlife Plan has been constructed.

1.2 OBJECTIVES AND INTENT

The Wildlife Plan builds upon the principles in the Preliminary Agreement of September 1990, and the Settlement Agreement to provide a comprehensive plan for wildlife habitat and needs for the new license period. The major elements and objectives of the Wildlife Plan are:

- **Habitat Protection.** The goal of the land acquisition component is to secure and preserve valuable wildlife habitat in the upper Skagit River and South Fork Nooksack River valleys. Lands have been selected which possess wetlands, riparian areas and corridors, and old-growth and mature forest communities. Additional considerations in selecting areas included size of tracts, adjacency to other protected areas or areas of interest, and use by bald eagles. The City is beginning to secure some of the identified lands in advance of the receipt of the new license.

- **Habitat Enhancement.** Habitat enhancement and manipulation are de-emphasized in this Wildlife Plan in favor of habitat acquisition and protection. However, some low-intensity measures may be employed (e.g., wetland habitat restoration) in several locations, and there will be a continuing program to retain some lands in the Nooksack basin in early successional stages to maintain forage for elk.

- **Management Agreements.** The NPS, City, and WDW have agreed on language in the Settlement Agreement that provides guidance to the City for responding to human-wildlife conflicts in the Project Area, and for taking anticipatory action in order to avoid or minimize such conflicts in the future. A memorandum of understanding between the City and the NPS will provide for NPS consultation regarding management activities on the non-residential City lands in the Ross Lake National Recreation Area which are not part of the Skagit River Hydroelectric Project Area.

- **Plant Propagation and Vegetation Management.** The City will institute a program to propagate low-elevation native plants. The plants will be transplanted to sites which have been adversely affected by recreational use and/or erosion. New horticultural facilities will be developed and new record-keeping procedures will be utilized to fulfill the responsibilities of this new program. The City will better provide for more environmentally sensitive vegetation management on the transmission right-of-way (ROW) and provide for wildlife consideration in the measures proposed for visual/aesthetic improvements to ROW management in the Ross Lake National Recreation Area. The Plant Propagation Program will be administered and funded through the Skagit Project Erosion Control Plan.

- **Research Program.** The mission and intent of this program is to provide continuing support during the term of the new license to interagency wildlife and ecosystems research and monitoring efforts in the North Cascades, with emphasis on research that will enhance the knowledge and practice of wildlife protection and management in the Project Area and Ross Lake National Recreation Area. In support of this mission the City will provide funding and administrative support for research studies and grants, development of new and better management approaches and information, long-term monitoring of wildlife and environmental resources, bald eagle inventory and monitoring efforts, and a research facility and equipment in the Project Area.

- **Educational Support.** The City will provide educational funding to the North Cascades Environmental Learning Center (see the Skagit Project Settlement Agreement on Recreation and Aesthetics) in support of greater public knowledge and understanding of the values and issues in wildlife and ecosystems management and protection in the Skagit Hydroelectric Project Area and the North Cascades.

- **Management and Review.** There will be direct supervision of the management activities for the wildlife lands by a biologist from the Seattle City Light Environmental Affairs Division. A procedure is established for the regular review by the resource agencies of the management of the Wildlife Plan and of the progress and results of its supported projects.

The project managers for the development of the Wildlife Plan were Richard Rutz of the City Light Department and John J. Brueggeman of Ebasco Environmental, and the technical leads were Richard Rutz of City Light, and David Volsen, Ronald Tressler, and Dominick DellaSala of Ebasco.

2.0 OVERSIGHT, MONITORING, AND REPORTING OF THE WILDLIFE PLAN

2.1 OBJECTIVES AND INTENT

The objectives and intent of this section are to:

- Make reference to the Settlement Agreement which incorporates this Wildlife Plan.
- State the City's intent to implement the Settlement Agreement and Wildlife Plan. Indicate the responsible manager for the Wildlife Plan.
- Define oversight, monitoring, reporting, and review responsibilities and procedures for the Wildlife Plan. Provide for regulatory agency consultation and review, and participation of other interested parties.

2.2 IMPLEMENTATION OF THE WILDLIFE PLAN BY THE CITY

2.2.1 Implementation of the Wildlife Plan

The City of Seattle, City Light Department will implement this Wildlife Plan under the new license for the Skagit River Hydroelectric Project (FERC No. 553) and will own and manage the wildlife habitat lands (described in Section 3 below) according to the direction provided in the Settlement Agreement and in this Wildlife Plan.

2.2.2 City Light's Manager for the Wildlife Plan

The City will assign professional environmental staff to ensure implementation of this Wildlife Plan, including establishment of new staff positions as necessary.

2.3 WILDLIFE MANAGEMENT REVIEW COMMITTEE (WMRC)

2.3.1 Function of the WMRC

A Wildlife Management Review Committee (WMRC) will be convened as provided in Section 2.3.2. The WMRC will review the implementation of the Wildlife Plan (except for the initial acquisition of wildlife lands), assess its progress and the results of management activities and programs, and review and comment on the City's reports on the Wildlife Plan and its components and measures. The WMRC shall make the final decision in questions concerning land acquisition which have been referred to it by the Land Acquisition Group. The decisions of the WMRC concerning land acquisition shall be by majority vote (as provided below).

The WMRC will review and approve the habitat enhancement planning for the Nooksack area and elsewhere (see Sections 5.2.1, 5.3, and 5.8). The WMRC will also provide guidance and

direction should problems arise (see, for example, Sections 3.4.2, 4.2.3, and 4.2.4), or in response to advances in the theory and practice of wildlife management. The WMRC may direct that minor changes be made in the measures and activities of the Wildlife Plan in response to problems or to best meet the needs of the wildlife.

It is envisioned that the members of the WMRC will utilize it both to formally meet consultation requirements and to formally and informally exchange information and request guidance and assistance.

Any decisions of the WMRC (except in the case of reviews of disputes concerning asserted non-compliance—see below) will be by majority vote of the 6 voting members (i.e., four or more must be in favor).

As is provided in the Settlement Agreement, an additional function of the WMRC will be to serve as the initial step for the review of any dispute between the Parties solely concerning asserted non-compliance with the terms of the Settlement Agreement. The WMRC shall convene as soon as practicable following issuance of a written request by any Party. All decisions of the WMRC relating to asserted non-compliance shall be unanimous. In the event that the WMRC cannot resolve the dispute within thirty (30) days after its first meeting on a dispute, it will give notice of its failure to resolve the dispute to all Parties.

2.3.2 Composition of the WMRC

The WMRC will consist of six voting members and one non-voting member. The voting members are the City of Seattle, City Light Department (represented by the Environmental Affairs Division), which will also act as committee chair; Washington Department of Wildlife, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and a representative of the three Skagit tribes. The non-voting member will be the North Cascades Conservation Council.

Members of the WMRC must have a background in wildlife, ecosystems, or biology. It is furthermore the responsibility of the WMRC members to keep the appropriate staff and managers in their agencies informed of pertinent information and decisions.

2.3.3 Meetings

The WMRC will meet as often as is necessary to complete its tasks, but in any case the WMRC will meet no less than once a year for the first ten years of the new license period, no less than once every two years for the next six years, and no less than once every five years for the remainder of the license period. The meetings of the WMRC will be open to interested members of agencies, tribes, and the public, as appropriate. The WMRC may develop further guidance on the attendance and participation of nonmembers.

The City (the WMRC chair) may call a meeting at its own initiative or at the request of any of the voting members and will give serious consideration to such a request from the non-voting member. The City of Seattle, City Light Department, will provide administrative support for the WMRC (such as providing notice and mailings).

2.4 WILDLIFE PLAN MONITORING, REPORTING, AND REVIEW

The City will prepare a report on the Wildlife Plan annually during the first five years of the new license and at least every five years thereafter. The frequency of reporting will be considered by the WMRC, which may elect to require a more frequent reporting period based on their review of the intensity and complexity of management activities and of any problems that may have arisen.

This report shall summarize land management activities during the period since the last report. A draft of this report will be submitted by the City to the WMRC for their review and comment (at least 30 days will be provided for review and comment), and the final report will be submitted to the WMRC and the Federal Energy Regulatory Commission.

The report will include: A report of the progress in land acquisition and development of site-specific management plans; documentation of the placement and maintenance, or implementation of any wildlife habitat enhancement measures, including wetland habitat rehabilitation or other measures; results of the monitoring program for evaluating the status of any wildlife habitat enhancement measures; and status of the construction of any physical improvements.

The report will discuss any problems encountered, and responsive actions that were taken. It will discuss the activities that are planned for the next reporting period and describe any proposed changes in management direction or prescriptions.

The report will also include a summary of the progress and results of research projects and programs during the previous period. This review will incorporate research reports from the City, funded researchers, National Park Service and the U.S. Forest Service (see Section 7.5).

2.5 TRIBAL RIGHTS DISCLAIMER (see also Section 4.2.3)

This Wildlife Plan and the Settlement Agreement have been developed in cooperation with affected tribes to be consistent with tribal rights. Nothing in this Agreement or in the plans, memoranda, procedures, or other actions taken to further the purposes of this Agreement shall reduce or otherwise impair access to and exercise of implied or explicit Indian rights, including hunting, fishing, and gathering rights; nor shall anything in this Agreement be construed as limiting, waiving or otherwise impairing whatever damage claims the Tribes may have arising out of the construction and operation of the Project outside the term of this Agreement.

3.0 LAND ACQUISITION PROGRAM

The Skagit River Hydroelectric Project Area (excluding portions of the transmission right-of-way) is located in Whatcom County in northwestern Washington, in the Skagit River drainage (see Map 1). The City and the Washington Department of Wildlife, National Park Service, U.S. Forest Service, U.S. Fish and Wildlife Service, North Cascades Conservation Council, and the Upper Skagit Tribe, Sauk-Suiattle Tribe, and Swinomish Tribal Community considered the wildlife and habitat impacts of the Skagit Project, the habitat priorities of agencies and public groups, the availability of lands and habitat, and the permissible land uses and manipulations in determining the area in which wildlife lands might be sought.

It was decided by the City and these intervenors to develop a plan which stressed the acquisition and protection of wildlife habitat, but which also would contain a component of habitat enhancement. Lands would be sought which could provide benefits such as: forested and riparian habitats; low elevation areas and wetlands; large blocks of land; lands in the near vicinity of the Project; lands adjacent to areas managed by agencies or private groups to provide for wildlife needs; lands on which habitat could be manipulated; and/or lands which could provide for species of concern (such as bald eagle and elk).

The recently adopted General Management Plan (National Park Service, 1988a) for the North Cascades National Park Service Complex (including the Ross Lake National Recreation Area) (Park Complex) is strongly directed towards ecosystem management and restoration of natural processes in most of the lands of the Park Complex. Habitat manipulations on a large scale, such as were contemplated in the High Ross Wildlife Mitigation, Compensation, and Enhancement Plan (Washington Department of Game, 1981) for the City's High Ross development proposal, are no longer supported or permitted by the Park Service for the Park Complex. Interest was therefore directed away from the Project Area in the Ross Lake National Recreation Area and towards the downstream Skagit River drainage.

It became apparent that the downstream Skagit River drainage has had a long history of settlement and development, and that some of the best opportunities for meeting the priorities described above were in fact available in the nearby and parallel drainage of the South Fork of the Nooksack River. Furthermore, substantial numbers of elk and deer spend their summers in the Skagit River drainage while wintering in the South Fork of the Nooksack River. The habitat acquisition component of the Wildlife Plan thus became directed at both the downstream Skagit River and the South Fork of the Nooksack River.

3.1 OBJECTIVES AND INTENT

The objectives and intent of the land acquisition program are to:

- Secure and preserve valuable wildlife habitat in the upper Skagit River and South Fork Nooksack River valleys to provide for wildlife needs during the new license period in the Skagit Project Area and its vicinity.

- Establish procedures for the initial selection of lands and for the selection of substitute lands should this prove necessary.

- Select lands which possess wetlands, riparian areas and corridors, and mature forest communities. Additional considerations in selecting areas included size of tracts, adjacency to other protected areas or areas of interest, and use by bald eagles.

- Establish a mechanism and schedule for securing lands. Begin the process in advance of the receipt of the new license, concentrating first on areas most at risk of modification.

3.2 PROCEDURES FOR APPORTIONMENT OF MONIES AND SELECTION OF WILDLIFE HABITAT LANDS

3.2.1 Single Amount of Money for Habitat Acquisition and Enhancement

The City will make available $17,000,000 (see Section 3.7) from which both the acquisition of wildlife lands and enhancement of habitat will be funded. All decisions regarding the apportionment and disbursement of the $17,000,000 will be made by the Parties to the Settlement Agreement (the City, National Park Service, Washington Department of Wildlife, U.S. Fish and Wildlife Service, U.S. Forest Service, North Cascades Conservation Council, Upper Skagit Tribe, Sauk-Suiattle Tribe, and Swinomish Tribal Community) through the Land Acquisition Group as provided in Sections 3.2.2 and 3.2.3. Payments for the acquisition of land shall be upon the approval and acceptance of the deeds or property agreements by the Seattle City Council.

3.2.2 Initial Acquisition of Wildlife Lands, Completion of the Initial Acquisition Process, and Decisions Subject to Consensus Decision-making

The "initial acquisition" of wildlife lands refers to the use of the land-acquisition process and the use of the funds identified in sections 3.2.1 and 3.7 to select, secure, and purchase land for the provision of wildlife benefits. This initial acquisition process shall end with the completion of the disbursal of all of the funds that are allocated to land acquisition under sections 3.2.1 and 3.7. Any subsequent alteration to the composition of the wildlife lands, including disposal and replacement acquisition, shall be handled as provided in Section 3.4.2.

Subject to the limitations in Section 3.3.2, all decisions or actions regarding initial land acquisition shall be made by consensus of the Parties. The decisions which will be made by consensus of the Parties to the Settlement Agreement are:

- All decisions relating to the selection and initial acquisition of lands.

- All decisions relating to the apportionment of the $17,000,000 between land acquisition and habitat enhancement.

- All decisions regarding the apportionment of monies or lands between the basins of the Skagit River and South Fork of the Nooksack River.

- All decisions regarding the selection of particular lands or parcels.

- All decisions regarding disbursement of monies apportioned to land acquisition.

The consensus process of decision-making applies only to the initial acquisition of wildlife habitat lands and shall end with the completion of the initial acquisition and the expenditure of the monies allocated to land acquisition.

Decisions regarding disbursement of monies apportioned to habitat enhancement will be made by the Wildlife Management Review Committee (WMRC) as provided in Sections 5.2.1 and 5.8. Decisions regarding the replacement (should this be required) of acquired wildlife lands in the years after the end of the second license year will also be made by the WMRC as provided in Section 3.4.2.

In the event that the properties are substantially reconfigured from Table 3-1, the purchase cannot be made in fee simple (e.g., an easement is all that can be acquired), the cost of early securing of lands will exceed initial estimates, fair market value exceeds initial estimates, or the properties are not available, the City will inform the other Parties of the difficulties and will seek guidance from them on how to proceed (see Section 3.3.2). A consensus of the Parties shall approve the purchase or optioning of: properties which have been substantially reconfigured, properties not available in fee simple, properties available only at higher total cost (purchase plus option) than initial estimates, or properties which shall substitute for lands identified in Table 3-1 (see below). Any change to the apportionment of monies between the River basins shall also be made by consensus of the Parties.

3.2.3 Consensus Decision-making

Throughout the initial acquisition of wildlife lands the City will, as appropriate, convene meetings or communicate with the Parties to the Settlement Agreement to share information, receive guidance, and to arrive at consensus decisions. Each Party will designate a representative and alternate representative to represent it for consensus decision-making. These representatives may be collectively referred to as the "Land Acquisition Group." A Party may also designate another Party to represent its interest.

Consensus requires that the Parties collectively and unanimously agree on a decision or course of action. Decisions may be made at meetings of the Land Acquisition Group by telephone conference call, polling by telephone, or by written authorization, or other means as approved by the Land Acquisition Group. The failure of a representative to participate in a decision meeting or call in which the representative had previously agreed to participate may be taken as that Party's agreement with any consensus reached in the meeting or call. If consensus cannot be reached, the Settlement Agreement provides a procedure for resolution of disputes.

3.3 INITIAL ACQUISITION OF WILDLIFE LANDS

From the available funds (see Sections 3.2 and 3.7) the City will preferably acquire wildlife lands in fee or, as necessary (e.g., owner refusal to sell at fair market value or at all), will acquire easements or conclude other arrangements. Options may be sought and secured in order to further the acquisition process.

3.3.1 Procedures for Selection of Wildlife Lands, and Initial Selections and Apportionments

The wildlife habitat lands to be acquired will be located in the Skagit River and South Fork Nooksack River drainages. Specific areas within the Nooksack block and Skagit River drainages will be—to the extent possible based on ownership patterns and current landowner concerns—selected on the basis of habitat value, and will be jointly approved by the Parties to the Settlement Agreement as provided in Sections 3.2.2 and 3.2.3.

An initial list of lands to be sought for acquisition was collectively agreed upon by the Parties, and is presented in Table 3-1 and Map 2. (The areas are further described in Section 4.) The Parties to the Settlement Agreement agree that the City has their authorization to purchase the lands in Table 3-1 as provided in Sections 3.2.1 and 3.3. It is the estimate of the City and the Parties that the monies allocated for this task (see Section 3.7) will be sufficient to acquire the lands shown in the table. The presence of lands on the list in Table 3-1 indicates the City's intention to acquire these lands to the limits of the available funds, subject to the provisions and constraints in Section 3.3.2.

In developing the initial list in Table 3-1, the Parties were interested in acquiring lands in both the Nooksack and Skagit basins, in roughly equal proportions. The Parties considered, among other things, the possibility that lands might be more or less expensive than was estimated, and that the Skagit and Nooksack basins might differ significantly in this regard (i.e., one basin might come in under estimate, the other over estimate). It was also considered probable that one or more parcels would not be available in whole or in part.

To address these concerns the Parties made an initial apportionment of acquisition monies between the Skagit and South Fork Nooksack basins. Of the portion of the $17,000,000 which is allocated to land acquisition, 45% (approximately $6.8-7.4 million) is to be applied to the purchase of the lands in Table 3-1 in the Skagit River basin and 55% (approximately $8.4-9.1 million) to lands in Table 3-1 in the South Fork Nooksack River basin. Furthermore, any of the monies allocated to land acquisition in either basin which are not required for the lands listed in Table 3-1 will be placed in a pool to be used to acquire additional lands and will be equally divided between the Skagit River and South Fork Nooksack River basins. In the event that the monies are not sufficient to acquire all of the identified lands, the Parties will determine (as provided in Sections 3.2.2 and 3.2.3) which areas will not be acquired.

In the event that some lands cannot be acquired or are found to be unsuitable for acquisition, the Parties will meet to consider alternative acquisitions in the same basin. Cost estimates will be prepared for alternative lands, and the monies allocated to the unavailable or unsuitable lands will

Table 3-1. Lands Proposed for Acquisition[1/,2/]		
Parcel	Acreage (approx.)[3/]	Text Description (Section in Plan)
Rocky Creek-Skagit River Parcel	90	4.5
McLeod Slough parcels (Causland and Hurn parcels)	200	4.4.1 and 4.4.2
South of McLeod Slough (Sauk River) Parcel	100	4.4.3
Upper Ryan Tract	40	4.6.2
F. Martin Riparian Parcel	30	4.6.1
Illabot Roost (Crown Pacific and John Hancock lands)	160	4.7
Skagit block	1,260	4.6.3
South Fork Nooksack River block[4/]	3,240	4.3
Total acres (approx.)	5,120	

1/ Initial list agreed upon by the Parties to the Settlement Agreement and included in the Preliminary Agreement.

2/ Lands are not listed in a priority order. Presence of lands on this list indicates the City's intention to acquire lands to the limits of the funds, subject to availability and the provisions and the limitations of Section 3.3.2.

3/ These figures represent initial estimates and are subject to change as more accurate appraisals and ownership information are available.

4/ Some of the recently clearcut conifer lands will be treated (see Section 5.2) to retain a portion of the area in openings for elk foraging. This will be accomplished by periodic selective burning, or by applying other stand enhancement techniques. Potentially as much as 20% of the lands could be available for such treatment.

be applied toward obtaining the alternative acquisitions. Monies which are left unspent after this acquisition due to lower than estimated costs will be placed in the pool to acquire additional lands, and will be divided equally between the two river basins.

Where a selection of land must be made from a larger area of land (as in the case of the Nooksack area, where approximately 3,240 acres are proposed to be acquired from an available area of over 4,000 acres), the selection will be based—to the extent possible, given ownership patterns and landowner concerns—on wildlife values. The selection must be approved by the Parties to the Settlement Agreement as provided in Sections 3.2.2 and 3.2.3 of the Wildlife Plan.

3.3.2 Property Purchase Provisions

Seattle City Light, Property Management Division, will be the City's agent for acquisitions, easements, and other arrangements regarding real property. The City will bear the primary responsibility to identify properties available for purchase; however, nothing in this Wildlife Plan will restrict another Party from identifying properties for purchase. The City may also enlist the assistance of others, such as the Trust for Public Land, in the acquisition process.

The City may acquire lands through any of several mechanisms, including fee purchase (the strongly preferred approach) and conservation easements, and may use options in order to further the acquisition process. The City is constrained to purchase at fair market value as determined by a reputable appraiser(s).

As discussions progress with landowners, early securing of land may cost additional money. This additional premium would be chargeable against the capped amount of money available for acquisition and enhancement. The City will in such cases confer with the Parties to the Settlement Agreement regarding their preference for early securing of the land at higher cost versus securing it at a later time (thus accepting a higher risk of not acquiring the land), or for acquiring alternative land.

The Seattle City Council retains the authority to accept the deeds/easements and thus to complete the transactions.

The City retains the right to refuse to acquire title or interest in land or property if that would pose a threat of unacceptable liability (e.g., an old hazardous waste dump is present on site) to the City; if the titles of the lands or easements to be acquired are not clear or capable of being cleared without undue difficulties; if there are unacceptable problems with the title, covenants, or deed restrictions; if the costs would exceed fair market value; if the landowners seek to impose unacceptable conditions; if adverse modifications have occurred which make the lands no longer desirable; or for other such causes. If such problems are identified, the City will confer with the other Parties to the Settlement Agreement to identify alternative approaches or responses, and/or to select substitute lands.

3.3.3 Substitutions During the Initial Acquisition Process

In the event that selected lands are not available for acquisition or are found unsuitable (see Section 3.3.2), substitute lands will be selected and acquired by the City, subject to consensus approval of the Parties to the Settlement Agreement. (Procedures for replacement of wildlife lands after completion of the initial acquisition process are described in Section 3.4.2.)

An initial list (which is not intended to be exhaustive or to preclude the selection of parcels that are not listed) of substitute lands is included in Table 3-2.

Table 3-2. Potential Substitute Lands[1/,2/]

Parcel	Acreage (approx.)
Doug Martin Parcel	70
Additional lands in S. Fork Nooksack River area	2,000 or more
Rocky Creek Section	640
Big Eddy Osprey Tract	148
Skagit-Rockport Mixed Forest	[large area]
Perrigoue Riparian Parcel	20
Paul Jesus Tract	30
Lower Ryan Tract	40
Lower Bacon Creek	320

1/ Not listed in a priority order.

2/ Not an exclusive list; rather, it is representative of lands which have previously received interest in Wildlife Issue Forum discussions.

3.4 OWNERSHIP OF WILDLIFE HABITAT LANDS AND LONG-TERM INTENT

3.4.1 Ownership; City's Intent for New License Term and Beyond

The City shall hold title to, and retain full control (subject to recommendations of the WMRC), of the acquired properties for the term of the new license and any subsequent annual licenses. Furthermore, for the foreseeable future the City intends to own and operate the Project. The City intends that the lands currently being acquired for the Wildlife Plan for the new license also contribute to meeting the needs of wildlife in future license periods. If the City does not renew the license in the future, the City will offer to the appropriate public agencies a first right of refusal for purchase of the properties at market rates.

3.4.2 Replacement Procedure for Wildlife Lands Should Wildlife Values be Lost During the Term of the License

After the initial acquisition period and during the term of the new license, the wildlife habitat values of the acquired lands may be unacceptably harmed or lost. For example, the lands may be unacceptably isolated or affected by development on adjacent lands; wind or fire may destroy forest habitats. If the City and the Wildlife Management Review Committee (WMRC) (see Section 2.3) agree that the interests of the wildlife would be better served by the sale of the affected parcel and the purchase of another, the City may proceed to dispose of the harmed area, and select and acquire another area, subject to the approval of the City and the WMRC. Such substitute lands should provide equivalent or other desirable wildlife benefits.

