Sand Point Magnuson Park

Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project

Final Supplemental Environmental Impact Statement

Seattle Department of Parks & Recreation

May 2003

FACT SHEET
FINAL SUPPLEMENTAL EIS

Name of Proposal

Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project.

Proponent

City of Seattle, Department of Parks and Recreation

Location

The proposed project would be located in Sand Point Magnuson Park, which lies generally north of NE 65th Street and east of Sand Point Way NE in the northeastern area of Seattle. The specific development activities for the project would occur within what is identified in the Sand Point Physical Development Management Plan (PDMP) as the Magnuson Park Open Space/Recreation Expansion Area. The sports fields and courts would be developed in the central and south-central areas of Sand Point Magnuson Park. The proposed wetland/habitat complex is in the southeastern quadrant of the park.

Proposed Action

The *Proposed Action* is a decision to undertake development of new sports fields and courts, a wetland/habitat complex and integrated site drainage facilities at Sand Point Magnuson Park (SPMP) in the City of Seattle. The proposed action would be taken pursuant to the general direction provided by the Seattle Department of Parks and Recreation Comprehensive Plan and the Sand Point Physical Development Management Plan (PDMP). City Council Resolutions 30063 (adopted in November 1999) and 30293 (April 2001) provide specific guidance on concept design for sports fields and courts, wetland/habitat components and drainage for Sand Point Magnuson Park.

To implement the project, the Department of Parks and Recreation proposes to undertake the following specific actions:

- remove existing buildings and paving in the area of the former Navy Commissary facilities, adjacent to NE 65th Street near the southern edge of the park, as necessary to accommodate the development of sports facilities, drainage features and upland and wetland habitats
- reconfigure the existing southern entrance corridor to Sand Point Magnuson Park by widening the roadway, providing separate bicycle and pedestrian pathways, and installing new landscaping
- maintain some areas of viable existing wetland and woodland habitat in the eastern/southeastern portions of the park, while creating additional wetland and upland habitats in a complex mosaic
- develop a new trail system to provide foot and visual access to suitable areas of the wetland and habitat complex (leaving sensitive

parts of the habitat generally inaccessible), with rest areas and signage as appropriate

- redevelop an existing mowed grass sports meadow to accommodate up to 4 soccer fields, as well as community functions and unstructured recreation, during daylight hours (i.e., without lights)
- construct new facilities to provide 11 athletic fields with all-weather, synthetic surfaces and lights, to accommodate soccer (5 fields), baseball/adult slow-pitch softball (