3.5 FUNDING

The City will make available a total amount of $17,000,000 (see Section 3.7 of the Settlement Agreement and Section 3.7 below) from which both the acquisition of wildlife lands and enhancement of habitat will be funded. It is estimated that these funds will be sufficient to acquire these lands and support the enhancement measures within the budget of Section 3.7. In the event that the monies are not sufficient to acquire all of the identified lands, the Parties to the Settlement Agreement will determine which areas will not be acquired. Procedures for the apportionment and disbursement of these monies are provided in Sections 3.2 and 3.3. In no event shall the amount spent for land acquisition and habitat enhancement exceed $17,000,000. The monies dedicated for these activities will be disbursed in lump sum payments and shall not be subject to Section 3.7 of the Settlement Agreement. Payments for the acquisition of land shall be upon the approval and acceptance of the deeds or property agreements by the Seattle City Council.

3.6 SCHEDULE FOR IMPLEMENTATION

The City has begun to secure some lands in 1991-2 in advance of the conferral of the new license. The City is taking this step because of the near-term risks from development to many of the lands

of greatest interest for wildlife habitat preservation. Areas which are most at risk of adverse modification will be sought first. Subject to compliance with the requirements of the consensus process (see Sections 3.2.2 and 3.2.3), the City shall make best efforts to acquire or otherwise secure all of the wildlife lands no later than the end of the second license year.

Parcel-specific management plans will be completed for each parcel or area subsequent to the closing of purchase agreements or easements for the particular parcel or area. Implementation of habitat enhancement measures (see Sections 5.1 and 5.2) on these lands will occur after acceptance of the license and after completion of the purchase agreements/easements and management plans.

The schedule for reporting is discussed in Section 2.4.

3.7 COSTS OF THE HABITAT LANDS ACQUISITION PROGRAM

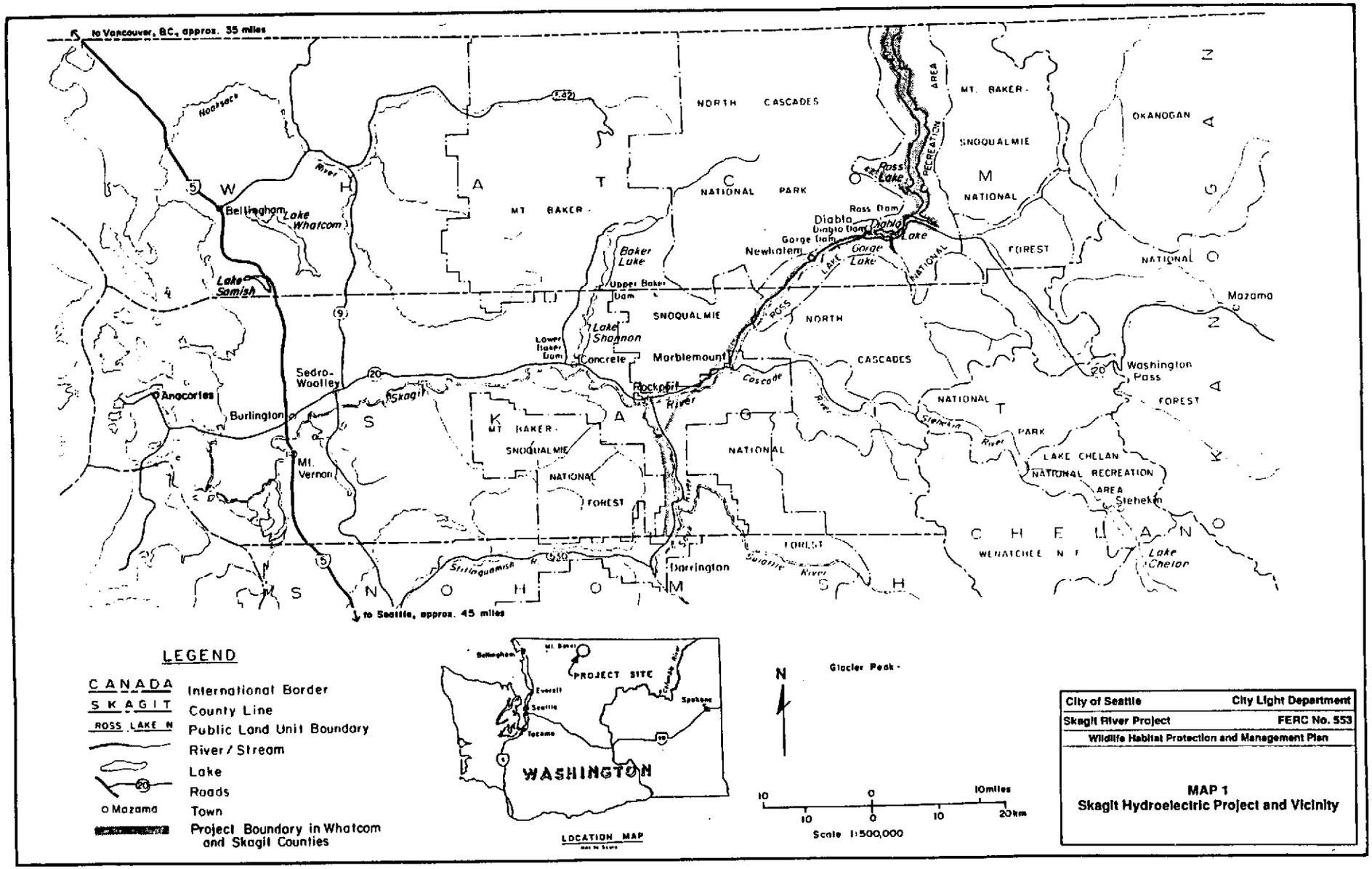
Costs of habitat acquisition program are given in Table 3-3. A range of costs is presented because the cost of the habitat enhancement program varies according to three options considered in Section 5.9.

Table 3-3. Range of Costs of the Land Acquisition Program

Program Component	Cost Range[1/]	
	5% Habitat Enhancement	20% Habitat Enhancement
Land Acquisition--estimated costs	$15,726,300	$14,498,900
Additional margin (5%)	827,700	763,100
Land Acquisition subtotal[1,2/]	16,554,000	15,262,000
Habitat Enhancement subtotal[1,2/]	446,000	1,738,000
Total for Land Acquisition and Habitat Enhancement Measures[1,2/]	$17,000,000	$17,000,000

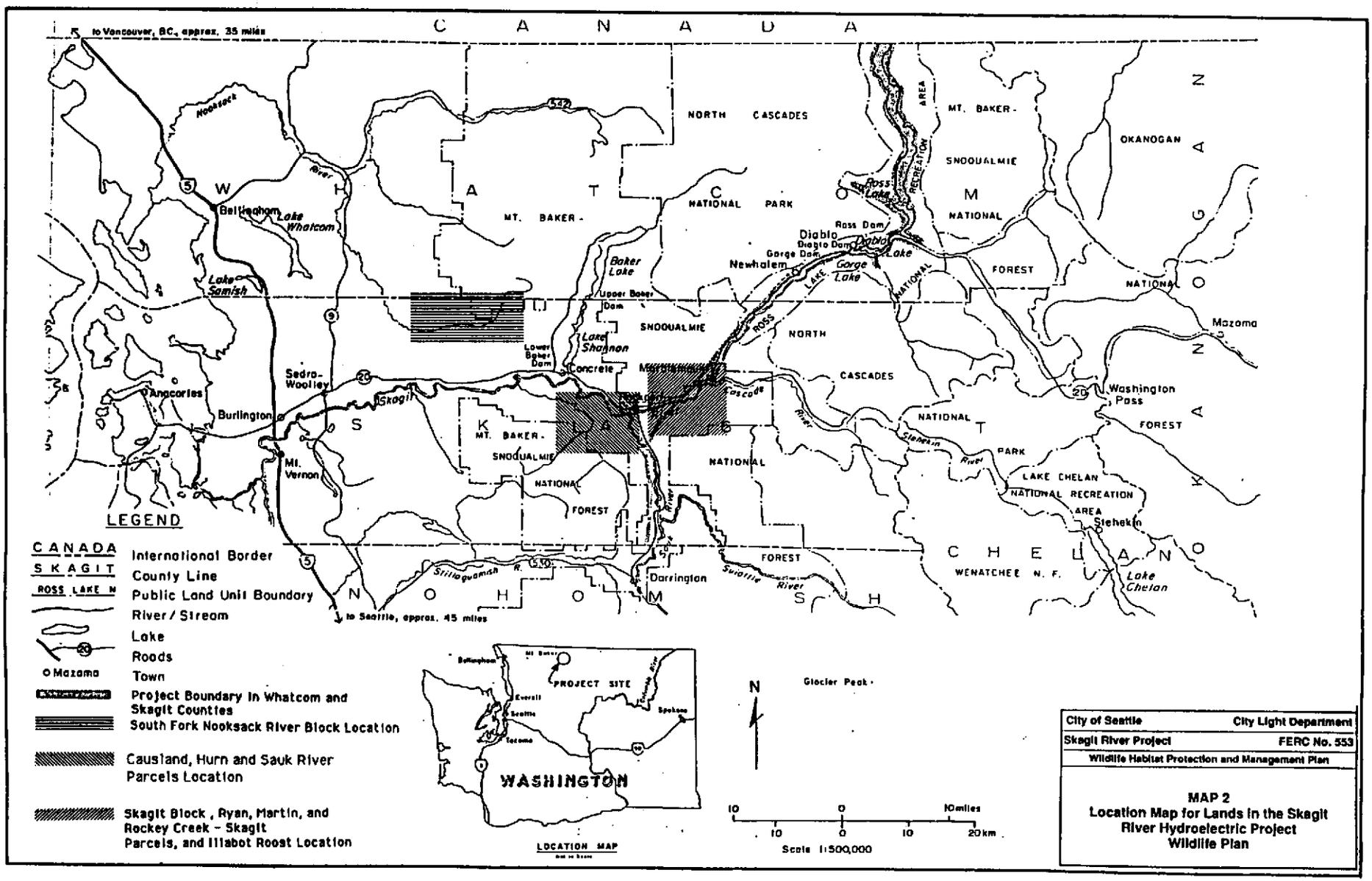
1/ Range of costs is dependent on the amount and proportion of Nooksack basin land that is manipulated for enhancement of elk forage. See discussion in Section 5 and Table 5-3.

2/ Expenditures for land acquisition and habitat enhancement are funded from a single, capped amount of money. Greater expenditures for habitat enhancement will result in smaller amounts being available for land acquisition, and vice versa. See Sections 3.2, 3.3, and 3.5.



City of Seattle	City Light Department
Skagit River Project	FERC No. 553
Wildlife Habitat Protection and Management Plan	

MAP 1
Skagit Hydroelectric Project and Vicinity


to Vancouver, BC., approx. 35 miles
CANADA
Nooksack River
Bellingham
Lake Whatcom
Lake Samish
NORTH CASCADES
NATIONAL PARK
MT. BAKER-
SNOQUALMIE
NATIONAL FOREST
Ross Lake
Ross Dam
Diablo
Diablo Dam
Gorge Dam
Gorge Lake
Newhalem
Baker Lake
Upper Baker Dam
Lower Baker Dam
Lake Shannon
Concrete
Marblemount
Sedro-Woolley
Anacortes
Burlington
Skagit
Mt. Vernon
Stillaguamish R.
Darrington
Skykomish River
to Seattle, approx. 45 miles
NORTH CASCADES NATIONAL PARK
MT. BAKER-SNOQUALMIE NATIONAL FOREST
OKANOGAN NATIONAL FOREST
Mazama
Washington Pass
Cascade River
Stehekin River
LAKE CHELAN NATIONAL RECREATION AREA
Stehekin
WENATCHEE N. F.
Lake Chelan
LEGEND
CANADA
SKAGIT
ROSS LAKE N
International Border
County Line
Public Land Unit Boundary
River / Stream
Lake
Roads
Mazama
Town
Project Boundary in Whatcom and Skagit Counties
South Fork Nooksack River Block Location
Causland, Hurn and Sauk River Parcels Location
Skagit Block, Ryan, Martin, and Rockey Creek - Skagit Parcels, and Illabot Roost Location
PROJECT SITE
WASHINGTON
LOCATION MAP
N
Glacier Peak
10 0 10miles
10 0 10 20km
Scale 1:500,000
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 2
Location Map for Lands in the Skagit River Hydroelectric Project
Wildlife Plan

4.0 HABITAT TRACT DESCRIPTIONS AND MANAGEMENT PRESCRIPTIONS

The Skagit Project wildlife habitat lands are located in Whatcom and Skagit counties in northwestern Washington, in the Skagit River and South Fork Nooksack River drainages (see Map 2). Land uses in the adjacent areas of the Skagit River include wildlife areas managed by the state and private organizations, timber management, agriculture, grazing, and rural residential development. In the South Fork of the Nooksack River the use of adjacent lands is primarily timber management on private and state lands, and dispersed recreation on the adjacent national forest lands.

4.1 OBJECTIVES AND INTENT

The objectives and intent of this section are to:

- Describe the current distribution of vegetation types and forest stand ages on lands of interest. This will provide the basic information to acquire good wildlife habitat and to provide for long-term wildlife benefits. The methodology used in the habitat inventory is presented in Appendix A.

- Acquire lands in the South Fork of the Nooksack River basin, which in order to meet the needs of the wintering elk herd will include lands in grass-forb stages in an optimal distribution for use by elk.

- Develop parcel-specific management plans once the parcels are acquired or easements are secured.

4.2 GENERAL MANAGEMENT PRESCRIPTIONS

The primary purpose for the acquisition and management of the wildlife habitat lands is to benefit wildlife. In general, management is intended to be minimal or low-intensity, and directed towards habitat acquisition and preservation. Furthermore, the management of these wildlife lands shall be consistent with tribal rights (see Sections 2.5 and 4.2.3).

Section 3 lists several parcels which will be sought by the City for acquisition. Considerable vegetation and habitat information has already been compiled and analyzed for these lands (see also Table 3-1, and Appendices A and B). This information has contributed to their identification and selection, and will also be used in the development of management plans for each parcel after acquisition. Timber appraisal information is also now being developed for several parcels of land. Parcel-specific management planning can only be completed by the City after the specific lands or easements have been acquired. This section of the Wildlife Plan therefore contains management direction which of necessity is general at this time. The development of the parcel-specific plans will commence upon closing of purchase/easement agreements for the specific parcels (see Section 4.8).

4.2.1 General Principles for Management of the Wildlife Habitat Lands

Management techniques and prescriptions should be flexible enough to accommodate new information and changes in wildlife management practices.

Management prescriptions should account for and accommodate reasonably foreseeable activities and actions on adjacent ownerships.

In selected locations in the Nooksack River area wildlife habitat may be enhanced using appropriate techniques, including prescribed burning. Enhancement measures, such as wetland rehabilitation, may be employed in both the Nooksack and Skagit areas. Timber production is not an objective of the treatments to enhance wildlife habitat.

4.2.2 Lands within the Skagit Wild and Scenic River System

Management of the acquired wildlife lands within the designated corridors for the Skagit National Recreation River, Sauk National Scenic River, or the Cascade National Scenic River shall be consistent with the maintenance or enhancement of the free-flowing character of each of the rivers, and of the outstandingly remarkable values for which the rivers were placed in the federal Wild and Scenic River System: wildlife, fish, recreation and scenic values.

4.2.3 Consistency with Tribal Rights; Cultural Resources; and other Resource Plans

Section 2.5 contains disclaimer language regarding this Plan and tribal rights. This Plan has been developed in cooperation with affected tribes to be consistent with tribal rights. Any management plans or agreements concerning the wildlife habitat lands to be acquired to which the City is a party will also be developed to provide for this consistency. Cultural resource reconnaissance surveys will be conducted as part of the environmental review process for any areas where ground-disturbing activities (e.g., some prescribed burning methods, or facilities construction) are proposed.

4.2.4 Public Access and Other Uses on Acquired Lands

In general, it is the City's intent to maintain public access to wildlife lands. Public access, recreational uses, and other uses may be allowed provided they do not compromise the wildlife purposes. It is incumbent on the parties seeking developed public access, recreational and other uses to show that these uses will not compromise the wildlife purposes and values of the wildlife lands. Physical access to these lands shall be designed to minimize wildlife disturbance and unauthorized activities.

At this time, several location-specific use restrictions or allowances are identifiable:

- As per discussions with intervenors in the wildlife and recreation resource areas, the Rocky Creek-Skagit River parcel will be considered for a boat-in picnic area and one or two eagle-viewing trails: These uses would help to reduce recreational impacts on the downriver Eagle Island area. A bicyclist camping spot is also being evaluated, and some interpretive displays might be located at these sites. It is recommended in the Skagit Project Settlement Agreement on Recreation and Aesthetics that the road which currently allows access near or onto the shoreline of the Skagit River and Rocky Creek be gated and closed at the trailhead.

- Other than the measures noted in the above item, the City does not plan to develop any other improvements for access or recreation on these wildlife lands.

- The Fred Martin parcel is immediately adjacent to and would be managed consistently with the Eagle Island portion of the Skagit River Bald Eagle Natural Area (SRBENA). It is currently inaccessible because of restricted access across privately owned land. Because of its location within restricted private lands, and the importance of maintaining this eagle refugium free of human presence and disturbance, this parcel would be closed to other uses. Access would be available to wildlife agencies, SRBENA managers, and City personnel.

- Scientific research may be conducted on the Wildlife lands where such research 1) does not conflict with any other management principles, and 2) has been reviewed and approved by the Wildlife Research Advisory Committee (WRAC) (see Section 7.3).

- The WMRC (*see* Section 2.3) may periodically review the applicable rules and regulations for hunting and fishing for these areas and may formulate recommendations regarding whether any additional provisions or measures are appropriate (e.g., seasonal closure of fawning/calving areas; closure to hunting of cougars and other predators).

- Use and access policies and measures shall be consistent with tribal rights (see Sections 2.5. and 4.2.3). The City will not arbitrate differences between the regulatory agencies (which may include agencies in addition to those which are included in the wildlife intervenors) and tribes; these differences will be resolved by the agencies and tribes themselves and will be reported to the City and the WMRC.

4.2.5 Fire Suppression

The prescribed use of fire will be a management tool to retain some areas in the Nooksack River corridor in grass/forb conditions, as described in Section 5. Other fires (wild or manmade) will be managed/suppressed by the Washington Department of Natural Resources. The Wildlife Management Review Committee (see Section 2.3) and Wildlife Research Advisory Committee (see Section 7.3) may develop additional guidelines regarding the handling of fire. These guidelines will conform to the City's and other agencies' legal requirements and responsibilities for the protection of life and property.

4.3 DESCRIPTIONS OF VEGETATION AND CONDITIONS ON LANDS PROPOSED FOR ACQUISITION IN THE SOUTH FORK NOOKSACK RIVER AREA

4.3.1 Riparian Corridor (see Maps 3, 4, 5, and 6 and Table 4-1)

The riparian corridor includes approximately 3,985 acres in a corridor which follows the South Fork of the Nooksack River for 8 river miles in Township 36N, Range 6E sections 12, 13, 14, 15, 22, and 23, and in Township 36N, Range 7E sections 2, 10, 15, 16, 17, and 18. All but approximately 120 acres is in the ownership of the Crown Pacific Company. The remaining acreage is managed by the Washington Department of Natural Resources. The main haul road (which is owned and maintained by Crown Pacific) forms the southern and eastern boundary, and the upper end of the corridor adjoins national forest land. (A cooperative agreement concerning the management of the road will be placed in Appendix C when it is executed.) The corridor varies in width but averages approximately 3/4 mile with the river approximately centered along it.

The river corridor (see Maps 4, 5, and 6) is forested primarily with mixed conifer and broadleaf trees, and broadleaf tree communities of approximately 60-100 years of age (see also Table 4-1). Most pockets of pure conifer trees have been logged in the last 5-20 years, yielding approximately 15-25% openings distributed along the entire length of the parcel. A major stand of mature conifer is still present near the upper end of the corridor.

The river corridor has a varied profile, with flat benches which are periodically flooded, with a few sloughs and wetlands, alternating with steeply angled banks and some abrupt drops to the river. The elevation of the area is below 3,000 feet, and most of the area is below 2,000 feet.

Wildlife use of the area is heavy. These lands form a major part of one of the most important elk and deer winter ranges in this part of the state (personal communication, M. Davidson, Washington Department of Wildlife, 5 October 1990). There is also some anadromous fish use of the river in the lower portion of the corridor.

Management plans for this area and two of the three parcels described in Section 4.3.2 would include a component of habitat enhancement: Active steps would be taken to retain approximately 5-20% of the area in grass-forb communities to provide winter forage for elk (see Section 5.2).

4.3.2 Bear Lake and Northern Parcels (*see* Map 5 and Table 4-1)

These three parcels are included at the request of the Crown Pacific Company. Initial discussions with Crown Pacific have indicated that the company is interested in avoiding the isolation of these parcels north of the river after the completion of land acquisitions by the City as described in Section 3. Two of the parcels (noted on Map 5 as the "northern parcels") in Township 36N, Range 7E sections 7 and 8 were logged in recent times; the third, which includes Bear Lake in section 9, includes some older forest communities as well as emergent wetland communities (see Map 5).

4.4 DESCRIPTIONS OF VEGETATION AND CONDITIONS ON LANDS PROPOSED FOR ACQUISITION IN THE MCLEOD SLOUGH AND SAUK RIVER AREAS

4.4.1 Sylvia Causland Tract (see Maps 7 and 8 and Table 4-2)

This parcel is approximately 105 acres in T 35N, R 9E. W. M., in a portion of section 34. (The parcel may also include some land in section 33.) The current owner is Sylvia Causland.

This property includes several habitats (see Map 8), including hayfield, river frontage, mature riparian hardwoods, and two-level canopy. McLeod Slough runs along the southern boundary in what was until recently the main channel of the Skagit River. The area is subject to flooding at high water.

4.4.2 Cliff Hurn Parcels (see Maps 7 and 8 and Table 4-2)

These two parcels total approximately 95 acres in T 35N, R 9E. W. M., portions of section 34 (two parcels). One parcel is in Lot 7, the other in Lots 10 and 11. The current owner is the Cliff Hurn Estate.

These properties occupy a desired location among lands owned by the Washington Department of Wildlife in the McLeod Slough area (at the confluence of the Skagit and Sauk rivers). One parcel is adjacent to the Causland tract on one side. These two parcels were both clearcut approximately 10 years ago (*see* Map 8). They are in sharp contrast to the adjacent state lands, which are almost entirely within riparian broadleaf and mixed forest cover (see Map 8).

4.4.3 South of McLeod Slough Parcel (Sauk River) (see Maps 7 and 8 and Table 4-2)

This parcel of approximately 171 acres is owned by Crown Pacific, and is located just south of McLeod Slough on the western side of the Sauk River.

The northernmost 44 acres of the parcel have recently been clearcut. The remainder of the property is in mixed broadleaf and conifer forest (see Map 8), with broadleaf trees greatly predominating. The area in the vicinity of the confluence of the Sauk and Skagit Rivers is heavily used by bald eagles for perching and feeding.

4.5 DESCRIPTIONS OF VEGETATION AND CONDITIONS ON LANDS PROPOSED FOR ACQUISITION IN THE ROCKY CREEK-SKAGIT RIVER PARCEL (see MAPS 9 AND 10 AND TABLE 4-2)

This 45-acre parcel is located on the western side of the confluence of the Skagit River and Rocky Creek in T 35N, R 10E, sections 22 and 27. It is owned by the Holy Spirit Association, a group affiliated with the Rev. Moon's organization.

The land consists of shoreline flood bench at the confluence, which slopes upward to a high bank characteristic of the river frontage. The land was high-grade logged many years ago and supports a broadleaf forest which is beginning to be replaced with conifers. The variety of bird species observed there is the highest found for any of the lands which are proposed for acquisition.

As per discussions with intervenors in the wildlife and recreation resource areas, the City proposes to develop a boat-in picnic area at the Rocky Creek-Skagit River confluence. This would have the benefit of intercepting river raft and floatboat traffic, and providing a place for lunch away from the downstream Eagle Island (where recreational impacts on the eagles have become a concern). The parcel also may provide one or two good locations for eagle-viewing, which could be developed in concert with providing a bicyclist camping spot. The road which currently allows access near or onto the shoreline of the Skagit River and Rocky Creek would be gated and closed.

4.6 DESCRIPTIONS OF VEGETATION AND CONDITIONS ON LANDS PROPOSED FOR ACQUISITION IN THE ILLABOT SLOUGH AND VICINITY (SEE MAPS 9 AND 10 AND TABLE 4-2)

4.6.1 Fred Martin Parcel

The parcel consists of approximately 30 acres located in T 35N, R 10E.W.M., in portions of sections 28 and 29. The property is situated along a portion of the Illabot Slough, and the area can only be reached through other privately owned lands (Doug Martin, Perriogue Farms) via a locked and gated road.

The land is forested with riparian hardwoods along the main channel of Illabot Creek in the slough area (see Map 10). The property is an important eagle feeding and off-river "loafing" area, and provides a critical area of chum salmon spawning. The parcel is also immediately adjacent to and would be managed consistently with the Eagle Island portion of the Skagit River Bald Eagle Natural Area (SRBENA).

This property is currently inaccessible to the public due to posted restrictions against crossing private land. Because of its location within restricted private lands, and the importance of maintaining this eagle refugium free of human presence and disturbance, this parcel would be closed to uses other than eagle habitat use. Access would be available only to wildlife agencies, SRBENA managers, and City personnel. (An agreement concerning rights to ingress/egress will be placed in Appendix C when it is executed.)

4.6.2 R. J. Ryan Tract (see Maps 9 and 10 and Table 4-2)

This parcel is approximately 34 acres in size, and is located in T 35N, R 10E. W. M., in a portion of section 27. This parcel is an eagle staging area which also has some chum salmon spawning areas.

The land is forested with a mosaic of riparian broadleaf/conifer mixed and riparian conifer trees (see Map 10). The dominant overstory species is red cedar, and ferns dominate the understory.

Illabot Creek flows through the middle of the property and enters into the Illabot Slough at the northern boundary. Some of the area is flooded by the creek or river at high water.

Portions of the area have been selectively logged in the last several years. The logging was carefully executed, and most of the habitat characteristics and components of mature and old-growth forest have been retained by the remaining forest.

4.6.3 Skagit Block (see Maps 9 and 10 and Table 4-2)

This area forms a large contiguous block of land which is adjacent to Department of Wildlife lands in the Illabot Slough. The land has a mixture of emergent and shrub wetlands (which also provide spawning habitat for anadromous fish), clearcut areas and regenerating conifer stands, and mixed broadleaf/conifer forest (see Map 10). O'Brien Creek runs through it seasonally (going subsurface in the late summer). One portion of the area has been identified as eagle habitat, and has been set aside from logging by the current owner, Crown Pacific.

4.7 DESCRIPTIONS OF VEGETATION AND CONDITIONS ON LANDS PROPOSED FOR ACQUISITION IN THE ILLABOT ROOST AREA (SEE MAPS 9 AND 10 AND TABLE 4-2)

This area is a known communal bald eagle roost: Upwards of 100 birds are observed to roost here nightly. The mature and old-growth conifers also provide optimal winter thermal cover for deer and elk.

4.7.1 Crown Pacific Land

Illabot Creek runs through a portion of the Crown Pacific ownership. The property is forested in an early mature conifer forest with riparian broadleaf forest along the creek (see Map 10).

4.7.2 John Hancock Parcel

This parcel of approximately 80 acres is located in T 34 N, R 10E.W.M., the northern half of the southeast quarter of section 2. The current owner is the John Hancock Insurance Company.

Illabot Creek traverses the northeast portion of the property. It is bordered by riparian hardwoods (see Map 10). The remainder of the land is a mixture of mature or early old-growth conifer forest and mixed forest cover.

4.8 SCHEDULE FOR IMPLEMENTATION

The schedule for land acquisition is discussed in Section 3.6. The City will make best efforts to acquire or otherwise secure all of the wildlife lands no later than the end of the second license year, subject to compliance with the consensus procedures in Sections 3.2.2 and 3.2.3.

The schedule for land acquisition is discussed in Section 3.6. The City will make best efforts to acquire or otherwise secure all of the wildlife lands no later than the end of the second license year, subject to compliance with the consensus procedures in Sections 3.2.2 and 3.2.3.

Parcel-specific management plans will be developed for each parcel/area upon the closing of purchase/easement agreements for the particular parcel/area. Land management plans for each parcel/area should be complete within approximately one year of the final closing of purchase/easement agreements for the particular parcel/area, subject to approval of the plans by the WMRC (see Section 2.3).

Cultural resource reconnaissance surveys (see Section 4.2.3) will take place as necessitated by the scheduling of ground-disturbing activities (such as scarification).

4.9 COSTS OF THE PROGRAM

The costs for land acquisition and management are included in the accounting presented in Section 3.7. Cultural resource reconnaissance surveys are accounted in Table 10-1.

Table 4-1. Vegetation/Habitat Acreages in the South Fork Nooksack River Area[1/]

Vegetation/Habitat Classes[2/]	Acres of Vegetation Type/Parcel					Grand Total	Total in Riparian Corridor[3/]
	Downstream	Midstream	Upstream	Bear Lake	Northern		
Upland Types							
Old-growth Conifer Forest (OG)	11.9 (0.27%)[4/]	11.5 (0.26%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	23.4 (0.54%)	23.4 (0.54%)
Closed-canopy Conifer Forest(CC)	24.7 (0.57%)	199.2 (4.58%)	406.9 (9.35%)	140.8 (3.24%)	5.4 (0.12%)	777.0 (17.85%)	612.6 (14.49%)
Broadleaf Forest (BF)	396.5 (9.11%)	130.9 (3.01%)	16.2 (0.37%)	0.0 (0.00%)	0.0 (0.00%)	543.6 (12.49%)	543.6 (12.49%)
Mixed Forest (MF)	472.6 (10.86%)	760.7 (17.48%)	119.0 (2.73%)	0.0 (0.00%)	0.0 (0.00%)	1352.3 (31.07%)	1352.3 (31.07%)
Shrubfields (SF)	0.0 (0.0%)	12.9 (0.30%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	12.9 (0.30%)	12.9 (0.30%)
Regenerating Conifer (CR)	154.8 (3.56%)	58.6 (1.35%)	14.1 (0.32%)	0.0 (0.00%)	90.7 (2.08%)	318.2 (7.31%)	231.6 (5.23%)
Cutting Units (CU)	191.5 (4.40%)	309.2 (7.10%)	70.5 (1.62%)	0.0 (0.00%)	215.7 (4.96%)	786.9 (18.08%)	571.2 (13.12%)
Riparian Types							
Riparian Conifer (rC)	0.0 (0.00%)	2.5 (0.06%)	8.2 (0.19%)	0.0 (0.00%)	0.0 (0.00%)	10.7 (0.25%)	10.7 (0.25%)
Riparian Broadleaf (rB)	6.2 (0.14%)	14.6 (0.34%)	2.4 (0.06%)	0.0 (0.00%)	0.0 (0.00%)	23.2 (0.53%)	23.2 (0.53%)
Riparian Mixed Forest (rM)	108.3 (2.49%)	86.4 (1.99%)	68.6 (1.58%)	0.0 (0.00%)	0.0 (0.00%)	263.3 (6.04%)	263.3 (5.22%)

Table 4-1 (cont.) Vegetation/Habitat Acreages in the South Fork Nooksack River Area[1/]

Vegetation/Habitat Classes[2/]	Acres of Vegetation Type/Parcel					Grand Total	Total in Riparian Corridor[3/]
	Downstream	Midstream	Upstream	Bear Lake	Northern		
<u>Wetland Types</u>							
Broadleaf Wetland (BW)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)
Mixed Wetland (MW)	0.0 (0.00%)	0.0 (0.00%)	1.9 (0.04%)	0.0 (0.00%)	0.0 (0.00%)	1.9 (0.04%)	1.9 (0.04%)
Shrub Wetland (SW)	0.0 (0.00%)	0.3 (0.01%)	1.0 (0.02%)	0.0 (0.00%)	0.0 (0.00%)	1.3 (0.03%)	1.3 (0.03%)
Emergent Wetland (EW)	0.0 (0.00%)	0.0 (0.00%)	1.1 (0.03%)	3.4 (0.08%)	0.0 (0.00%)	4.5 (0.10%)	1.1 (0.03%)
Shrub/Emergent Wetland (S/EW)	5.4 (0.12%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	5.4 (0.12%)	5.4 (0.12%)
<u>Non-vegetated Types</u>							
Riverine	79.7 (1.83%)	60.1 (1.38%)	45.9 (1.05%)	1.9 (0.04%)	0.0 (0.00%)	187.6 (4.31%)	185.7 (4.27%)
Exposed Rock (ER)	0.6 (0.01%)	0.0 (0.00%)	3.9 (0.09%)	0.0 (0.00%)	0.0 (0.00%)	4.5 (0.10%)	4.5 (0.10%)
Lacustrine Open Water (LOW)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	4.7 (0.11%)	0.0 (0.00%)	4.7 (0.10%)	0.0 (0.00%)
Riverine/Exposed Rock (R/ER)	0.0 (0.00%)	0.0 (0.00%)	8.8 (0.20%)	0.0 (0.00%)	0.0 (0.00%)	8.8 (0.20%)	8.8 (0.20%)
Disturbed (DS)	2.8 (0.06%)	19.3 (0.44%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	22.1 (0.51%)	22.1 (0.51%)
Total Acres	1,455.0	1,666.2	768.5	150.8	311.8	4,352.3	3,889.7

[1] Based on 1987 aerial photography. Revisions based on 1990 fixed-wing overflights.
[2] See Appendix B for description of cover types.
[3] Riparian Corridor includes those lands within the downstream, midstream, and upstream sections. It does not include the area of sections 7, 8, and 9 of T 36N R7E.
[4] Percent of total South Fork Nooksack River study area.

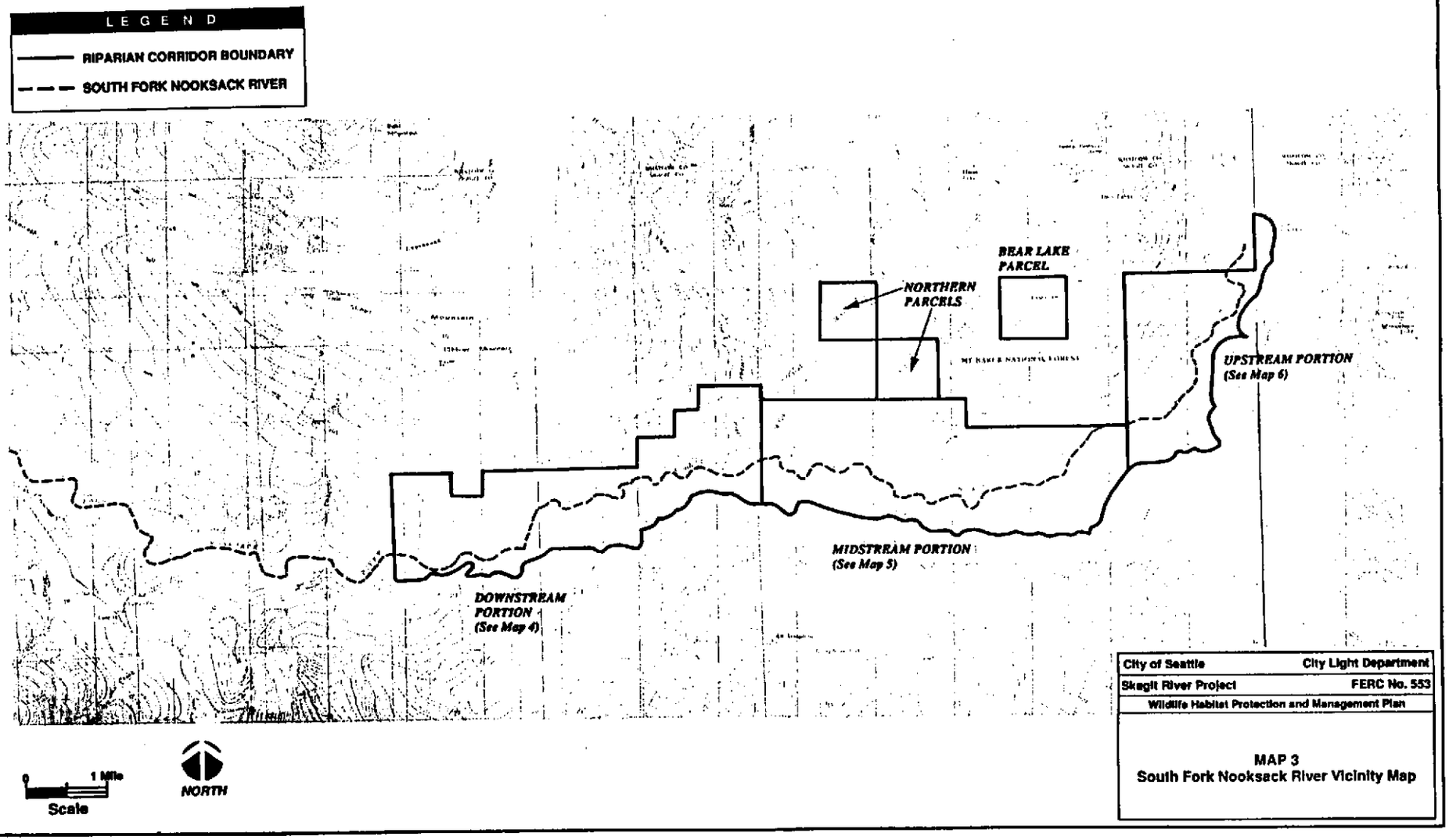
Table 4-2. Vegetation/Habitat Acreages in the Skagit and Sauk River Area[1/]

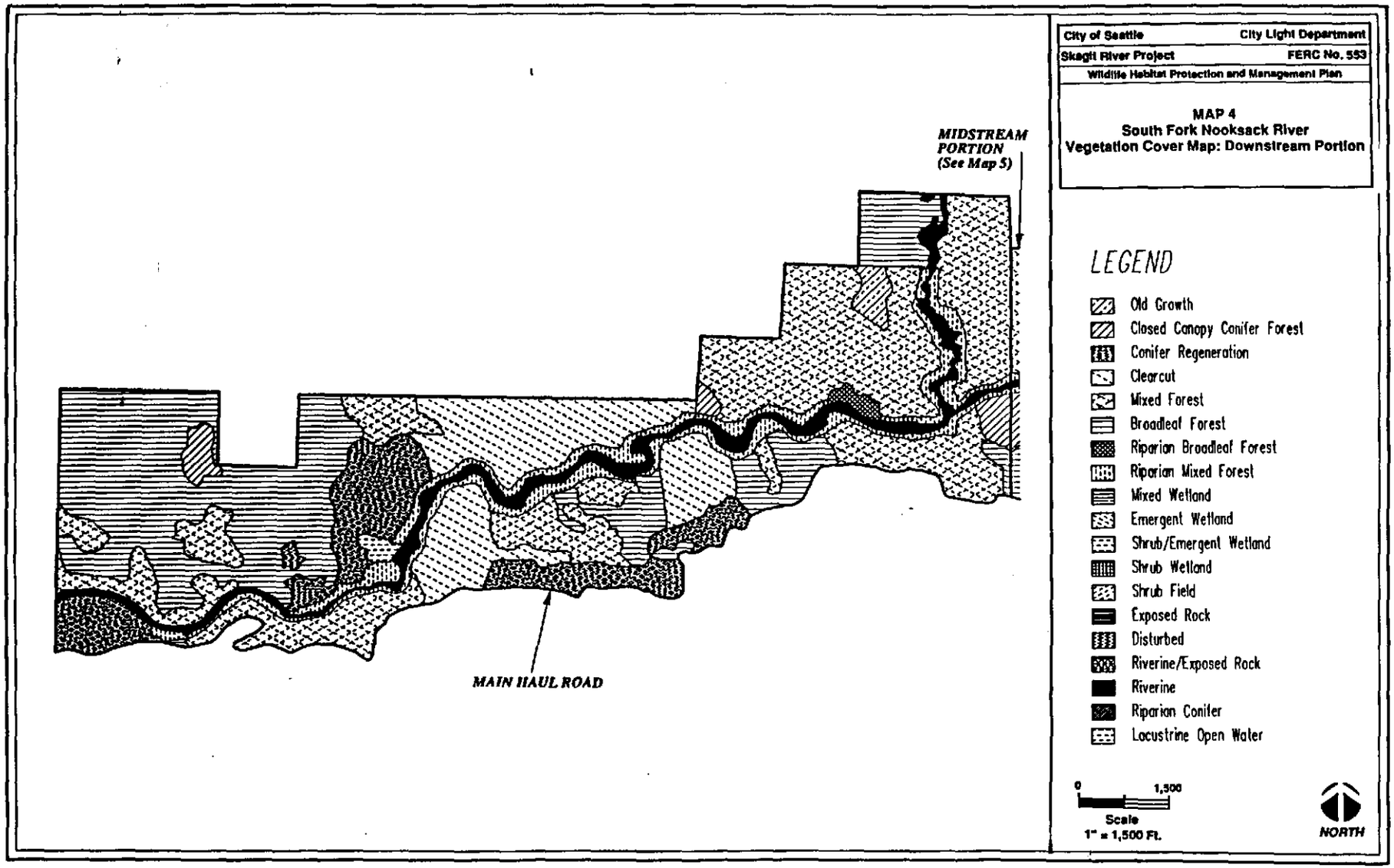
Vegetation/Habitat Classes[2/]	Acres in Parcel								Total
	Causland	F. Martin	Holy Spir. Assoc.	Hurn	Illabot Roost	Ryan	Sauk River	Skagit block	
Upland Types									
Closed-canopy Conifer Forest(CC)	0.0 (0.00%)[3/]	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	25.5 (1.81%)	0.0 (0.00%)	0.0 (0.00%)	68.5 (4.87%)	94.0 (6.69%)
Broadleaf Forest (BF)	0.0 (0.00%)	2.5 (0.18%)	19.8 (1.41%)	0.0 (0.00%)	0.0 (0.00%)	30.0 (2.13%)	87.5 (6.23%)	60.0 (4.27%)	199.8 (14.21%)
Mixed Forest (MF)	36.9 (2.63%)	0.0 (0.00%)	23.6 (1.68%)	8.8 (0.63%)	126.9 (9.03%)	0.0 (0.00%)	0.0 (0.00%)	15.4 (1.10%)	211.6 (15.05%)
Regenerating Conifer (CR)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	343.4 (24.43%)	343.4 (24.43%)
Cutting Units (CU)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	1.6 (0.11%)	44.0 (3.13%)	108.8 (7.74%)	154.4 (10.98%)
Transmission Line (TL)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.1 (0.01%)	0.0 (0.00%)	38.0 (2.70%)	38.1 (2.71%)
Riparian Types									
Riparian Broadleaf (rB)	11.7 (0.83%)	11.2 (0.80%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	8.7 (0.62%)	0.0 (0.00%)	31.6 (2.25%)
Riparian Mixed Forest (rM)	0.8 (0.06%)	0.0 (0.00%)	0.0 (0.00%)	13.7 (0.97%)	39.5 (2.81%)	2.7 (0.19%)	4.2 (0.30%)	0.0 (0.00%)	60.9 (4.33%)
Wetland Types									
Shrub Wetland (SW)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	9.5 (0.68%)	20.5 (1.46%)	30.0 (2.13%)
Shrub/Emergent Wetland (S/EW)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	73.8 (5.25%)	73.8 (5.25%)

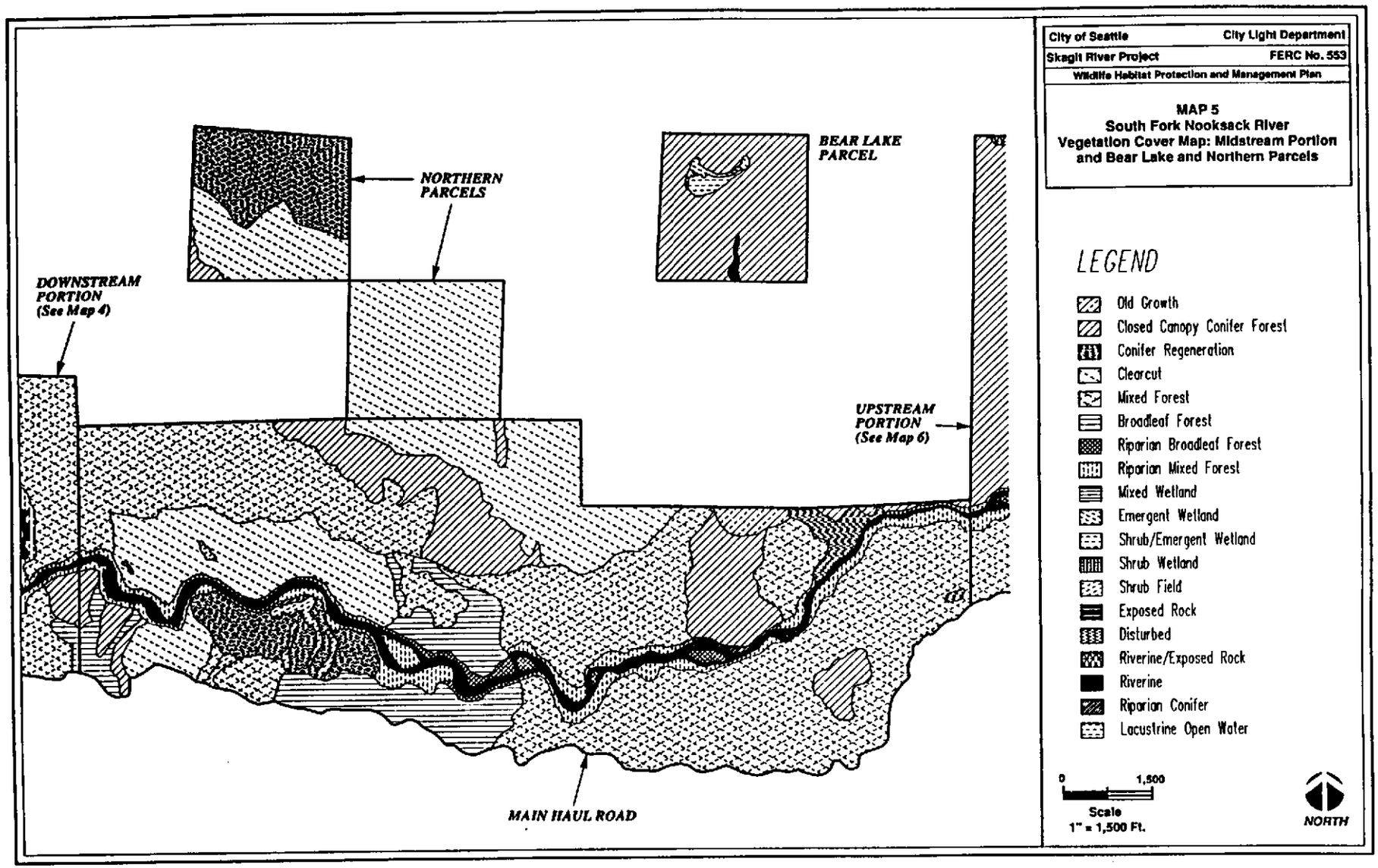
Table 4-2 (cont.). Vegetation/Habitat Acreages in the Skagit and Sauk River Area[1/]

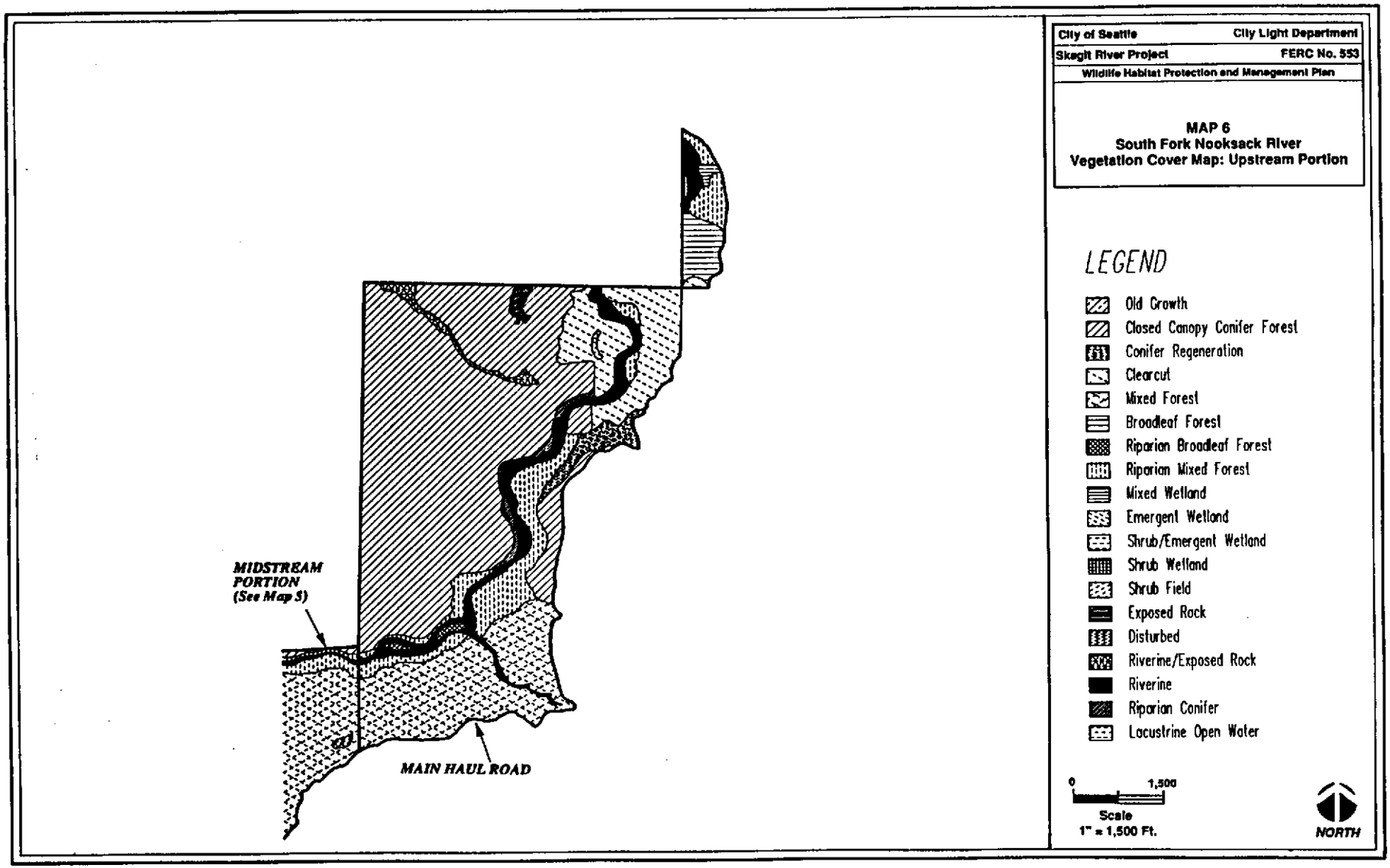
Vegetation/Habitat Classes[2/]	Acres in Parcel								Total
	Causland	F. Martin	Holy Spir. Assoc.	Hurn	Illabot Roost	Ryan	Sauk River	Skagit block	
Non-vegetated Types									
Riverine	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	17.1 (1.22%)	0.0 (0.00%)	17.1 (1.22%)
Exposed Rock (ER)	0.0 (0.00%)	0.0 (0.00%)	2.1 (0.15%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	2.1 (0.15%)
Pasture (P)	51.0 (3.63%)	16.3 (1.16%)	0.0 (0.00%)	68.9 (4.90%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	136.2 (9.69%)
Residential (RES)	5.1 (0.36%)	0.0 (0.00%)	0.0 (0.00%)	3.7 (0.26%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	8.8 (0.63%)
Disturbed (DS)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	0.0 (0.00%)	2.9 (0.21%)	2.9 (0.21%)
Total Acres	105.5	30.0	45.5	95.1	191.9	34.4	171.0	731.3	1,404.7

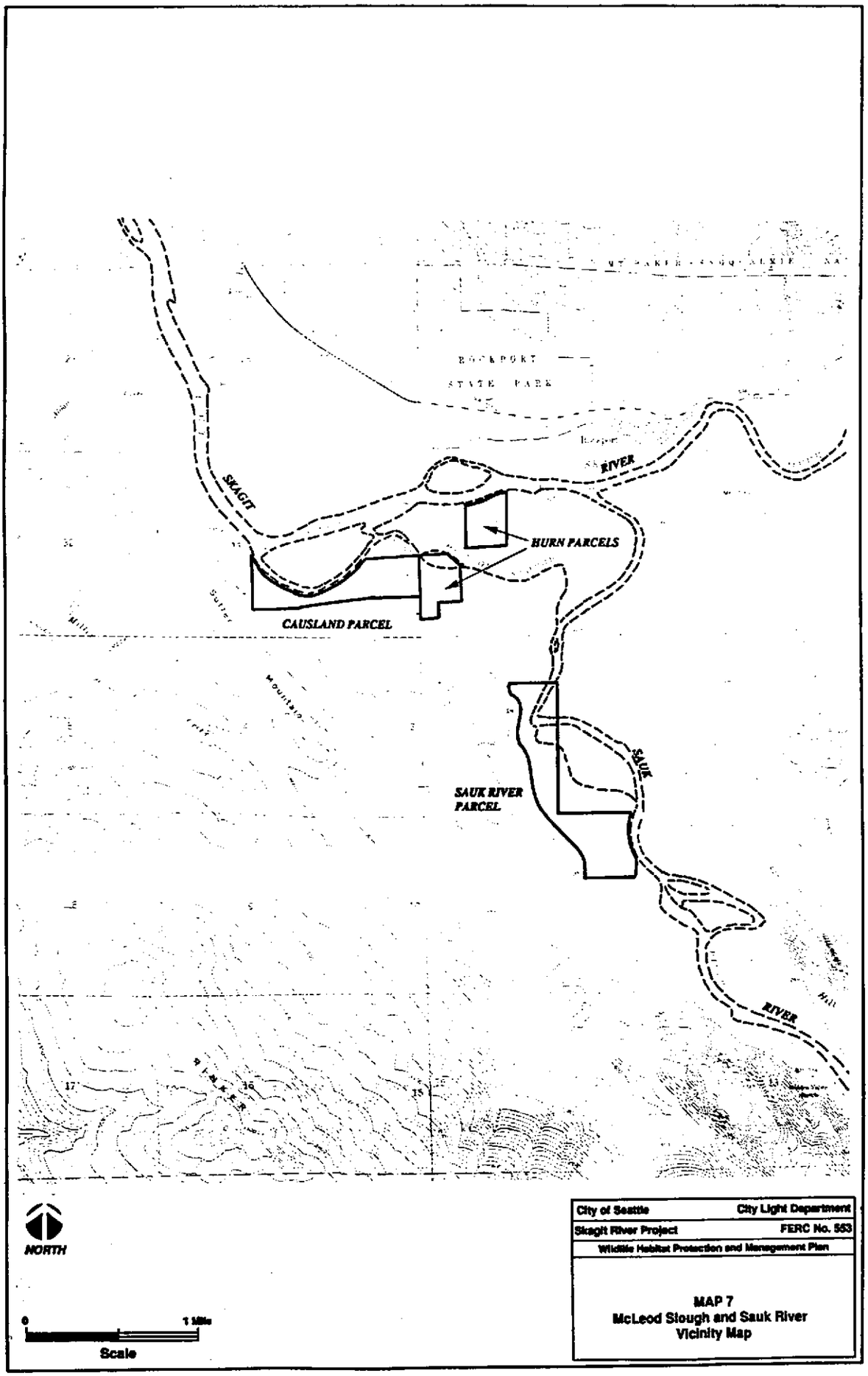
[1] Based on 1987 aerial photography. Revisions based on 1990 fixed-wing overflights.
[2] See Appendix B for description of cover types.
[3] Percent of total Skagit and Sauk River study areas.

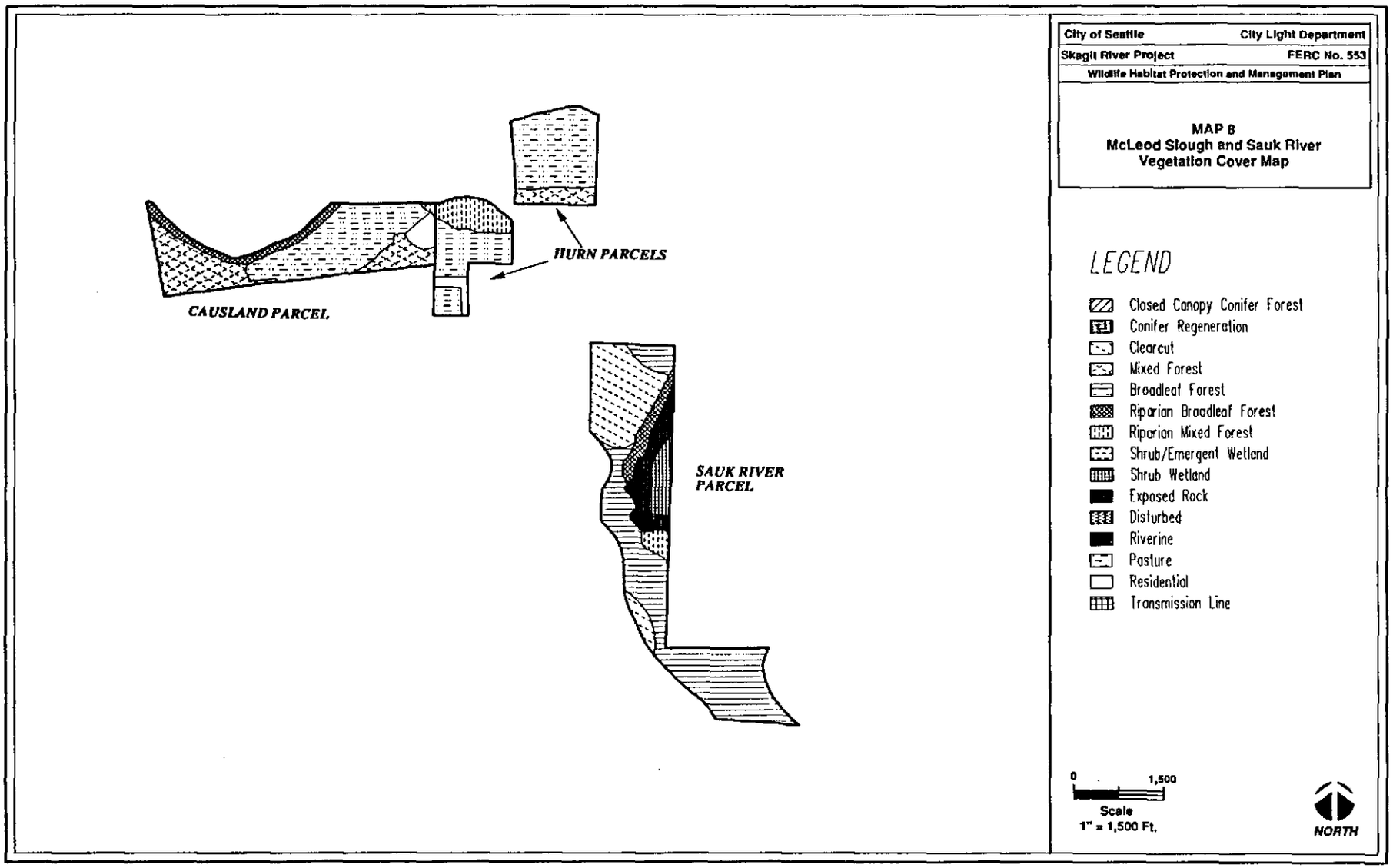

LEGEND
RIPARIAN CORRIDOR BOUNDARY
SOUTH FORK NOOKSACK RIVER
BEAR LAKE PARCEL
NORTHERN PARCELS
UPSTREAM PORTION (See Map 6)
MIDSTREAM PORTION (See Map 5)
DOWNSTREAM PORTION (See Map 4)
0
1 Mile
Scale
NORTH
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 3
South Fork Nooksack River Vicinity Map

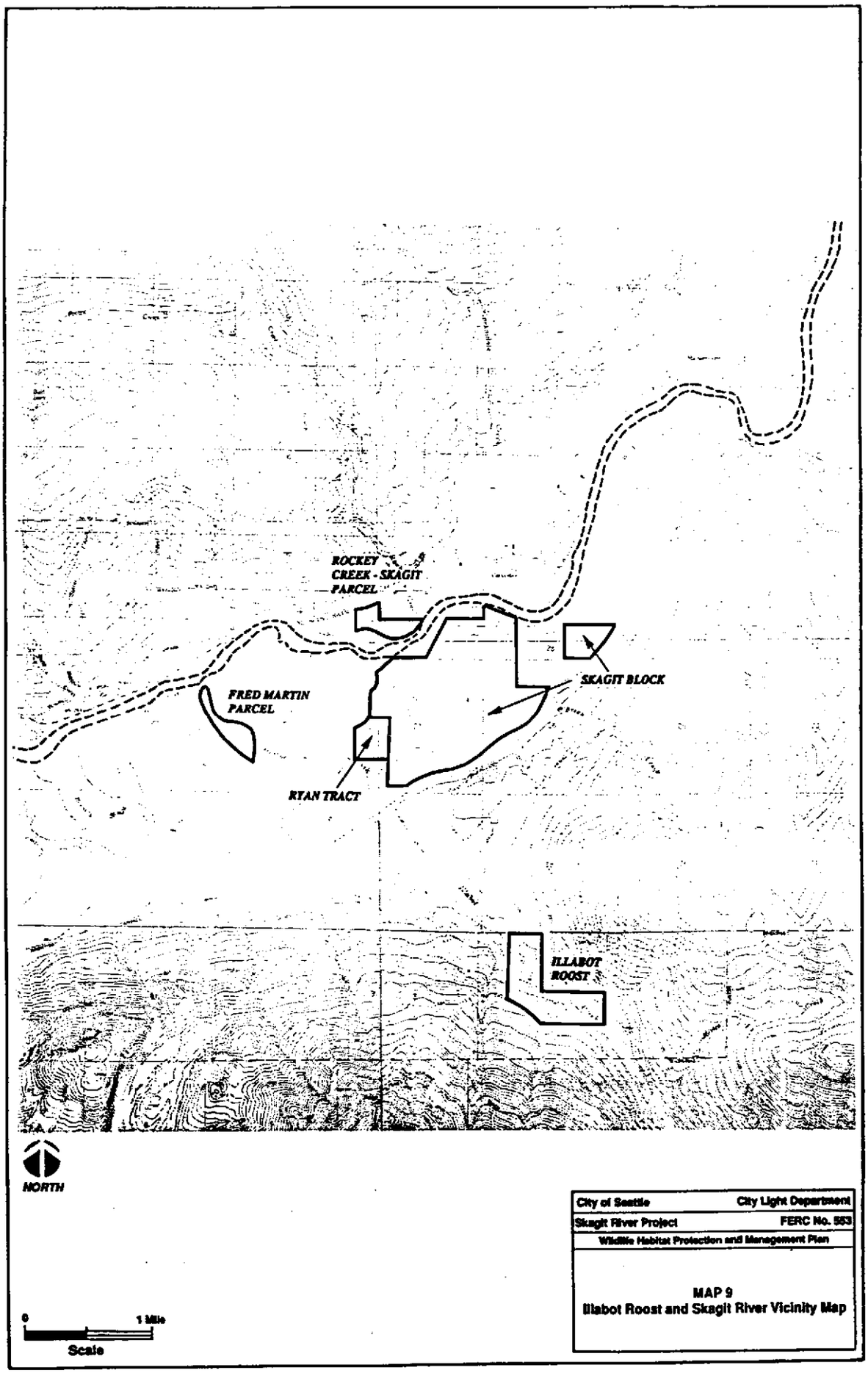

City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 4
South Fork Nooksack River
Vegetation Cover Map: Downstream Portion
MIDSTREAM PORTION (See Map 5)
MAIN HAUL ROAD
LEGEND
Old Growth
Closed Canopy Conifer Forest
Conifer Regeneration
Clearcut
Mixed Forest
Broadleaf Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Mixed Wetland
Emergent Wetland
Shrub/Emergent Wetland
Shrub Wetland
Shrub Field
Exposed Rock
Disturbed
Riverine/Exposed Rock
Riverine
Riparian Conifer
Locustrine Open Water
0
1,500
Scale
1" = 1,500 Ft.
NORTH


City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 5
South Fork Nooksack River
Vegetation Cover Map: Midstream Portion and Bear Lake and Northern Parcels
NORTHERN PARCELS
BEAR LAKE PARCEL
DOWNSTREAM PORTION (See Map 4)
UPSTREAM PORTION (See Map 6)
MAIN HAUL ROAD
LEGEND
Old Growth
Closed Canopy Conifer Forest
Conifer Regeneration
Clearcut
Mixed Forest
Broadleaf Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Mixed Wetland
Emergent Wetland
Shrub/Emergent Wetland
Shrub Wetland
Shrub Field
Exposed Rock
Disturbed
Riverine/Exposed Rock
Riverine
Riparian Conifer
Lacustrine Open Water
0
1,500
Scale
1" = 1,500 Ft.
NORTH


City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 6
South Fork Nooksack River
Vegetation Cover Map: Upstream Portion
LEGEND
Old Growth
Closed Canopy Conifer Forest
Conifer Regeneration
Clearcut
Mixed Forest
Broadleaf Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Mixed Wetland
Emergent Wetland
Shrub/Emergent Wetland
Shrub Wetland
Shrub Field
Exposed Rock
Disturbed
Riverine/Exposed Rock
Riverine
Riparian Conifer
Lacustrine Open Water
MIDSTREAM PORTION (See Map 5)
MAIN HAUL ROAD
0
1,500
Scale
1" = 1,500 Ft.
NORTH

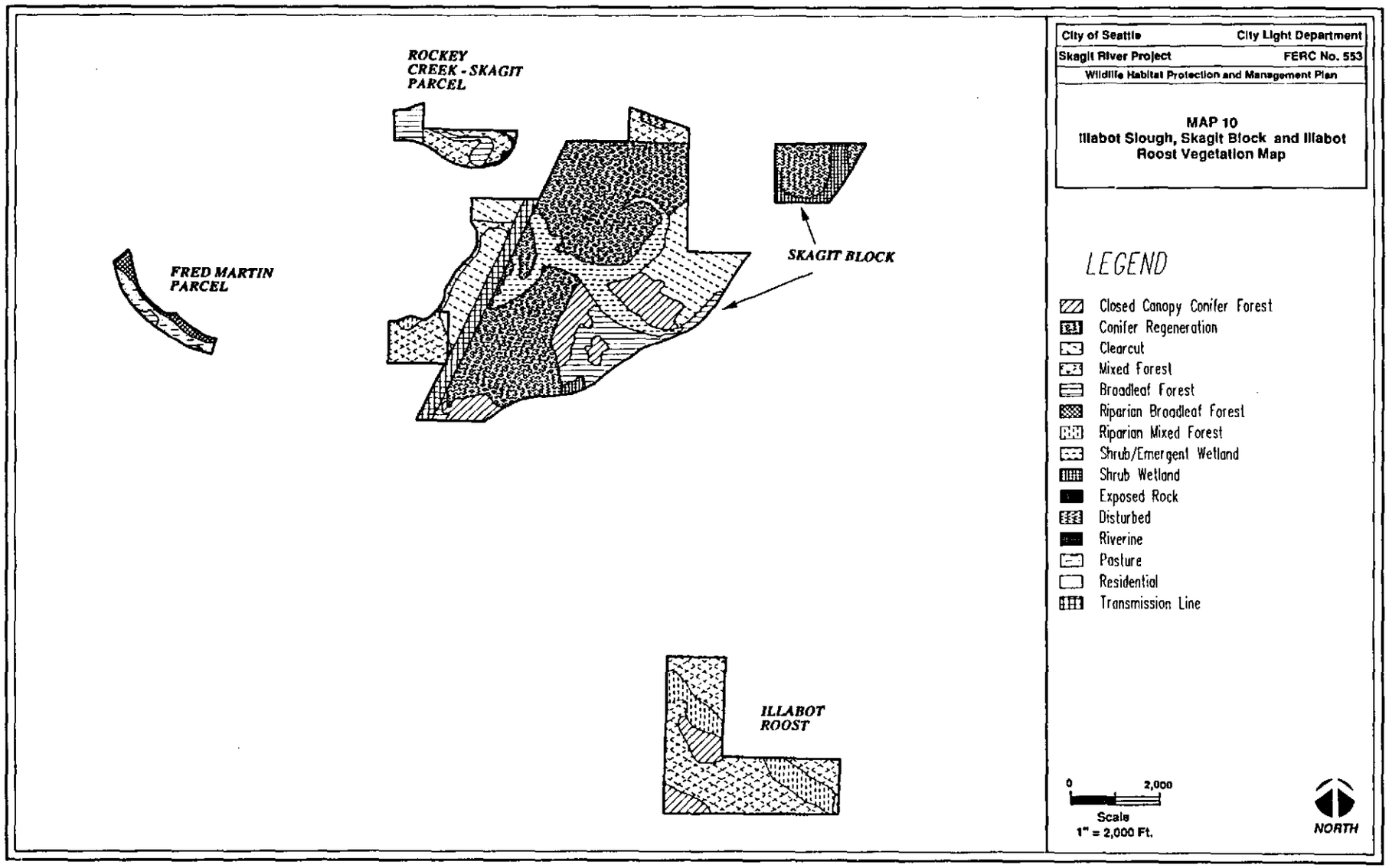

ROCKPORT
STATE PARK
SKAGIT
RIVER
HURN PARCELS
CAUSLAND PARCEL
SAUK
SAUK RIVER
PARCEL
RIVER
NORTH
0
1 Mile
Scale
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 7
McLeod Slough and Sauk River
Vicinity Map


City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 8
McLeod Slough and Sauk River
Vegetation Cover Map
HURN PARCELS
CAUSLAND PARCEL
SAUK RIVER PARCEL
LEGEND
Closed Canopy Conifer Forest
Conifer Regeneration
Clearcut
Mixed Forest
Broadleaf Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Shrub/Emergent Wetland
Shrub Wetland
Exposed Rock
Disturbed
Riverine
Pasture
Residential
Transmission Line
0
1,500
Scale
1" = 1,500 Ft.
NORTH



City of Seattle	City Light Department
Skagit River Project	FERC No. 553
Wildlife Habitat Protection and Management Plan	

MAP 9
Illabot Roost and Skagit River Vicinity Map


ROCKEY
CREEK - SKAGIT
PARCEL
FRED MARTIN
PARCEL
SKAGIT BLOCK
ILLABOT
ROOST
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 10
Illabot Slough, Skagit Block and Illabot
Roost Vegetation Map
LEGEND
Closed Canopy Conifer Forest
Conifer Regeneration
Clearcut
Mixed Forest
Broadleaf Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Shrub/Emergent Wetland
Shrub Wetland
Exposed Rock
Disturbed
Riverine
Pasture
Residential
Transmission Line
0
2,000
Scale
1" = 2,000 Ft.
NORTH

5.0 HABITAT ENHANCEMENT MEASURES

The City and the wildlife intervenors and tribes have discussed many approaches to provide wildlife habitat in the study area, including specific habitat enhancement methods and goals. Several measures have been identified for implementation and/or consideration and are discussed below.

5.1 OBJECTIVES AND INTENT

The objectives and intent of this section are to:

- Develop an enhancement program for the maintenance of elk forage areas on the South Fork of the Nooksack River lands that will meet agency concerns for long-term maintenance of habitat for the winter elk herd, conserve funds so that the maximum is available for land acquisition, and be practical to accomplish.

- Develop other low-intensity enhancements (e.g., wetlands rehabilitation) as indicated by field reviews and supported by the Wildlife Management Review Committee.

5.2 MAINTENANCE OF ELK FORAGE AREAS

Elk (*Cervus elaphus*) forage extensively in small (less than 20 acre) openings and clearcut units adjacent to forest stands. Forage areas tend to consist of less than 60 per cent combined canopy closure of trees and tall (greater than 7 feet) shrubs. Forage use tends to be highest within 200 feet of the forest edge and declines precipitously with distance into the interior of large clearcuts. Consequently, maintaining small clearcuts in early seral stages and in close proximity to forest cover is the primary focus of this management plan.

Clearcutting small (less than 20 acres) units in combination with prescribed burning is a widely accepted practice for providing forage opportunities for elk. Burning slash created by timber harvesting also improves access to forage areas for elk. Following burning of a site, fertilization and seeding with both native and non-native species is often used to increase forage quantity and quality. These particular techniques will be used to provide elk forage areas in the study area.

Approximately 20 percent of the lands to be acquired in the South Fork of the Nooksack River basin have been harvested. Most of the adjacent lands are in ownerships that are practicing commercial forestry. While these ownerships are currently providing an overabundance of open forage areas, in the future there will be a period of 20 to 40 years that forage areas may become limiting. Furthermore, the mature forest canopy is rapidly being depleted by logging and will soon exist only on the City's lands. Logging in this area has been extensive and has resulted in declines primarily in elk winter range (personal communication, M. Davidson, Washington Department of Wildlife, 5 October 1990). Consequently, restoration of elk winter range is the primary objective of this management plan. Deer and other species are also expected to benefit incidentally from restoration of elk range.

5.2.1 Objectives

The Parties to the Settlement Agreement have agreed that it is appropriate to periodically maintain harvested areas in the South Fork of the Nooksack River basin in open, high-quality forage conditions and to preserve the mature or maturing forest canopy on the remaining lands as cover for elk and other wildlife species. No manipulations are proposed for elk in mature forest areas. The specific habitat enhancement measures are as follows:

1) Maintain or restore approximately 5 to 20 percent of the total area in the South Fork of the Nooksack River basin as grass and forb plant communities within portions of the wildlife lands in the South Fork of the Nooksack River basin. The Parties to the Settlement Agreement will apportion the monies available for land acquisition and habitat enhancement as provided in Sections 3.2 and 3.3.

2) Provide distribution of forage areas throughout the riparian corridor.

3) Provide for long-term retention of these areas in early seral stages through the use of prescribed burning.

4) Provide at least one area for public viewing of elk.

5) Re-establish riparian buffers of trees where these areas were removed in the past by logging.

6) Assure proper fire safety and take precautions to prevent spread of fire outside of designated burn areas.

7) Minimize the cost of these measures since habitat acquisition, the primary emphasis of this plan and habitat enhancement draw on the same funding.

Once the specific lands have been acquired by the City, management sites will be identified and located on project maps. Site plans will be prepared in consultation with the Wildlife Management Review Committee (WMRC), and a schedule of treatment will then be developed. The WMRC will approve the plans (see Section 2.4) before habitat enhancement monies are spent. The general management prescription to be used on these sites is discussed below.

5.2.2 Management Prescription

In order to obtain 5 to 20 percent of the area in forage, the City will actively manage clearcut units to maintain them in an early seral stage. Prescribed burn in clearcut units will be the primary method for maintaining existing openings. Only clearcuts that have not been reforested and are less than 20 years old will be burned. Ideally, only openings with slopes less than 50 percent will be maintained since steeper areas tend to receive low use by elk. In addition, openings will be maintained at no larger than 20 acres and within 200 feet of forest cover. For larger clearcuts, a mix of 20 acre openings will be maintained while the remaining portion will be allowed to

revegetate to provide elk hiding and thermal cover. Older clearcut units (greater than 20 years old) dominated by regenerating conifers will be allowed to reforest.

Preparation of clearcut units will involve two steps. The first step will include burning the site on a three-year cycle for the first 6 years and every five years thereafter for the term of the new license. Burning will be used to reduce slash and prepare the site for grass and forb seeding. Burning will occur following fall rains when alder and other undesirable species are particularly vulnerable to fire and conditions are optimal for seeding. Once burning is completed for each cycle, Step 2, fertilization and seeding of sites will occur. The Rocky Mountain seed mix used by USFS will be planted on relatively flat areas since this mixture provides for uniform growth of grasses and forbs (personal communication, M. Davison, WDW, 5 October 1990). The Scott Paper seed mix will be used on steeper areas since this mixture contains ryegrass that is especially useful in binding soil. Native seed species will be used wherever possible. Fertilization and seeding will occur during the first two burning cycles (i.e., first six years) and seeding alone will continue on a five-year cycle. A cost breakdown of prescribed burning and other forage area maintenance techniques (see section 5.2.6 for description) is in Table 5-1.

In addition to the site preparations already described, at least one clearcut unit will be maintained as an area for viewing elk. The City will consult with the WDW to determine which of the clearcut units would provide the public maximum viewing access to elk.

5.2.3 Factors Affecting Burning Prescription

Variables that can be used in developing prescriptions include fire, fuels, vegetation, soil, weather, time, National Fire Danger Rating System variables, and firing technique.

Fire—Flame length is probably the fire variable which is the most used. Together with wind and temperature, flame length influences scorch height which attacks the bark of the trees within the burning unit.

Fuels—Moisture Content (MC) by size class determines how each size class of fuel burns and how fast it will burn. Low MC may be desired in fine fuels in order to carry fire, but high MC may be preferable in large fuels to reduce heat output. Distribution of fuels through crushing or other pretreatments may be necessary to modify burning. Duff moisture content strongly influences how much of the duff will burn and the decision to expose or protect mineral soil.

Vegetation—The state of vegetation, whether active or dormant, can modify the effects of fire. Elsewhere, chemicals may be used as a desiccant or defoliator before burning. Moisture level of the plant tissue may make a difference in whether or not it is consumed by the fire; this in turn modifies the fire characteristics.

Soil—Moisture content is especially important in the sprouting of some plants and for potential soil modification.

Weather—Relative humidity strongly influences fine fuel MC and thus determines how a fire will burn, if at all. Temperature influences how fast fuels will dry and also their final MC. Wind is

very important in determining how a fire behaves and influences scorch height. Precipitation is especially important in affecting the MC of fuels, plants and soil.

Time—The season relates strongly to expected plant conditions, sprouting ability, and seed sources. Diurnal (daily) changes in temperature, humidity, and wind can help achieve the desired prescription condition.

Firing techniques—A variety of firing techniques, such as head fire, backfire, and flank fire, can be used to guide how and where a fire is ignited.

5.2.4 Burn Plan Contents

An adequate prescribed burning plan will be developed in advance of the treatment using an interdisciplinary approach. The plan should address all or most of the following areas and be recorded on the burning plan field form see Figure 5-1):

1) Description of the burn unit, including map which contains vegetation, topography, slope and aspect, soil type and characteristics, fuel tonnages, duff and litter depth, and fuel type classification.

2) Statement of the wildlife management objective to be accomplished by this treatment.

3) Identification of the level of complexity of the fire and the appropriate organization needed.

4) A job safety and health hazard analysis.

5) Provisions for public safety and protection of environmentally sensitive areas.

6) Source of funding and estimated cost.

7) The range of acceptable results expected, quantified if possible.

8) The fire prescription containing the set of variable factors needed to achieve the desired results.

9) Provisions to contain the fire within the burn unit including firing, sustained burning, patrol and mopup.

10) Provisions for inter/intra-agency preburn coordination and where applicable, public involvement and burn day notification.

11) Provisions to satisfy smoke management requirements of DNR.

Figure 5-1. Prescribed Burning Field Form

FOREST	DISTRICT	FY-
TRI COMPARTMENT (NAME & NUMBER)	GRID NUMBER	BURN UNIT
LOCATION: T_____, R_____, S_____	GROSS AREA	NET AREA
I&E CONTACTS	APPROPRIATION(S)	
	EAR PREPARED BY	DATE

BURN AREA DESCRIPTION: DESCRIBE TREES & SHRUBS OVER 12 FEET TALL, SHRUBS & TREES UNDER 12 FEET, AND GRASSES AND FORBS.

ECOCLASS CODE(S)_____ TOPOGRAPHY_____ SLOPE_____ ASPECT_____

SOIL TYPE(S) & DESCRIPTION_____

FUELS (NATURAL &/OR ACTIVITY)

0 -¼" SIZE CLASS_____T/A SHRUBS_____T/A TOTAL_____T/A

¼"-1" SIZE CLASS_____T/A HERBACEOUS_____T/A

1"-3" SIZE CLASS_____T/A DUFF DEPTH_____IN FUEL CLASSIFICATION_____

3" + SIZE CLASS_____T/A SURFACE FUEL DEPTH_____FT NFDR FUEL MODEL_____

MANAGEMENT GOALS OF THIS BURN

OBJECTIVES OF BURN	(CHECK)	(SPECIFICS)
HAZARD REDUCTION		
SILVICULTURE		
SITE PREPARATION		
WILDLIFE HABITAT		
RANGE MANAGEMENT		
INSECT/DISEASE CONTROL		
SPECIES MANIPULATION		
OTHER		

BURNING PRESCRIPTION

SEASON_____ TEMPERATURE (RANGE) ___to___°F WIND DIRECTION:

TIME OF DAY_____ RH (RANGE) ___to___% PREFERRED_____

DAYS SINCE RAIN_____ WIND SPEED (RANGE) ___to___MPH ACCEPTABLE_____

FUEL MOISTURES: 1 HR TL_____%, 10 HR TL_____%, 100 HR TL_____%,
1000 HR TL_____%, DUFF_____%, SHRUB_____%, HERBACEOUS_____%

FLAME LENGTH: MAXIMUM_____, AVERAGE_____ FLAME HEIGHT_____

ALLOWABLE SCORCH HT (FT): CROWN___, BOLE___ NFDR DATA: BI___, ERC___, IC___, SC___

FIRING PATTERN_____ IGNITION METHOD_____

LOGISTICAL INFORMATION

CHAINS LINE TO CONSTRUCT: TRACTOR___ HAND___ OTHER (SPECIFY)___ TOTAL_____

CHAINS LINE TO FIRE: EXTERIOR___ INTERIOR___ TOTAL_____

MANPOWER NEEDS: UNIT PREPARATION_____ BURNING_____

HOLDING_____ MOPUP_____

EQUIPMENT NEEDS: UNIT PREPARATION_____

BURNING_____

HOLDING_____

MOPUP_____

BURN SUMMARY

DATE BURNED_____ TIME OF DAY_____ DAYS SINCE RAIN___ SEAS. PRECIP TO DATE___IN.

ACTUAL WEATHER: TEMP___ RH___ WIND SPEED & DIRECTION_____ NFDR BI_____

FUEL MOISTURES: 1 HR___ 10 HR___ 100 HR___ 1000 HR___ BRUSH___ HERBACEOUS___

FIRE BEHAVIOR: ROS_____CH/HR, AVERAGE FLAME LENGTH_____FT, HEIGHT_____FT

SCORCH HEIGHT: BOLE_____FT, CROWN_____FT

BURN EVALUATION (If additional space is needed, use additional sheet)_____

PLAN PREPARED BY:_____DATE_____

PLAN REVIEWED BY:_____DATE_____

PLAN APPROVED BY:_____DATE_____

12) Provisions for post burn evaluations including documentation of burn day conditions, fire behavior, smoke dispersal, fire effects and results.

13) Identification of contingency actions to be taken if the fire exceeds prescription parameters.

14) A risk assessment that portrays the probabilities and consequences of success/failure.

15) Provisions for a test fire and recording the results.

5.2.5 Regulatory Requirements and Smoke Management

Burning will be conducted according to the requirements of the Washington Department of Natural Resources which issues burning permits and imposes equipment requirements, size limitations and timing limitations to insure safe burning and to meet the smoke management requirements of the area.

Burning will also be in accordance with the permit requirements of the Department of Ecology which are incorporated into the Department of Natural Resources's permitting process.

5.2.6 Alternatives to Burning

When smoke management concerns or safety considerations discourage the use of burning methods, the other methods of site preparation available are manual slashing and herbicide application.

Manual and Mechanical Means

The cutting away of woody brush, emerging hardwoods and other trees mechanically can temporarily restrain natural plant succession in an area where grasses/forbs are established. The work will be done with hand tools, weed eaters with metal blades, or chainsaws because almost all of the forestry sites are too uneven to allow mowing. By timing the manual removal to the bud-breaking period, the resprouting of alders from stumps can be reduced to an acceptable level of 20 percent or less.

The manual/mechanical alternative may be preferable to prescribed burning for some sites or some purposes and will be evaluated further as site-specific plans are developed.

Herbicide Treatments

Herbicide applications in tree plantations could be used to stunt the growth of woody brush and emerging trees, thus favoring the continued growth of grass and forbs. There are many concerns regarding the use of this family of chemicals, including pollution of nearby surface and groundwater, toxic effects on nontarget flora and fauna (especially amphibians), and worker exposure.

Given the suitability of either burning or manual methods to accomplish the objectives of maintaining browse areas at a reasonable cost, the use of chemicals is found to not be necessary, and is therefore not a suitable alternative given the City's policy to minimize the use of toxic chemicals. Herbicide use will not be considered further unless burning or manual methods are later found to be unsuitable for a particular site or purpose.

Cost comparisons between manual and herbicide treatments and prescribed burning are in Table 5-1.

5.2.7 Equipment and Labor Requirements

Prescribed Burning

Staff requirements vary according to the size, complexity and fire method employed (broadcast, or pile and burn). The cost estimates shown in Table 5-1 reflect, among other things, the different staffing levels.

A variety of fire suppression vehicles are required for a burn, including one or more large water tank/pumper trucks.

Other Methods

Manual or mechanical slashing of target species is usually accomplished with one or more crews of two or three people each in addition to a field supervisor.

Chemical applications require a minimum of two licensed workers to refuel from the tank truck and fly a helicopter when aerial applications are involved. One or two observers are also employed representing the landowner and/or manager.

5.2.8 Opportunities for Contracting

Development of fire prescriptions will be part of the overall wildlife plan administered by the City or its management consultant.

Implementation of a site preparation project can be contracted to an existing agency that retains qualified forest workers and to available private firms providing forestry services.

5.3 WETLANDS AND OTHER HABITAT REHABILITATION

In the Nooksack River area and elsewhere there are several locations where logging on-site or on lands up-slope from the river corridor have had negative impacts on the land and habitat. One example is a small mixed forested wetland area in the upstream portion of the Nooksack which has had logging debris and silt carried into it from upslope logging. This and some other areas could be rehabilitated and brought back to more optimal habitat conditions. This work will occur only

after the approval of rehabilitation planning by the Wildlife Management Review Committee (see Section 2.3).

5.4 SNAG DENSITY EVALUATION

Snag management is a widely accepted practice for providing nesting opportunities for cavity-nesting birds. Snag densities can be easily manipulated in the field and cavity-nesters respond readily to increases in snags of the appropriate size class where snags are scarce. The pileated woodpecker (*Dryocopus pileatus)* is known to respond to snag management and has often been used as an indicator of the overall quality of habitat for a variety of cavity-nesting birds. Optimal snag densities for the pileated woodpecker occur when the number of snags greater than 20 inches dbh (diameter at breast height) exceeds 0.17 snags/ acre. It is assumed that when these conditions are met that snag densities are also optimal for primary cavity nesters with smaller dbh requirements (e.g., downy woodpecker, hairy woodpecker, etc.).

A snag density analysis was performed on a portion of the closed canopy forests in the Nooksack basin study area. This particular habitat type was chosen since snags in other habitat types such as hardwoods tend to decay rapidly, thereby making snag management programs ineffective for hardwoods. Snags were sampled in 0.20 acre circular plots located within 12 forested polygons and total snag densities were calculated for several diameter classes. These estimates were then compared to optimal snag densities for pileated woodpeckers as defined by Habitat Suitability Index (HSI) models (i.e., 0.17 snags greater than 20 inches dbh/acre).

Results of the snag density analysis for closed canopy forest indicate that each of the polygons exceeded optimal snag densities for pileated woodpeckers (see Table 5-2). Consequently, a snag management program to increase snag densities for cavity nesters is not recommended for closed canopy forests in the Nooksack basin study area.

5.5 NOOKSACK WILDLIFE MONITORING PROGRAM

A monitoring program will be established to assess the success of the elk habitat management and wetlands rehabilitation manipulations. Monitoring will be low intensity and linked with annual surveys conducted by the Washington Department of Wildlife in the Skagit-Nooksack drainages. High-intensity monitoring will be unnecessary because the manipulations will follow standard wildlife management techniques that have a demonstrated record of successful application. The length of the monitoring program will be until the end of the new license.

The elk monitoring program will include annual counts of elk observed in the manipulation areas and oversight of the City's adherence to the manipulation elements of the Wildlife Plan. Counts will be conducted by the WDW area biologist during the late winter to early spring, when elk use should be highest and forage availability most critical. These counts will be conducted in accordance with survey techniques currently followed by the WDW in order to maintain consistency with existing data for determining population trends and habitat use patterns in the Skagit-Nooksack drainages. These counts will be provided by the WDW to the City for its reporting (see below in this section). In addition, the habitat manipulation measures will be

routinely tracked to ensure that they are being fully implemented according to the stated schedule. No other actions will be conducted to monitor the elk habitat manipulations.

Wetlands monitoring will focus on confirming that the measures taken to rehabilitate the wetland areas are completely implemented in the target areas. An evaluation of the recovery of the areas will be made by field inspection.

A brief report will be prepared by the City which will describe the results of the monitoring efforts and will incorporate the information developed by the WDW. The report will document the number of elk using the management areas, and summarize survey results from previous years in order to show trends in elk use. Lastly, the report will describe the progress and status of the elk habitat manipulation management and wetlands rehabilitation measures relative to the schedule. The report will be submitted to the WMRC for review and comment. The monitoring reports will be prepared annually for the first five years. Thereafter, the reports shall be prepared on a biennial schedule (or other time frame as determined by the WMRC). These monitoring reports will be included in the City's reports on the Wildlife Plan (see Section 2.4).

The estimated cost of the monitoring plan is given in Section 5.9 and Table 5-3. The budget will cover costs of producing and distributing the report and unanticipated miscellaneous expenses. There are no salary expenses, since the monitoring effort will be incorporated into the wildlife census annually conducted by the WDW.

5.6 TRANSMISSION RIGHT-OF-WAY ENHANCEMENT MEASURES

The City began several years ago, at its own initiative, to reduce the use of herbicides on the transmission right-of-way (ROW) and to better protect natural values. The City proposes to continue this reduction in the use of herbicides and pesticides, to expand upon the measures for the environmental management of the ROW, and to provide for increased consideration of wildlife needs in ROW management.

5.6.1 Objectives

- Increase consideration and provision for wildlife values and needs in management planning for transmission right-of-way corridor
- Continue to seek ways to reduce or eliminate the use of herbicides and pesticides

5.6.2 Vegetation Management

The Settlement Agreement on Recreation and Aesthetics provides guidance for vegetation management and visual quality in the transmission right of way (ROW) from the Skagit facilities to the Bothell Substation. The Settlement Agreement addresses several objectives including:

- electrical service safety and reliability
- regrowth and promotion of low-growing plant species
- visual quality and aesthetics improvements

- wildlife habitat enhancement and protection of riparian/stream habitats

Wildlife habitat values and considerations will be incorporated into ROW management through the provision of better cover and habitat diversity and a reduced use of herbicides.

Several vegetation management techniques are available to accomplish the ROW management objectives. The particular mix of techniques will depend on the location and site conditions. Also contributing to the selection and availability of techniques is whether or not the City has fee ownership of the ROW. [ROW lands in which the City holds fee ownership are confined almost entirely to within the Ross Lake National Recreation Area (RLNRA), and will be subject to the new MOU which is being developed to provide for consultation with the Park Service—see Appendix D.]

Right-of-way management will continue to remove tall-growing tree species. However, this will be done with greater sensitivity and selectivity—particularly in the RLNRA—and with as little impact as possible to the indigenous low-growing species.

In some locations in the RLNRA the edges of the ROW may be "feathered", blurring the line of the ROW and providing for some additional structural diversity in the vegetation along the ROW edge. In some locations some additional enhancement measures (such as the planting of cuttings of native plants) may be employed as necessary.

The regrowth of shrubs and browse species will be promoted, providing habitat and visual enhancements while competing with and suppressing the growth of the taller trees. The regrowth of some vegetation in the ROW will be promoted to provide visual quality and habitat enhancement where compatible with the other objectives, especially where it can be used to compete with and suppress the growth of taller-growing trees.

5.6.3 Relationship of Visual Quality and Wildlife Concerns in Vegetation Management in the ROW in the Ross Lake National Recreation Area

As part of the Skagit Project Settlement Agreement on Recreation and Aesthetics, special efforts will be made to reduce the visual contrast of the ROW in the RLNRA. Site-specific measures are being developed for several locations to address visual quality concerns.

Wildlife input to this planning will be in the form of review and consultation during the implementation of the ROW management plan. The Wildlife Management Review Committee will be given the opportunity to suggest modifications to site-specific vegetation measures to better provide for wildlife needs and values.

5.6.4 Streamside Management

High-quality streamside area—streams which support fish and provide high-quality wildlife habitat—will be designated for special management. All vegetation in these areas (excepting trees which will present a danger to the lines) will be left undisturbed in these riparian areas.

5.6.5 Herbicide Use Limitations

The use of herbicides will only be allowed for noxious weeds and for treatment of broadleaf stumps to prevent resprouting. The City is investigating the potential for use of natural control of noxious weeds (e.g., by use of insects which are plant-specific in their diets) to further reduce the use of herbicides. Within the RLNRA, herbicides will be used only in consultation and with the consent of the National Park Service.

Spot-spraying will be the only permissible application technique, and only targeted species will be sprayed. All areas selected for application will first be inspected by a plant ecologist in the City Light Department to ensure no environmentally sensitive areas will be affected.

Any herbicides considered for use will first be carefully reviewed for health and safety assurance. No spraying will be done if wind speed is greater than 5 mph or if rain is likely. Stream protection will be at least double the requirement prescribed on the label. This approach will meet concerns regarding both the relative mobility and toxicity of different chemicals and treatments.

5.6.6 Staffing

The transmission ROW is currently administered the City Light Department's Skagit Operations personnel from the hydroelectric facilities to the Sauk River crossing, and by the City Light Department's Transmission and Distribution Division staff from the Sauk River crossing to the Bothell substation. The maintenance planning for the entire ROW is conducted by the Transmission and Distribution Division, with participation and review by the City Light Department's Environmental Affairs Division staff.

5.7 FUNDING

As is described also in Sections 3.2 and 3.7, the City will make available seventeen million dollars ($17,000,000) from which both wildlife lands will be acquired and habitat will be manipulated and enhanced. The Parties to the Settlement Agreement will determine the apportionment of monies between the land acquisition and habitat enhancement programs as provided in Sections 3.2 and 3.3. A best estimate of the final apportionment between acquisition and enhancement is presented in this document (see Section 5.9 and Tables 3-3, 5-3, and 9-1). It is estimated that these funds will be sufficient to acquire these lands and support the enhancement measures. In the event that the monies are not sufficient to acquire all of the identified lands, the Parties to the Settlement Agreement will determine which areas will not be acquired.

Funding for the ROW measures is provided in the Skagit Project Settlement Agreement on Recreation and Aesthetics and is not included in this Wildlife Plan.

5.8 SCHEDULE FOR IMPLEMENTATION

Payments and obligations by the City for the habitat enhancement measures of the Wildlife Plan will be made and met on a license-year basis. License years are based on the date that the City accepts the new license for the Skagit Project. For example, license year 1 will begin on the date of license acceptance and end one year after that date. Habitat enhancement measures for elk and other resources (see Sections 5.2 and 5.3) will be further implemented only after the closing of the sales or easements for properties, and after site-specific management plans have been developed for Nooksack basin parcels and approved by the WMRC (see Section 2.3). The timing of the visual quality improvements in the ROW in the RLNRA will occur as per the Skagit Project Settlement Agreement on Recreation and Aesthetics.

5.9 COSTS OF THE HABITAT ENHANCEMENT PROGRAM

The City will make available a single amount of $17,000,000 (see Sections 3.2, 3.7, and 5.7) from which both the acquisition of wildlife lands and enhancement of habitat will be funded. It is estimated that the funds will be sufficient to acquire these lands and support the enhancement measures. In the event that the monies are not sufficient to acquire all of the identified lands, the Parties to the Settlement Agreement will determine which areas will not be acquired. Procedures for the apportionment and disbursement of these monies are provided in Sections 3.2 and 3.3.

A best estimate of the final apportionment between acquisition and enhancement is presented in Table 5-3. The estimate includes three options for apportioning the monies based on varying proportions of area manipulated for elk.

The costs of the ROW enhancement measures are included in the Skagit Project Settlement Agreement on Recreation and Aesthetics.

TABLE 5-1. Cost Estimates for Forage Area Maintenance Treatment Methods[1/]

Treatment	Cost/Application ($/acre)	Remarks
Scarification	175-200	Necessary for preparation of seed bed and piling of slash
Prescribed Burn	200-250	Depends on site access
Fertilization	25-30	Aerial application
Seeding	40-50	Rocky Mountain or Scott Paper mix
SUBTOTAL	440-530	
OTHER METHODS		
Hand Slash	125-400	Least effective, most short-term, least impacting
Chemical Applications	125-250	Cost includes water monitoring

[1]Based on estimates from L. Anderson, Forestry & Fire Management, Shelton, WA, and B. Green, U.S. Forest Service, Sedro Woolley, WA (personal communications, October 1990).

Table 5-2. Snag Density Estimates for Closed Canopy Forests in the South Fork Nooksack River Basin.[1,2]

Polygon Location	Polygon Number	Number of Plots Sampled	dbh Classes[3]			
			6-10	10-15	15-20	>20
T36N R7E Section 9	40	58	4.74	7.07	4.74	2.16
T36N R7E Section 17	15	31	0.16	0.97	1.13	2.90
T36N R7E Section 16	8	18	0.56	0.28	0.00	1.39
T36N R7E Section 16	9	8	0.00	0.00	0.63	0.63
T36N R7E Section 18	21	6	0.00	0.83	0.00	2.50
T36N R7E Section 18	18	8	0.63	0.00	1.25	13.75
T36N R7E Section 15	38	5	0.00	0.00	1.00	1.00
T36N R7E Section 13	25	2	0.00	0.00	0.00	7.50
T36N R7E Section 15	4	1	0.00	0.00	0.00	5.00
T36N R7E Section 10	4	6	0.83	0.00	0.00	0.83
T36N R7E Section 15	1	7	0.71	2.14	1.43	12.14
T36N R7E Section 10	10	72	5.00	3.75	3.40	4.03

[1]Only conifer snags were included in the analysis.
[2]Optimal snag density for pilieated woodpecker is 0.17 snag greater than 20 inches dbh per acre.
[3]Dbh: diameter (in inches) at breast height.

Table 5-3. Range of Costs of the Habitat Enhancement Program.[1,2/]

Program Component	OPTION 1 (20% forage maintenance)	OPTION 2 (10% forage maintenance)	OPTION 3 (5% forage maintenance)
Prescribed Burn (Elk forage enhancement)	$1,723,000	$862,000	$431,000
Wetland and other habitat rehabilitation	10,000	10,000	10,000
Monitoring Program	5,000	5,000	5,000
Total for Habitat Enhancement Measures	**$1,738,000**	**$877,000**	**$446,000**

[1]Based on a projected license term of thirty (30) years. If the license which is accepted by the City is for a term longer than 30 years, the annual expenditures will be extended at the same amounts set forth in this Agreement, and the related total expenditures will be appropriately increased.

[2]See also Table 3-3.

6.0 PLANT PROPAGATION AND REVEGETATION PROGRAM

6.1 OBJECTIVES AND INTENT

The objectives and intent of the plant propagation and revegetation program are to:

- Revegetate eroded sites on the margins of Ross, Diablo, and Gorge lakes and on the transmission right-of-way (ROW), in order to protect terrestrial and aquatic resources and to improve recreational and visual quality as per the Skagit Project Erosion Control Plan.
- Revegetate overused recreational sites in the Skagit Project Area, as per the Skagit Project Settlement Agreement on Recreation and Aesthetics.
- Maintain genetic integrity of the plants on revegetated sites.
- Consider wildlife needs and benefits in selecting plants for propagation and revegetation of sites.
- Provide contextual vegetation for rehabilitation of Ladder Creek Falls Trail, should this occur in the future. Such rehabilitation would occur under the guidance of the Skagit Project Historic Resources Mitigation and Management Plan and the Ladder Creek Falls Landscape Assessment for the development of which the Historic Plan provides.
- Supplement, on an as-needed basis, the plans for increased vegetation screening and regrowth of natural vegetation in selected locations on the transmission ROW, as per the Skagit Project Settlement Agreement on Recreation and Aesthetics.

6.2 PROGRAM RESPONSIBILITIES

The plant propagation and revegetation program for the Skagit Project Area will be a cooperative effort between the City and the National Park Service. Generally, the City will be responsible for horticultural elements of the program, and will provide funding support for the program. It will develop greenhouse facilities and methods to annually produce 30,000 low-elevation native plants. The Park Service will have lead responsibility for site assessment, field collection of seed, and the transplanting of the plants.

In light of some potentially long lead times for the production of plants (up to four years—see below), the Park Service and the City will jointly develop program objectives which will cover a 10-year period. The City and the Park Service will meet at least annually to review the progress and success of the program and to review the 10-year program objectives.

Skagit Area gardeners/horticulturalists from the City Light Department's Operations Division will oversee and implement the plant propagation program, with program development and reporting assistance from the City Light Department's Environmental Affairs Division (E.A.D.) and

consultation with the Park Service. E.A.D. staff will also facilitate the coordination and cooperative efforts of the City and Park Service. This cooperative planning will be particularly necessary in the first several years of the program, when procedures and methods are still being defined and facilities are being constructed.

6.2.1 Revegetation Site Plans.

The Skagit Project Erosion Control Plan provides details on the identification and selection of sites for erosion control actions. Other sites (e.g., recreational sites affected by heavy recreational use) in the Skagit Hydroelectric Project Area will be identified for rehabilitation and treatment in accordance with direction in the Skagit Project Settlement Agreement on Recreation and Aesthetics and the General Management Plan for the North Cascades National Park Complex (NPS, 1988). This identification of sites will occur as part of the continuing management and review of recreational and other uses in the Project Area and Ross Lake National Recreation Area by the Park Service and the City.

Revegetation plans for the selected sites will be developed by the Park Service and reviewed by the City. The selected revegetation sites will be *a*) seeded with appropriate native species, and/or *b*) planted with plants raised in the City's horticultural facilities, as provided below. In particular, the selection of plant species will be a cooperative effort between horticultural staff of the City and Park Service which will consider the specifics of the site, adequacy of propagation techniques for the plant species in question, the appropriateness of different transplantation and plant reëstablishment methods (e.g., cuttings, nursery-grown plants, direct seeding), the benefits to be provided to wildlife, efficacy in erosion control, and other factors.

6.2.2 Plant Propagation

Locally appropriate seed and/or cuttings will be gathered in situ by the Park Service. The seeds and cuttings will be delivered by the Park Service to the City in Newhalem. The City will provide funding support to the Park Service for this work, as described below (see Sections 6.4 and 6.6).

The City will provide up to 30,000 low-elevation plants annually for the revegetation effort. The exact number of the plants to be produced will be determined by the needs of the sites which are selected for treatment. Plants may need to be held for up to three years before transplanting, and the City will hold and maintain the plants (including, as necessary, repotting of the plants) for the necessary period. Any dead plant materials will be composted at the new horticultural facilities (see Section 6.3.1).

The Park Service has emphasized, and the City agrees, that site-specific native plants should be used to revegetate the sites. Therefore, an important part of the revegetation program is the strict control and accounting of seed/cutting source, and maintenance of genetic integrity of the plants during the propagation phase. The Park Service will be responsible for the source control of plants and seed. The City will develop and implement propagation and record-keeping methods (with review by the Park Service) to ensure the genetic integrity and accurate tracking of site identity of the plants.

6.2.3 Horticultural Facilities

The present horticultural facilities of the City in the Skagit Project Area are not adequate to meet the increased responsibilities described above. The facilities are both too small and too old to properly meet the tasks. In order to provide sufficient space for the propagation of plants and to allow the efficient completion and integration of the various program measures, new horticultural facilities will be needed by the City in the Skagit Project Area. The new facilities will also require a larger area than the present location can accommodate.

The City will therefore upgrade its Skagit Project Area horticultural facilities to enable it to meet these increased responsibilities. This will entail a relocation of the facilities to another site in Newhalem, as well as an expansion of the horticultural operation. A new site for the facilities has been located in the Newhalem area, north of Highway 20 at the western edge of Newhalem. Some existing structures at this site will be removed in preparation for the horticultural facilities.

The City will provide space at or near its facility for the holding of as many as 90,000 plants. This will provide the ability to hold and maintain plants for a period of up to three years before transplanting to the site. The Park Service will also provide space in Marblemount as needed and appropriate for the holding of plants.

6.2.4 Transport and Transplanting.

The City will deliver the plants and accounting of genetic background to the Park Service in Marblemount. The Park Service will transport the plants to the sites, plant them, and provide subsequent supportive maintenance.

6.3 FACILITIES, SUPPLIES AND MATERIALS

6.3.1 New Horticultural Facilities.

Table 6-1 lists the new structures and facilities that will be developed at the new site.

Greenhouses are rigid structures with glass or plastic panels and watering, ventilation, and heating systems. They are used for starting and growing seedlings, rooting some cuttings, and overwintering plants. The new greenhouse will be glazed, and the growing area in the greenhouse will be on one level, with supplementary lighting by high-intensity discharge (HID) lamps such as sodium vapor. The greenhouse area will also have an automatic irrigation system with in-line fertilizing, adequate heating and ventilation. This heated and ventilated propagation facility will be adequate to produce 30,000 low-elevation plants annually, as well to fulfill the ongoing Skagit Project Area responsibilities.

Coldframes are unheated structures which are used for "hardening off" seedlings in spring, and protecting young perennials and shrubs over winter. The new coldframes will be walk-in, efficiently ventilated structures which will provide space for display pots, hanging baskets, etc., as

Table 6-1. New Facilities for the Plant Propagation Program

Structure or Area	Area (in square feet)
Greenhouse growing area	3,000
Coldframe area	3,500
Propagating house	600
Lath house	10,000
Office and workshop	600
Storage sheds	6,000
Storage area for raw compost materials	9,000
Nursery and plant-holding area	43,000 (~1 acre)
Cutting Garden	1,500

well as flats of annuals. This area will have an automatic irrigation system with in-line fertilizing, and the capacity to be heated during severe cold periods.

A propagating house is a rigid structure with heating and other systems to allow the rooting of cuttings and the overwintering of semi-hardy plants. The new propagating house will have an automatic misting system, and adequate ventilation and heating. (Heating is necessary only to the extent of preventing the freezing of plants.) The propagating house will be sited in a shaded area to allow for summer propagation. The facility will also have a workbench area and some storage area.

A lath house is a framework structure which is used for summering rooted cuttings and various shade-loving plants, and the overwintering of hardy shade-loving plants. This will be included in the facilities in order to provide protection to plants from seasonal temperature extremes.

The greenhouse office and workshop will be a structure with a cement floor, fluorescent lights, heat, water, telephone, cabinets, shelves, desks, and benches. This facility will have sufficient

space for the gardening staff offices, desk computer, reference materials, potable water, and restroom facilities.

Storage sheds will be built to allow the storage of tools, supplies and equipment; some of the space will require heating. A lit, ventilated, heated, and locked pesticide storage area will be included. In addition, an area and structure will be provided for the storage and composting of shredded leaves and plants.

An outside nursery and plant-holding area will be provided for the holding and growing of hardy trees and shrubs, annuals and perennials, etc. This area will have an automatic irrigation system with in-line fertilizing, and pathways for the movement of equipment. It will be capable of holding three years' production of plants (i.e., 90-100,000 plants).

A cutting garden will be set aside for experimentation and trial of new plant materials.

The design of the horticultural area will allow ample space for parking, and easy access for heavy equipment (e.g., for snow removal). Fill dirt will be used as necessary to provide a level and insulated (from cold bedrock) nursery area, and an 8-foot-high fence will be erected around the entire compound to keep deer out.

6.3.2 Supplies and Materials

The City will purchase the necessary additional supplies for startup (for example, pots, trays, additional tools) and annual operation (soil mix, etc.). The City will provide computers and software, and training for the staff, so that an accurate accounting of genetics and site origins can be kept, and to facilitate the preparation of reports.

6.4 STAFFING

The City's current gardening and horticultural operation in the Skagit Project Area does not have sufficient staff available to meet new plant propagation program responsibilities.

To meet the requirements of the plant propagation program will require one additional full-time-equivalent (FTE) Gardener for the Skagit Operations staff, with hours distributed throughout the year.

The City Light Department's Environmental Affairs Division will provide program development and reporting assistance to the Skagit Project Area staff. It will also assist in selection of sites and review of site plans, and facilitate the cooperative planning for the program. It is estimated that this will require approximately 50-200 hours of attention in each of the first several years and 40 or less in most other years.

The Park Service will develop revegetation plans for sites and provide review of operations as described above. The Park Service will provide the labor necessary to collect seed and cuttings, and to transplant plants, cuttings, etc. at the sites. The City will provide funding assistance for

staffing and supplies for these Park Service efforts in the amount of $4,500 per year (estimated on average to be divided approximately 2/3 for staffing, 1/3 for supplies and materials) for the term of the license.

6.5 SCHEDULE FOR IMPLEMENTATION

Payments and obligations by the City for the plant propagation program of the Wildlife Plan will be made and met on a license-year basis. License years are based on the date that the FERC order issuing a new license for the Skagit Project is accepted by the City. For example, license year 1 will begin on the date of license acceptance and end one year after that date.

1990

A. Negotiation and development of overall program, identification of program needs, assignment of responsibilities.

B. A pilot program (approx. 500 plants) was initiated in 1990 to initially acquaint staff with the handling of these plants.

1991-1992

A. Continue pilot program.

B. Agree on initial methods for plant propagation and record-keeping

C. The City and NPS start the budget process for personnel and for capital improvements so that these items will be in place at the time of program initiation.

D. Begin design of new horticultural facilities.

License Years 1-3 (projected dates 1993-1995)

A. Initiate program upon conferral of new license. For the first several years there will be a scaling-up to full production capacity as methods are developed, facilities are constructed, and the Skagit Project Erosion Control Plan is fully implemented.

B. The City hires new Gardener.

C. Begin construction of new facilities.

License Years 4-term of the new license

The City will implement the plant propagation program for the term of the new license.

6.6 COSTS OF THE PLANT PROPAGATION PROGRAM

The costs of this Plant Propagation Program are detailed in Table 6-2. Because the funding for this program is provided in the Skagit Project Erosion Control Plan and not by the Wildlife Plan, these costs do not appear in the summary cost table for the Wildlife Plan (Table 10-1); rather, they are listed in the summary cost table for the Skagit Project Erosion Control Plan.

Table 6-2. Costs of the Plant Propagation Program

Item	Annual Costs[1/]	Costs (30 Years)[1/]	Notes
City fulltime Gardener position[2/]	$33,000	$990,000	
NPS Seasonal Help[3/]	3,000	90,000	
Personnel subtotal		**$1,080,000**	
Greenhouse		97,500[4/]	$65/sq. ft., 3,000 sq. ft.
Propagating House, Cold Frames		30,000[4/]	$15/sq. ft., 4,100 sq. ft.
Lath House		20,000[4/]	$4/sq. ft., 10,000 sq. ft.
Office (with rest room and potable water)		3,000[4/]	$10/sq. ft., 600 sq. ft.
Storage		12,000[4/]	$4/sq. ft., 6,000 sq. ft.
Compost facility		5,000[4/]	
Fill dirt for planting beds		6,000[4/]	
Fencing and misc. systems		9,000[4/]	
Capital Improvements[4/] subtotal		**$182,500[4/]**	
Computers, software, training[5/]		8,500	
Startup supplies[6/]		4,500	
Annual supplies (soil mix, etc.)	5,000	150,000	
NPS supplies and materials[3,7/]	1,500	45,000	
Supplies and Materials subtotal		**$208,000**	
Total:		**$1,470,500**	

[1]The annual expenditures are based on a projected license term of thirty (30) years. If the license which is accepted by the City is for a term longer than 30 years, the annual expenditures will be extended at the same amounts set forth in this Agreement, and the related total expenditures will be appropriately increased.

[2]Cost of new gardener FTE for Skagit Operations staff. A new Gardener 2 position would be approximately $29,000-33,000 /yr in salary and benefits, depending on step. A Senior gardener (= Gardener 3) would be approximately $33,000-36,000 /yr in salary and benefits, depending on step. E.A.D. staff time is allocated from existing staff and budget.

[3]Park Service Staffing Assistance. The City will provide funding assistance for staffing and supplies for these Park Service efforts in the amount of $4,500 per year (estimated on average to be divided approximately 2/3 for staffing, 1/3 for supplies and materials) for the term of the license. This will provide assistance to the Park Service for the hiring of seasonal help for seed/cutting collection and the transplanting of plants.

[4]All costs are approximate. Sources of variability include the amount of contracted vs. in-house work, use of double poly sheeting instead of glass for all structures except the greenhouse, etc. The total cost of capital improvements is $365,000, of which only one half is represented in the figures in the table. This halving of the costs is in recognition that the facilities are being sized to provide for both ongoing and relicensing-related responsibilities: Approximately one-half of the total capital improvement costs can be attributed to meeting relicensing responsibilities.

[5]An 80386 computer+DOS: approx. $3,500; an 80286 laptop computer+DOS: approx. $2,500; software, supplies, training: $2,500.

[6]Pots, trays, additional tools, etc.

[7]Materials for seed collection, plant transplanting, etc.

7.0 RESEARCH AND MONITORING PROGRAM AND EDUCATION FUNDING

In the course of their discussions the City and wildlife intervenors agreed that there is an important need for additional research and monitoring to develop basic and applicable information and methods for wildlife resources and ecosystem management in the Project Area and its vicinity and in the North Cascades. As part of its responsibilities in this Wildlife Plan, the City will provide support for research and monitoring in several ways and forms, including the funding of research proposals and projects, developing and equipping a North Cascades research facility, providing additional funding to support long-term wildlife research and monitoring projects of the National Park Service and the U.S. Forest Service, and providing funding for educational programs centered on wildlife and ecosystems resources and issues.

7.1 OBJECTIVES AND INTENT

The objectives and intent of this Section are to:

- Develop a research support program for wildlife and ecosystem studies in the Project Area and North Cascades. Provide funding for research studies and grants and the development of new and better management methods and information.
- Establish research priorities and procedures for selection of research proposals. Establish procedures for reporting, review, and consultation.
- Develop and equip a research facility in the North Cascades area which will provide a laboratory and library research environment, and provide some overnight living space.
- Provide support to long-term monitoring efforts of the NPS and USFS.
- Provide funding to the North Cascades Environmental Learning Center (see the Skagit Project Settlement Agreement on Recreation and Aesthetics) for educational programs and activities directed towards wildlife and ecosystems in the Skagit Project Area and North Cascades vicinity.

7.2 CAPITAL FACILITIES FOR RESEARCH

7.2.1 North Cascades Research Building to be Provided and Refurbished

In support of research efforts by the National Park Service and others, the City will provide an historic building in the town of Newhalem to house a North Cascades research facility. The City will remodel the interior of the building to provide laboratory, living, office and library space. The building structure and utilities will be refurbished (including new wiring, insulation, and glazing as necessary, and exterior repairs) to meet current code and to facilitate research purposes.

The building (known as Bunkhouse #10) is an historic structure which still retains its historic exterior features but has undergone interior alterations in the past. Further interior alteration will not affect the historic designation and is provided for in the Skagit Project Historic Resources Mitigation and Management Plan.

7.2.2 Research Building Ownership and Management

Ownership of the building will be retained by the City, but the building will be leased to the National Park Service. The City shall bear the costs of the electricity, water use, and lease of the building. To offset the cost of this lease and of the electricity and water use of the building the Park Service shall, for the term of the new license, waive any fees and costs for a special use permit for land occupancy and all other permits and approvals for the Babcock Creek microwave site (part of the Skagit Microwave Backup System) which is described in the Environmental Assessment prepared by the Park Service.

The Park Service will schedule the use of the research facility, including overnight use, and will set rates and collect fees (if any) for such use. The City shall provide upkeep and maintenance to the exterior of the building and grounds, and shall provide repair service for the internal and external electrical wiring and plumbing. The Park Service shall be responsible for linen service and all other internal maintenance, upkeep, and cleaning, and shall be responsible for establishing and carrying out such rules and policies as are necessary to maintain the condition of the building and equipment. Day and overnight visitors will be responsible for their own meals.

7.2.3 Research Building Equipment Purchase

Seattle will provide funds (see Section 7.6.1) to purchase equipment (fume hoods, balances, computers, other analytical equipment, and the like) for the facility. Equipment selection will be made in consultation with the Park Service.

7.3 RESEARCH PROGRAM

7.3.1 Research Program Administration

The City will be responsible for the research program and will provide a portion of the administrative support through the City Light Department's Environmental Affairs Division for the Wildlife Research Advisory Committee (see Sections 7.3.2 and 7.9).

It is the City's expectation that the administrative load for this program will be met in part by the WRAC members, and that they will assist the City in a number of tasks (see Sections 7.3.2 and 7.9). Should the administrative load be greater than expected (approximately 120 staff hours annually) the City will meet with the WRAC to consider procedural or program changes to reduce the administrative load.

7.3.2 Composition and Function of Wildlife Research Advisory Committee

A Wildlife Research Advisory Committee (WRAC) will be convened/instituted to complete the long-term research objectives, set the requirements for proposals, solicit and review research proposals, ensure that results are published in the scientific literature, allocate research funds, and review the progress and results of ongoing or newly completed research projects and recent developments in other research efforts in the North Cascades and in related efforts elsewhere. It is furthermore the responsibility of the WRAC members to inform appropriate staff and managers of their agencies and organizations of pertinent information and decisions.

The WRAC will consist of 5 members, each of whom must have a background in wildlife, ecosystems, or biology. The first three positions will be filled by representatives of: 1) the City of Seattle, City Light Department (represented by the Environmental Affairs Division), which will also act as committee chair; 2) the National Park Service; and 3) the Washington Department of Wildlife. The fourth position will rotate every three years between the U.S. Fish and Wildlife Service and the U.S. Forest Service, beginning with the Forest Service in License Year 1. The fifth position, a nonvoting position, will be filled by a university representative (such as from the Institute of Environmental Studies at the University of Washington or Western Washington University) or other qualified person. The representative for this position will be selected and appointed by the WRAC for a term of three years. If any of the designated agencies or organizations cannot effectively participate, a replacement will be selected by the WRAC.

The WRAC will meet as often as necessary (but at a minimum of once a year) to complete its tasks. The meetings will be open to interested members of agencies, tribes, and the public. The City will provide a record of the committee's discussion.

7.3.3 Research Goals and Objectives

This Research Program will provide support for research on wildlife resources, impacts, or effects (including beneficial effects) of the Skagit River Hydroelectric Project and Project Area, the Ross Lake National Recreation Area, and other lands in the North Cascades in the U.S. The central goal of this program is to facilitate the development of information and methods that will lead to the better understanding and management of the wildlife and ecosystems in these areas.

The supported research should contribute to and complement the existing body of information and research in this area, and should therefore meet professional standards and should be published when completed. The research support is intended to extend the current level of investigation and research activity in this area and should therefore not duplicate or substitute for normal agency responsibilities and programs.

Another goal, of lower priority, of the Research Program is to contribute to the education and training of new researchers and investigators. To this effect, consideration will be given to proposals that provide an educational function, e.g., contribute to graduate student dissertation research.

The WRAC will complete a set of long-term (10 or more years) research goals and objectives to provide further guidance, direction, and continuity to the program and proposers. These goals and objectives will be provided to prospective proposers of projects for funding.

In determining its research priorities for each year, the WRAC will review the long-term goals and objectives previously set for the research program, the degree of success to date in meeting the program goals, recent progress in wildlife science and understanding, new developments and information, near- and long-term management plans and priorities, new management needs, and other pertinent information.

7.3.4 Solicitation of Research Project Proposals for Support

The City, with the help and advice of the WRAC, will develop an announcement for the solicitation of research proposals. The City will develop, also with the assistance of the WRAC, a mailing list of potential proposers and interested parties, and distribute the announcements.

The WRAC will establish the complete set of program and submittal requirements. The requirements shall include the following:

- All proposals shall be complete submittals. All proposals shall budget to include the analysis of results, and the preparation and submittal of final reports and data. Proposals must include background information, study design, qualifications of personnel, complete budget, and other information to enable a complete and thorough evaluation of the proposed projects.

- Multi-year or multi-phase proposals must be clearly indicated. If the value or completion of research in one phase is dependent on funding for subsequent phases, this must also be stated: In such cases, the subsequent phases must also be sufficiently detailed and described so that the WRAC may consider and evaluate the larger, linked phases of the proposal.

- Research support is limited to proposals which will be conducted in the United States. However, cooperation or coordination with research proposals or projects in Canada which are funded by the Skagit Environmental Endowment Fund or other funding source is encouraged.

- Proposals must help to meet the long-term goals and objectives of the Research Program, or explain why they do not (i.e., why the goals and objectives should be different).

- Proposals and studies shall not duplicate or substitute for normal agency responsibilities and programs. Studies and research should have a final end date or explain how their indefinite continuance will be transferred and incorporated into agency programs and management.

7.3.5 Review and Selection of Research Proposals

The City will receive the research proposals and will distribute them for peer review. The selection and recruitment of peer reviewers will be made with the assistance of the WRAC.

The Chair will select from among the proposals to develop a preliminary list of projects to be funded. This list, together with the complete set of proposals and reviewers' comments, will be distributed to the WRAC.

The WRAC will decide on the proposals to be funded by majority vote of the four voting members (i.e., three or more must be in favor).

7.3.6 Selection Criteria

These criteria (not in a priority order) shall be used to select research proposals for funding support. Proposals shall be evaluated on their:

- Potential to help meet the goals and objectives of the Research Program;
- Pertinence to wildlife resources, impacts, or effects (including beneficial effects) of the Skagit River Hydroelectric Project and Project Area. Proposals shall address wildlife or ecosystem issues which pertain to (in order of decreasing priority): The Skagit River Hydroelectric Project and Project Area (see Map 1); North Cascades National Park Complex; and Skagit valley and the North Cascades area (see Map 11) in the United States;
- Technical merit. This shall include the evaluation of the appropriateness of the background and expertise of the researchers, study design, and proposed methods;
- Potential applicability to wildlife and land/ecosystem management in the Project Area and vicinity. This shall include the evaluation of the potential of the research to contribute to the improvement of existing and future management programs and activities for wildlife and ecosystems, and ability to contribute to and complement existing or future research;
- Efficiency, which includes cost-effectiveness, accountability, and previous record of research and project management.
- Special consideration will be given to proposals addressing an educational function, e.g., graduate student dissertation research.

7.3.7 Reporting Requirements of Funded Projects

The responsible officials and research principals for funded projects must provide final reports which shall describe the background and methods, present and analyze the data, and discuss and interpret the significance of the results. The applicability of the research results to wildlife and ecosystems management in the area shall be discussed. Results of studies shall be of publishable quality and the WRAC will seek to ensure that the results are published in the scientific literature. The reports shall also provide an accounting of spending.

Multi-year projects must further provide annual reports of progress and results, an accounting of spending, and a study plan for the next year.

The responsible officials and research principals for funded projects must provide these reports in a timely fashion so that the City may meet its own reporting requirements to the WRAC and the FERC.

7.3.8 Review of Research Results and Program

The City will provide the reports from Section 7.3.7 to the WRAC, and include a summary of the reports in its annual report on the Research Program (see Section 7.5) The WRAC will review the research reports from Section 7.3.7 and, together with the City's annual report, evaluate the progress and success of the Research Program in meeting its goals.

Should a researcher not meet the requirements for conducting and reporting research (or not meet any other requirements or standards adopted by the WRAC), the WRAC will decide upon the appropriate corrective action (including termination of the funding).

7.4 LONG-TERM MONITORING PROJECTS

7.4.1 Monitoring Projects in the Project Area and the Ross Lake National Recreation Area

The City will provide funding as described in Section 7.6.3 for the long-term monitoring of wildlife and environmental resources (including key wildlife species, water quality, and air quality) in the Project Area and Ross Lake National Recreation Area and vicinity in the United States. The National Park Service will administer this program component.

Projects and programs will be designed and selected by the Park Service, with the advice and comment of the City and the WRAC. Selection of projects should be guided by, among other things, the ability of the projects to: Contribute to the improvement of management or programs in the Project Area and the Ross Lake National Recreation Area; provide basic and applied information on impacts of the Project or of Park Service programs on wildlife and ecosystems; and contribute to and complement existing or future research projects. Projects should be cost-effective and not duplicate or substitute for normal agency responsibilities and programs.

Other agencies and entities may utilize some of the monies in this program component upon approval of the Park Service and the City. The Park Service will provide for the publication of results in the scientific literature as appropriate. Reporting requirements are described below (see Section 7.5).

7.4.2 Bald Eagle Inventory, Planning, and Monitoring

The City will provide funding as described in Section 7.6.4 for the inventory, planning, and monitoring of bald eagle and other wildlife habitat in the Skagit National Recreation River corridor and the Sauk, Suiattle, and Cascade National Scenic River corridors. The U.S. Forest Service will administer this program component.

The Forest Service will inventory roost tree, nesting, and feeding locations of eagles, and acquire other habitat information to the extent practical. The Forest Service will assemble this inventory information and develop a plan for monitoring eagles and will develop guidance for landowners on how to provide for the needs of the eagles and how to improve their lands in order to better meet the needs of the eagles.

In these tasks the Forest Service will seek the advice and comment of the City, WRAC, and the managers of the Skagit River Bald Eagle Natural Area. Projects/tasks should be cost-effective and not duplicate or substitute for normal agency responsibilities and programs.

The inventory and plan will be developed in the first several years. Funding in later years (see Section 7.6) will be used to update the plan and monitor its performance.

Other agencies and entities may utilize some of the monies in this program component upon approval of the Forest Service and the City. The Forest Service will provide for the publication of results in the scientific literature as appropriate. Reporting requirements are described below (see Section 7.5).

7.5 REPORTING

The National Park Service will provide to the City an annual report of the progress and results of the long-term monitoring projects described in Section 7.4.1. Similarly, the U.S. Forest Service will provide to the City an annual report of the progress and results of the bald eagle inventory, planning, and monitoring projects described in Section 7.4.2. The guidance of Section 7.3 (in particular, Section 7.3.7) will in general apply to this reporting.

The City will prepare an annual report of research activities and projects, results and accomplishments. This will include a review of the results reported by the National Park Service (see Section 7.4.1) and the U.S. Forest Service (see Section 7.4.2), as well as the funded research projects (see Section 7.3). This report will be provided to the members of the WRAC, and will be incorporated into the City's report on the Wildlife Plan (see Section 2.4).

7.6 RESEARCH AND MONITORING PROGRAM FUNDING

7.6.1 Research Building and Equipment (see also Section 7.2)

The City will make Bunkhouse #10 in Newhalem available in support of scientific research on North Cascades wildlife and ecosystems. The City will remodel the interior, providing laboratory, living, library and office space, and refitting the building with new wiring, insulation and glazing where needed, and exterior repairs. This remodeling and refurbishing will be done in consultation with the Park Service (including a review of the preliminary design) and is estimated to cost $80,000.

The City will provide a maximum of $50,000 to purchase equipment (fume hoods, balances, computers, other analytical equipment, and the like) for the facility. Equipment selection will be made in consultation with the Park Service.

7.6.2 Research Project Funding

The City will provide $50,000 per year for the term of the license and any subsequent annual licenses to fund scientific research. Administration and allocation of the funds will be made by the Wildlife Research Advisory Committee.

7.6.3 Funding of Long-term Monitoring Projects

The City will provide $20,000 per year for the term of the new license and any subsequent annual licenses to the National Park Service for the support of long-term monitoring of wildlife and environmental resources (including key wildlife species, water quality, and air quality) in the Project Area and Ross Lake National Recreation Area. Other agencies and entities may utilize some of the monies upon approval of the Park Service and the City.

7.6.4 Bald Eagle Inventory and Planning

The City will provide $90,000 to the U.S. Forest Service for the purpose of inventory and monitoring of bald eagle and other wildlife habitat in the Skagit National Recreation River corridor and the Sauk, Suiattle and Cascade National Scenic River corridors. The monies will be provided on the following schedule: in License Years (see Section 7.8 below) 1 and 2, $20,000 each, to be used to develop the inventory and plan; and in License Years 7, 12, 17, 22, and 27, $10,000 each, to be used for updating the plan and monitoring its performance. These five-year periodic payments of $10,000 will be continued throughout the term of the new license, and in any subsequent annual license which completes the next five-year period in this progression. Other agencies and entities may utilize some of the monies upon approval of the Forest Service and the City.

7.7 EDUCATION FUNDING

The City will provide $20,000 per year for the term of the new license and any subsequent annual licenses to the Environmental Learning Center and educational program (see the Skagit Project Settlement Agreement on Recreation and Aesthetics). This funding will support greater public knowledge and understanding of the values and issues in wildlife and ecosystems management, and protection in the Skagit Hydroelectric Project Area and the North Cascades area (see Map 11).

7.8 SCHEDULE OF IMPLEMENTATION

Payments and obligations by the City for the research and monitoring program and education funding of the Wildlife Plan will be made and met on a license-year basis. License years are based on the date that the FERC order issuing a new license for the Skagit Project is accepted by the City. For example, license year 1 will begin on the date of license acceptance and end one year after that

date. Furthermore, the educational funding will not begin before the initiation of the North Cascades Environmental Learning Center funding as per the Skagit Project Settlement Agreement on Recreation and Aesthetics.

7.9 COSTS OF THE PROGRAM

It is estimated that the administration of this program by the City will require an average of approximately 150 staff hours each year for the first five years and an average of approximately 100 staff hours each year thereafter. It is the City's expectation that the WRAC members will assist the City in a number of tasks (see Section 7.3.2). Should the administrative load be much greater than this estimate, the City will meet with the WRAC to consider procedural or program changes to reduce the administrative load.

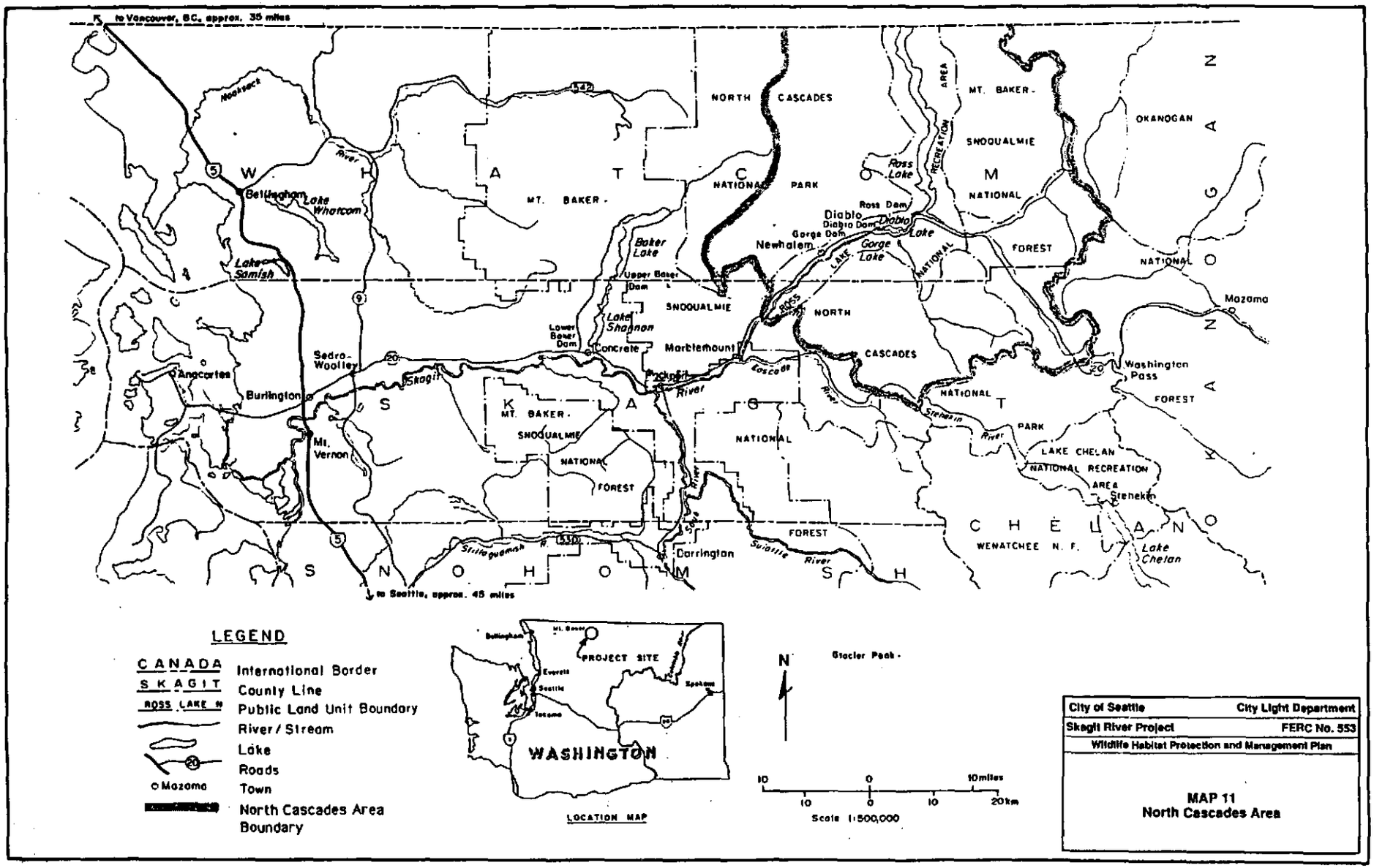
The costs of the research, monitoring, and education measures are shown in Table 7-1.

Table 7-1. Costs of the Research and Monitoring Program and Education Funding

Program Component	Annual Cost[1/]	30-year Cost[1/]
Research		
Building renovation (estimate)		$80,000
Equipment (capped amount)		50,000
Research project funding (capped amount)	$ 50,000	1,500,000
Monitor long-term impacts (capped amt.)	20,000	600,000
Bald Eagle Inventory & Plan (capped amt.)		90,000
Research subtotal		**$2,320,000**
Education		
Wildlife education (in cooperation with the North Cascades Environmental Learning Center[2/] (capped amount)	20,000	600,000
Total		**$2,920,000**

[1]The annual expenditures are based on a projected license term of thirty (30) years. If the license which is accepted by the City is for a term longer than 30 years, the annual expenditures will be extended at the same amounts set forth in this Agreement, and the related total expenditures will be appropriately increased.

[2]See Skagit Project Settlement Agreement on Recreation and Aesthetics.


to Vancouver, BC, approx. 35 miles
NORTH CASCADES NATIONAL PARK
MT. BAKER - SNOQUALMIE NATIONAL FOREST
MT. BAKER - SNOQUALMIE NATIONAL FOREST
OKANOGAN NATIONAL FOREST
WENATCHEE N. F.
LAKE CHELAN NATIONAL RECREATION AREA
Ross Lake
Ross Dam
Diablo
Diablo Dam
Diablo Lake
Gorge Dam
Gorge Lake
Newhalem
Baker Lake
Upper Baker Dam
Lake Shannon
Lower Baker Dam
Concrete
Marblemount
Rockport
Bellingham
Lake Whatcom
Lake Samish
Sedro-Woolley
Anacortes
Burlington
Skagit River
Mt. Vernon
Arlington
Darrington
Stillaguamish River
Suiattle River
Cascade River
Stehekin River
Mazama
Washington Pass
Stehekin
Lake Chelan
to Seattle, approx. 45 miles
LEGEND
CANADA
SKAGIT
ROSS LAKE
International Border
County Line
Public Land Unit Boundary
River / Stream
Lake
Roads
Mazama
Town
North Cascades Area Boundary
PROJECT SITE
WASHINGTON
LOCATION MAP
Glacier Peak
N
10 0 10miles
10 0 10 20km
Scale 1:500,000
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 11
North Cascades Area

8.0 MANAGEMENT AGREEMENTS

8.1 GUIDANCE FOR CITY RESPONSE TO WILDLIFE-HUMAN CONFLICTS IN THE SKAGIT PROJECT AREA

The City shall enter into a memorandum of understanding with the National Park Service and the Department of Wildlife to provide guidance to the City in responding to human-wildlife conflicts in the Project Area, and for taking anticipatory action in order to avoid or minimize such conflicts in the future. The interaction of the agencies in wildlife management in the RLNRA may require some further elaboration; the City, the NPS, and the WDW therefore decided to include those provisions of an MOU that apply to the City in the Settlement Agreement and in this Wildlife Plan until such time as an MOU is prepared. The provisions are:

1. The City shall reduce or eliminate wildlife attractants on nonfederal lands within the RLNRA which result in problem wildlife species habituation, including, but not limited to, the storage of garbage.

2. The City shall prohibit wildlife feeding by City residents.

3. The City may be authorized to take specific actions to control an animal that presents a threat to human safety. Authorizations determined to be appropriate shall be given on a case-by-case basis and only after prior consultation and approval of the WDW and the NPS. Authorized actions may include lethal or non-lethal measures.

4. Except in cases of immediate threat to public safety, the City shall not take unilateral action in dealing with problem wildlife on non-federal lands without first consulting the NPS and the WDW.

8.2 MOU PROVIDING FOR NATIONAL PARK SERVICE CONSULTATION REGARDING MANAGEMENT ACTIVITIES ON NON-RESIDENTIAL, FEE TITLE LANDS OF THE CITY OF SEATTLE IN THE ROSS LAKE NATIONAL RECREATION AREA

The City owns in fee several non-residential parcels (see Table 8-1 and Maps 12 and 13) downstream of Newhalem in the Ross Lake National Recreation Area. These lands (with the exception of some of the transmission right-of-way) are not part of the Project Area for the Skagit River Hydroelectric Project.

City activities on these lands include the excavation of materials such as aggregate and fill dirt, storage of vehicles and other materials, and operation of certain environmental enhancement projects.

The City will retain ownership of these lands during the new license period of the Skagit Project. A Memorandum of Understanding (MOU) (see Appendix D) has been developed with the NPS which provides for the City's operations and needs, consultation between the City and the NPS on City and NPS projects, and a statement of the City's intent that these lands will be managed consistent with the purposes and objectives of the RLNRA and the Special Use Zone as defined by the 1988 General Management Plan (NPS, 1988).

This MOU will not constrain (nor does it endorse) the City from potentially seeking federal licensing of a Copper Creek project in the future, nor will it constrain the other Parties from opposing a Copper Creek project.

Table 8-1. City of Seattle Nonproject Fee Title Lands in the Ross Lake National Recreation Area[1,2]

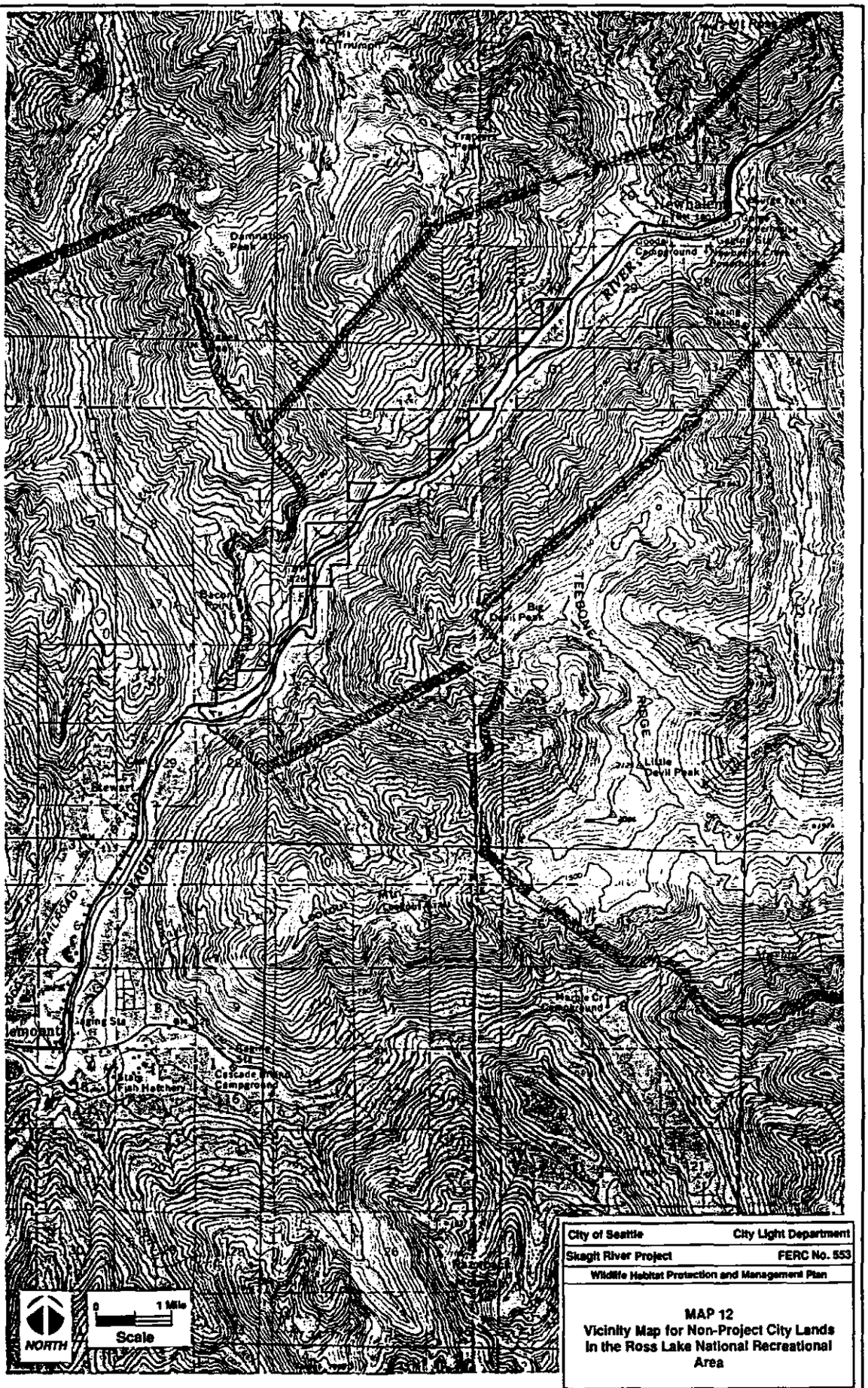
Parcel No.[3]	Acres[3]	Development/Use
01-128	177.05	Newhalem ponds and borrow pits; equipment storage and staging area; North Cascades Highway (NCH); transmission right of way (ROW)
01-130	49.26	n/a[4]
01-131	42.56	NCH and ROW
01-132	63.07	County line ponds and aggregate borrow pits; Newhalem Creek fish mitigation (4 removable piers and self-feeders for steelhead); NCH; ROW
01-133	127.01	NCH; ROW
02-100	4.10	n/a[4]
02-108	379.01	Top soil borrow area; NCH; ROW
02-109	25.41	Cabin--Boy Scout use
02-110	3.45	n/a[4]
02-114	69.08	ROW

[1]Derived from Appendix C of the Ross Lake National Recreation Area Land Protection Plan (National Park Service, 1988b). The map of lands is taken directly from this Plan.

[2]With the exception of some transmission rights-of-way these lands are not part of the Project Area of the Skagit River Hydroelectric Project (FERC Number 553).

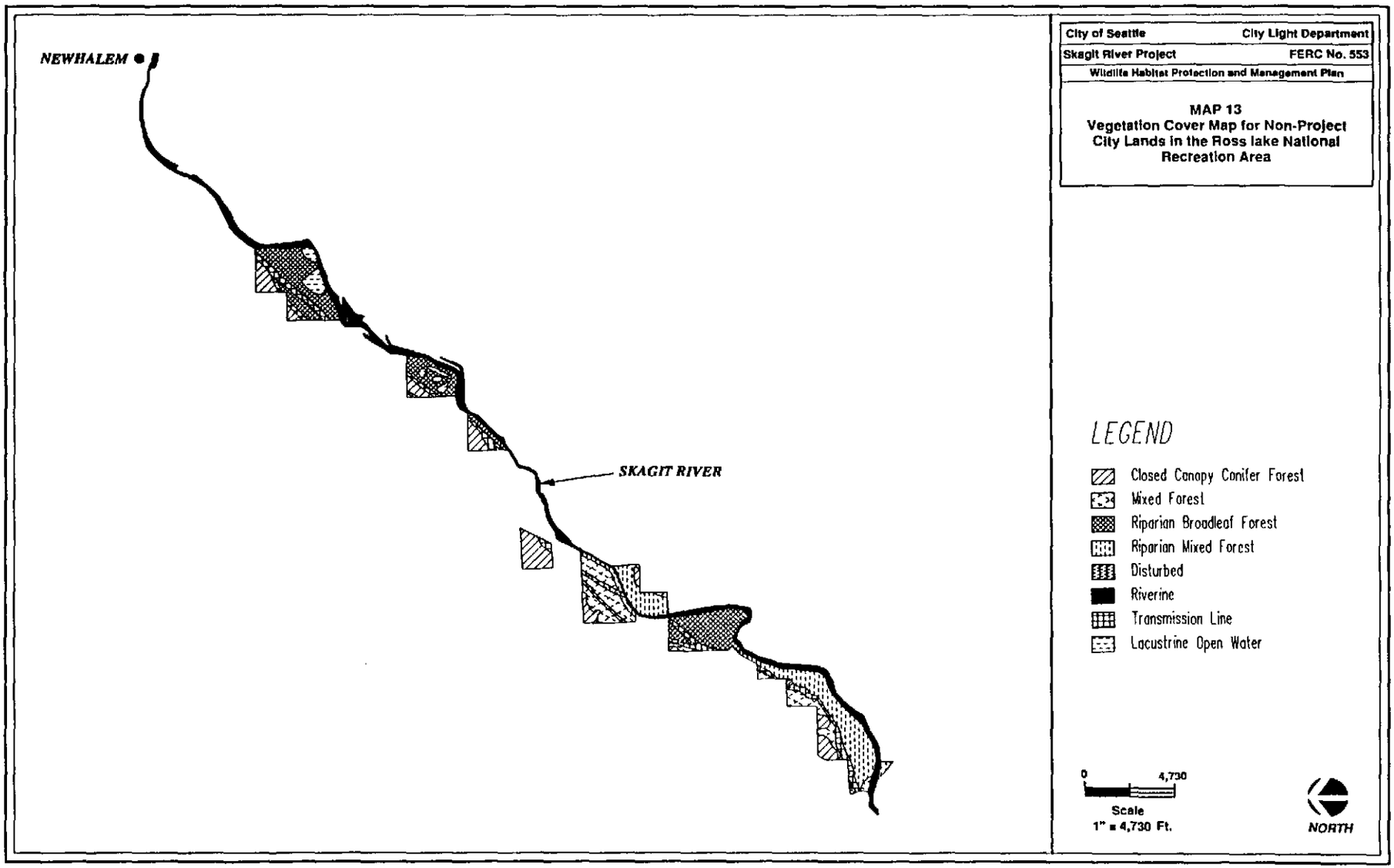
[3]Statistics as reported in the Ross Lake National Recreation Area Land Protection Plan (NPS, 1988b).

[4]Information not currently available.



City of Seattle	City Light Department
Skagit River Project	FERC No. 553
Wildlife Habitat Protection and Management Plan	

MAP 12
Vicinity Map for Non-Project City Lands in the Ross Lake National Recreational Area


NEWHALEM
SKAGIT RIVER
City of Seattle
City Light Department
Skagit River Project
FERC No. 553
Wildlife Habitat Protection and Management Plan
MAP 13
Vegetation Cover Map for Non-Project City Lands in the Ross lake National Recreation Area
LEGEND
Closed Canopy Conifer Forest
Mixed Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Disturbed
Riverine
Transmission Line
Lacustrine Open Water
0
4,730
Scale
1" = 4,730 Ft.
NORTH

9.0 SCHEDULE AND BUDGET

With the exception of the habitat lands acquisition program (see Section 3), payment and obligations by the City for the Wildlife Plan will be made and met on a license-year basis. License years are based on the date that the FERC order issuing a new license for the Skagit Project is accepted by the City. For example, license year 1 will begin on the date of license acceptance by the City and end one year after that date.

Table 9-1. Schedule and Budget for the Wildlife Plan

Program Item	Expenditures/year[1]							
	TOTAL	1991[3]	1992[3]	License Year[2] 1	2	3	4	5
Land Acquisition [4]	$16,123,000	$2,500,000	$3,500,000	$5,062,000	$5,061,000			
Elk Habitat Enhancement [4]	862,000			2,000	43,000	$44,000	$43,000	$44,000
Wetlands Rehabilitation	10,000				2,000	4,000	4,000	
Elk and Rehabilitation Monitoring	5,000				400	400	400	300
Cultural Resource Reconnaissance	20,000				5,000	5,000	5,000	5,000
Wildlife Education	600,000				40,000	20,000	20,000	20,000
Research Projects	1,500,000			50,000	50,000	50,000	50,000	50,000
NPS Long-term Monitoring	600,000			20,000	20,000	20,000	20,000	20,000
Bald Eagle Studies (USFS)	90,000			20,000	20,000			
Wildlife Research Center	130,000			10,000	50,000	70,000		
WILDLIFE TOTAL	$19,940,000	$2,500,000	$3,500,000	$5,164,000	$5,291,400	$213,400	$142,400	$139,300

Table 9-1 (cont.). Schedule and Budget for the Wildlife Plan

Program Item	Expenditures/Year[1] License Year[2]								
	6	7	8	9	10	11	12	13	14
Land Acquisition[4]									
Elk Habitat Enhancement[4]	$43,000	$43,000	$43,000	$44,000	$43,000	$23,000	$24,000	$23,000	$24,000
Wetlands Rehabilitation									
Elk and Rehabilitation Monitoring	300	300	300	300	300	100	100	100	100
Cultural Resource Reconnaissance									
Wildlife Education	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Research Projects	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
NPS Long-term Monitoring	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Bald Eagle Studies (USFS)		10,000							
Wildlife Research Center									
WILDLIFE TOTAL	$133,300	$143,300	$133,300	$134,300	$134,300	$113,100	$114,100	$113,100	$114,100

Table 9-1 (cont.). Schedule and Budget for the Wildlife Plan

Program Item	Expenditures/Year[1] License Year[2]								
	15	16	17	18	19	20	21	22	23
Land Acquisition [4]									
Elk Habitat Enhancement [4]	$23,000	$24,000	$23,000	$24,000	$23,000	$24,000	$23,000	$24,000	$23,000
Wetlands Rehabilitation									
Elk and Rehabilitation Monitoring	100	100	100	100	100	100	100	100	100
Cultural Resource Reconnaissance									
Wildlife Education	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Research Projects	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
NPS Long-term Monitoring	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Bald Eagle Studies (USFS)			10,000					10,000	
Wildlife Research Center									
WILDLIFE TOTAL	$113,100	$114,100	$123,100	$114,100	$113,100	$114,100	$113,100	$124,100	$113,100

Table 9-1 (cont.). Schedule and Budget for the Wildlife Plan

Program Item	Expenditures/Year[1] License Year[2] 24	25	26	27	28	29	30
Land Acquisition [4]							
Elk Habitat Enhancement [4]	$24,000	$23,000	$24,000	$23,000	$24,000	$23,000	$24,000
Wetlands Rehabilitation							
Elk and Rehabilitation Monitoring	100	100	100	100	100	100	100
Cultural Resource Reconnaissance							
Wildlife Education	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Research Projects	50,000	50,000	50,000	50,000	50,000	50,000	50,000
NPS Long-term Monitoring	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Bald Eagle Studies (USFS)				10,000			
Wildlife Research Center							
WILDLIFE TOTAL	$114,100	$113,100	$114,100	$123,100	$114,100	$113,100	$114,100

1/ 1990 dollars indexed for inflation.

2/ License years are based on the date that the FERC order issuing a new license for the Project is accepted by the City.

3/ Expenditures preceding conferral of license (projected to be conferred early in 1993 or late 1992).

4/ The spread of expenditures in this table are for purposes of illustration only, and will depend on decisions that will subsequently be made by the Parties and the WMRC (*see* Section 3).

10.0 COSTS OF THE WILDLIFE PLAN

Table 10-1. Cost Summary for the Wildlife Plan.[1]

Program Item	Budget
Land Acquisition and Habitat Enhancement	$17,000,000
Cultural Resources Reconnaissance	20,000
Research	2,320,000
Education	600,000
WILDLIFE PLAN TOTAL	**$19,940,000**

[1]Based on a projected license term of thirty (30) years. If the license which is accepted by the City is for a term longer than 30 years, the annual expenditures will be extended at the same amounts set forth in this Agreement, and the related total expenditures will be appropriately increased.

11.0 REFERENCES

NPS (U.S. Department of the Interior, National Park Service). 1985. Ross Lake National Recreation Area Land Protection Plan.

NPS (U.S. Department of the Interior, National Park Service). 1988a. General Management Plan, North Cascades National Park, Ross Lake National Recreation Area, Lake Chelan National Recreation Area.

NPS (U.S. Department of the Interior, National Park Service). 1988b. Ross Lake Recreation Area Land Protection Plan.

WDG (Washington Department of Game). 1981. High Ross Wildlife Mitigation, Compensation, and Enhancement Plan.

APPENDIX A

Methodology Used for Mapping Habitat Cover Types

APPENDIX A

Methodology Used for Mapping Habitat Cover Types

In order to evaluate the proposed mitigation lands a vegetation cover type inventory was completed for the Nooksack River parcels and for selected parcels in the Skagit and Sauk River drainages. The following sections describe the process used in mapping the vegetation habitat classes defined in Table B-1

Selection of Cover Type Classification System

To ensure consistency, the classification system used for mapping the vegetation cover types in the original Skagit Dams Wildlife Impacts study was used to map the proposed mitigation areas. This system includes the following cover types which are described in Appendix B.

Old-growth Conifer Forest
Closed-canopy Conifer Forest
Open-canopy Conifer Forest
Broadleaf Forest
Mixed Forest
Shrubfields
Regenerating Conifer
Clearcut or Cutting Unit
Riparian Conifer Forest
Riparian Broadleaf Forest
Riparian Mixed Forest
Riparian Shrubland
Broadleaf Wetland
Shrub Wetland
Emergent Wetland
Mixed Wetland (Conifer and Deciduous)
Riverine
Exposed Rock
Disturbed
Agriculture/Pasture

Aerial Photograph Interpretation

Cover type polygons were delineated on mylar overlays on Washington Department of Natural Resources (WDNR), 1987, 1:12,000 scale black and white aerial photographs. All of the interpretation was completed by one person using a stereoscope to ensure consistency. Each polygon was assigned a cover type label based on the photographic signatures of the cover types.

The minimum mapping unit for upland cover types was approximately 5 acres, while wetlands and riparian areas were mapped to as small of a scale as possible, usually about 0.5 acres.

Field Verification

The mapping was verified in the field by a team of two biologists who visited all accessible sites on the ground during August 1990 and made all necessary changes to the mapping on the aerial photographs. Oblique photographs were taken of the parcels from vantage points and within each of the polygons visited. In addition, oblique photographs were taken from a fixed-wing aircraft in early September to further verify that all the mapping was correct.

Compilation on Orthophotographs

Once the mapping was corrected on the aerial photographs and was checked by a second person qualified in aerial photo interpretation, the cover type boundaries were transferred to mylar overlays on 1:12,000 scale WDNR orthophotographs using a stereo zoom transfer scope. By compiling the mapping information on the orthophotographs, the radial distortion of polygon boundaries on the aerial photographs was eliminated, allowing for more accurate estimates of area.

Entry Into Geographic Information System (GIS)

The compiled mapping information was digitized into a GIS with ARC/INFO software. The area of each cover type polygon within each parcel was then calculated by the GIS software.

APPENDIX B

Description of Vegetation Cover Types

APPENDIX B
DESCRIPTION OF VEGETATION COVER TYPES

Table B-1. Vegetation/Habitat Classes and Abbreviations

Upland Forested Types	
Old-growth Conifer Forest (OG)	Forest communities which are approximately 175 years old or older, and are dominated by western hemlock, Pacific silver fir, Douglas fir, and western redcedar. Structural diversity is high, with trees in all age classes from seedling to standing dead, and with a multilayered understory of small trees, shrubs, and herbs.
Closed-canopy Conifer Forest (CC)	Forest communities similar to the old-growth forests in species composition but with fewer snags and logs, and with smaller, younger trees in the overstory. This category may contain trees in seral stages ranging from pole-sapling to late mature, and may comprise stands from approximately 20 to 30 to 175-200 years of age. Canopy closure ranges from 50-100%, averaging about 65%. Understory is usually dominated by shrubs, with an herbaceous layer of broadleaf herbaceous forbs, grasses, sedges, and mosses.
Open-canopy Conifer Forest (OC)	Forest communities with 10-50% canopy closure (averaging 35%), commonly found on rocky slopes and dry promontories with shallow soils. Douglas fir and Pacific silver fir are the common overstory species. On sites with thin, rocky soils the understory is often a heavy cover of mosses together with grasses and flowers; where soils are deeper, a well developed layer of shrubs will be found in addition to the grasses and forbs.
Broadleaf Forest (BF)	These forests are dominated by black cottonwood, red alder, bigleaf maple, paper birch, or combinations of these species. Because they are not shade tolerant they will gradually be replaced by conifers except where disturbances or localized conditions give an added advantage to the broadleaf trees. Understory includes vine maple, shrubs, ferns, and herbs. Some of the understory species are closely associated with the broadleaf communities and are rarely seen with the conifers.

Upland Forested Types (continued)	
Mixed Forest (MF)	As in the case of broadleaf forest, these communities are often established following a disturbance, although some are transitional stages between broadleaf- and conifer-dominated forest communities. These stands are characterized by a low to moderate density of shrubs and trees, with approximately 90% canopy closure.
Regenerating Conifer (CR)	This community is a transitional stage from a disturbance (fire, logging, avalanche, etc.), comprising stands from the establishment of a new conifer stand to approximately 20-30 years of age. Grasses, shrubs, and forbs are found in high density during the initial years of growth, but are greatly reduced in numbers as the trees begin to overtop them.
Riparian Types	
Riparian Conifer (rC), Riparian Broadleaf (rB), Riparian Mixed Forest (rM), Riparian Shrubland (rS)	Riparian habitats are distinguished from upland habitats by their close association with streams, rivers, and seasonally wet soils. Often these areas are separated from the uplands by a topographic break between the river bottomland and the upland areas, associated with a recognizable change in the characteristics of the vegetation. They will contain most of the species in the equivalent upland type, but in different ratios and with a number of species which are largely or wholly confined to the riparian area. The dominant species in the different layers may change. For example, black cottonwood may predominant along the river margin, with red alder forming the majority of the broadleaf stand in an upland location. Willow shrubland may also persist in large areas along the river margin and in frequently inundated areas.
Wetland Types Wetlands are defined as areas dominated by plants adapted to growing on seasonally saturated soils.	
Broadleaf Wetland (palustrine forest) (BW or PF)	This is often a late successional wetland stage, but may also be found on riverside benches where inundation occurs frequently enough to maintain soil saturation. Understory dominated by dense shrub and herb layers, with skunk cabbage, sedges, horsetails, etc.
Shrub Wetland (palustrine scrub-shrub: shrub swamp) (SW)	This is most often associated with oxbow lakes, and is dominated by dogwood, willows, hardhack, and the like. The shrub communities form thickets around the margins of the oxbows, growing into the opening as sediment fills the lake.
Emergent Wetland or Vegetation (palustrine emergent: wet meadow, marsh, bog) (EV)	These are herb-dominated wetlands, often with communities dominated by several of the sedge species. Usually a small body of open water (such as an oxbow pond/lake) is associated with this community.

Wetland Types (continued)	
Mixed Wetland (palustrine forest) (MW)	This type of wetland is very similar to the broadleaf wetland, but also has a significant conifer component along with the deciduous trees and shrubs.
Shrub/Emergent Wetland (S/EW)	Areas with a mixture of small patches of both emergent and shrub wetland types.
Non-forested Types	
Clearcut or Cutting Units (CU)	An areas which has been cut within the last five years, vegetation is still being re-established, and the debris of the logging is still very evident visually. Remnants of pre-existing vegetation, leave strips, annuals and perennials, and naturally reseeding trees and shrubs predominate.
Shrubfields (SF)	These communities may be a transitional stage between a disturbed area (such as a cutting unit) and a new stand of trees, or may be more persistent, reflecting southern aspect, thin soil and xeric conditions. Shrub canopy closure is often 50-70%.
Riverine (R)	This category includes the mainstem river, tributaries, and gravel bars.
Exposed Rock/Earth (ER)	These areas are characterized by sparse tree, shrub, and herbaceous cover. Typically the areas have exposed bedrock or piles of broken rock and soil (talus and scree). Moist areas may have heavy covers of mosses and lichens.
Riverine/Exposed Rock (R/ER)	Areas dominated by a combination of riverine and exposed rock habitats. These sites are usually high gradient streams.
Disturbed (DS)	This may include an active avalanche track, an area of active movement in the river channel, or an area of erosion which might have a natural or artificial cause (such as failure of road fill or culvert undersizing). Some natural areas may persist indefinitely; some artificial areas may also persist for considerable times in the absence of active intervention and corrective measures.
Agriculture (AG)	An area which has obvious signs of clearing and use for crops or grazing, and which if abandoned has not recovered sufficiently for the vegetation to suppress the signs of the previous use. Abandoned agricultural areas are generally dominated by shrubs, annuals, and perennials.
Pasture (P)	Areas used for grazing.
Residential (RES)	Areas heavily influenced by residential structures such as houses or other buildings.

APPENDIX C

Landowner Agreements

[Will contain road-sharing agreement(s) with Crown Pacific, especially in the Nooksack Area; ingress/egress agreement to access the Fred Martin parcel; etc.]

APPENDIX D

Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING

between

National Park Service

and Seattle City Light

PROVIDING FOR NATIONAL PARK SERVICE CONSULTATION REGARDING MANAGEMENT ACTIVITIES ON NON-RESIDENTIAL FEE TITLE LANDS OF THE CITY OF SEATTLE IN THE ROSS LAKE NATIONAL RECREATION AREA

This MEMORANDUM OF UNDERSTANDING is made and entered into between the National Park Service, an executive agency of the United States Department of the Interior, hereinafter referred to as "the NPS", and the City of Seattle, City Light Department, hereinafter referred to as "SCL".

AUTHORITY

The NPS enters into this Memorandum of Understanding pursuant to the authority set forth in 16 U.S.C. 1a–1, and 16 U.S.C. 661; and SCL enters into this Memorandum of Understanding pursuant to the authority set forth in Ordinance 106741.

PURPOSE AND OBJECTIVE

This Memorandum of Understanding is made for the purpose and objective of providing for consultation between the SCL and NPS regarding management activities on non-residential fee title lands of the City of Seattle in the Ross Lake National Recreation Area (ROLA).

RECITALS

WHEREAS, SCL owns and operates the Skagit River Hydroelectric Project , FERC No. 553, hereinafter referred to as "the Project", pursuant to annual licenses issued by the Federal Energy Regulatory Commission, hereinafter referred to as "the FERC"; and

WHEREAS, SCL has applied to the FERC for a new license to continue to operate the Project; and

WHEREAS, the NPS is an intervenor in the relicensing proceeding for the Project now pending before the FERC; and

WHEREAS, the Project lands lie wholly within the ROLA, with the exception of some transmission line corridors; and

WHEREAS, the ROLA was created by Pub. L. 90-544, Title II, Section 201, Oct. 2, 1968, codified at 16 U.S.C. 90 to 90d-5, as amended by the Washington Park Wilderness Act of 1988, Pub. L. 100-668, Nov. 16, 1988, codified at 16 U.S.C. 90 to 90d-5, for the purposes of

providing for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) such management, utilization, and disposal of renewable resources and the continuation of such existing uses and developments as will promote or are compatible with, or do not significantly impair, public recreation and conservation of the scenic, scientific, historic, or other values contributing to public enjoyment; and

WHEREAS, pursuant to 16 U.S.C. 90d-4, the FERC retains administrative jurisdiction under the Federal Power Act over the Project; and

WHEREAS, 16 U.S.C. 90c-1a, provides in part that "the removal and disposal of trees within power line rights-of-way within the ROLA are authorized as necessary to protect transmission lines, towers, and equipment; *Provided*, that to the extent practicable, such removal and disposal of trees shall be conducted in such a manner as to protect scenic viewsheds"; and

WHEREAS, the NPS has the administrative responsibilities for the management of the ROLA and has developed, through public input, a General Management Plan dated June 29, 1988 for the area; and

WHEREAS, the 1988 General Management Plan for the ROLA establishes as an objective of the NPS "to provide a variety of superlative and diverse recreational activities commensurate with available opportunities on the Skagit River" in the ROLA; and

WHEREAS, SCL holds fee title to approximately 940 acres of non-residential fee title lands within the boundaries of the ROLA (*see* Exhibit 1) hereinafter referred to as the "subject lands"; and

WHEREAS, having a written agreement which provides the extent of each party's obligations will facilitate their cooperation to accomplish the purposes and objectives of this Memorandum of Understanding; and

NOW, THEREFORE, in consideration of the benefits to be derived by each party:

AGREEMENT

IT IS HEREBY AGREED AS FOLLOWS:

I. This Memorandum of Understanding is entered into by SCL and the NPS as partial mitigation and compensation for the issuance by the FERC of a new license for the Project.

II. MUTUAL COOPERATION

To accomplish the purposes and objectives of this Memorandum of Understanding, each party agrees to cooperate with the other in fulfilling its obligations as herein provided.

III. SPECIFIC OBLIGATIONS OF THE PARTIES

A. SCL Obligations:

1. SCL shall manage the subject lands consistent with the Special Use Zone designation of the 1988 General Management Plan for the North Cascades National Park Service Complex which includes the ROLA, subject to the continuing jurisdiction of the FERC.

2. SCL shall consult with the National Park Service on an annual basis on plans for activities on the SCL subject lands within the ROLA.

3. SCL shall manage these lands, to the extent possible in such a manner as to provide native wildlife habitat and aesthetic quality. SCL shall consider visitor safety and aesthetic quality when siting, constructing, painting, and screening any necessary structure(s) on the subject lands, when engaging in any other construction activities on the subject lands, and when extracting any mineral from the subject lands, including but not limited to topsoil and gravel.

4. SCL shall limit the use of pesticides on the subject lands, consult with the NPS on any plans for use of pesticides and obtain NPS permits prior to their application.

5. SCL shall consult with the NPS in the planning and implementation of visitor use sites such as trails, interpretative exhibits, rafting sites or other such developments which are required by the FERC or are proposed by SCL on the subject lands.

6. SCL shall not, without the approval of the NPS, subdivide, sell any surface or subsurface rights, or convey any other rights or interests to a third party during the term of the new license issued by FERC for the Project, or during the terms of any subsequent annual license(s) issued by the FERC for the Project.

7. SCL shall not construct any buildings or other structures on the subject lands without first consulting with the NPS, except for those construction activities which may be authorized by the FERC pursuant to a license issued by the FERC for SCL's proposed Copper Creek Project, or in connection with the transmission right of way (ROW) for the Skagit Project.

8. SCL shall not store any form of hazardous material or waste on the subject lands, with the exception of explosives at existing locations as of January 1, 1991.

9. SCL shall consult with the NPS regarding possible alternative sites and sources before conducting any renewable natural resource or mineral extraction from the subject lands, including opening any new topsoil or gravel extraction sites, for the administrative purposes of SCL within the boundaries of ROLA.

10. SCL shall not conduct any timber harvest for commercial purposes on the subject lands, except for the necessary maintenance of transmission line ROWs or other timber clearing necessary for the furtherance of SCL's license activities and requirements.

11. SCL shall consult with the NPS before implementing any wildlife habitat or fisheries habitat improvement proposals on the subject lands.

12. SCL shall consult with the NPS in seeking ways to control the spread of exotic or non-native plants on the subject lands.

13. SCL and the NPS shall jointly consult regarding research, interpretive, recreational, fisheries, wildlife, or administrative proposals on adjacent NPS lands that may directly affect the subject lands, and such proposals on the subject lands that may directly affect the adjacent NPS lands. Should SCL and the NPS agree to proceed with the projects, SCL and NPS shall jointly consult regarding the planning and implementation of the projects.

B. NPS Obligations:

1. NPS shall provide consultation to SCL for project proposals on the subject lands that potentially impact natural or cultural resources, recreation opportunity or aesthetics.

2. SCL and the NPS shall jointly consult regarding research, interpretive, recreational, fisheries, wildlife, or administrative proposals on adjacent NPS lands that may directly affect the subject lands, and such proposals on the subject lands that may directly affect the adjacent NPS lands. Should SCL and the NPS agree to proceed with the projects, SCL and NPS shall jointly consult regarding the planning and implementation of the projects.

IV. Key Officials

1. Key Seattle City Light Official:

Superintendent
City of Seattle
City Light Department
1015 Third Avenue
Seattle, WA 98104-1198

2. Key National Park Service Official:

Superintendent
North Cascades National Park Service Complex
Pacific Northwest Region, National Park Service
2105 Highway 20
Sedro Woolley, WA 98284

V. Attachments

The following document is attached as an exhibit to this Memorandum of Understanding:

Exhibit 1. — City of Seattle Non-residential Fee Title Lands in the Ross Lake National Recreation Area

VI. Funding

No legal liability on the part of the NPS shall arise for any performance under this Memorandum of Understanding or any subsequent agreements between the parties until funds are made available from funds appropriated by Congress for that purpose.

VII. Amendment of Memorandum of Understanding

No waiver, modification, or amendment of this Memorandum of Understanding shall be valid unless in writing duly executed by each party. Amendments to this Memorandum of Understanding may be proposed by either party and shall become effective only upon being executed by each party hereto.

VIII. Officials Not To Benefit

The parties hereby assure and certify that no member of or delegate to Congress, or other federal official shall be admitted to any share of or part of this agreement or any subsequent agreement, understanding, grant or contract developed pursuant to this agreement, or to any benefit that may arise from it.

IX. Nondiscrimination

During the performance of this Memorandum of Understanding, each party hereto agrees to abide by the terms of Executive Order 11246 on nondiscrimination and shall not discriminate against any person because of race, color, religion, sex, or national origin. Each party hereto also agrees to take affirmative action to ensure that any applicants that may be employed pursuant to this Memorandum of Understanding are employed without regard to their race, color, religion, sex, or national origin.

X. Termination of Memorandum of Understanding

This Memorandum of Understanding may not be terminated unless by mutual consent, in writing, signed by each party hereto.

XI. Binding Nature of Memorandum of Understanding

The provisions of this Memorandum of Understanding shall inure to the benefit of and be binding upon the successors or assigns of each party hereto.

XII. Authority to Execute Memorandum of Understanding

Each party to this Memorandum of Understanding hereby represents and acknowledges that it has full legal authority to execute this Memorandum of Understanding and that it shall be fully bound by the terms hereof.

XIII. Effective Date

This Memorandum of Understanding shall be effective upon the date of the last signature hereto.

IN WITNESS WHEREOF, each party hereto has caused this Memorandum of Understanding to be executed by an authorized official on the day and year set forth opposite their signature.

City of Seattle
Seattle City Light
Seattle, WA

Superintendent — Date: 4/26/91

North Cascades National Park Service Complex
National Park Service
Sedro Woolley, WA

Superintendent — Date: 4/24/91

Exhibit 1. City of Seattle Non-residential Fee Title Lands in the Ross Lake National Recreation Area[1,2]

Parcel No.[3]	Acres[3]	Development/Use
01-128	177.05	Newhalem ponds and borrow pits; equipment storage and staging area; North Cascades Highway (NCH); transmission Right of Way (ROW)
01-130	49.26	n/a[4]
01-131	42.56	NCH and ROW
01-132	63.07	County line ponds and aggregate borrow pits; Newhalem Creek fish mitigation (4 removable piers and self-feeders for steelhead); NCH; ROW
01-133	127.01	NCH; ROW
02-100	4.10	n/a[4]
02-108	379.01	Top soil borrow area; NCH; ROW
02-109	25.41	Cabin--Boy Scout use
02-110	3.45	n/a[4]
02-114	69.08	ROW

[1]Derived from Appendix C of the Ross Lake National Recreation Area Land Protection Plan (National Park Service, 1988b). The map of lands is taken directly from this Plan.

[2]With the exception of some transmission rights-of-way, these lands are not part of the Project Area of Project #553.

[3]Statistics as reported in the Ross Lake National Recreation Area Land Protection Plan (NPS, 1988b).

[4]Information not currently available.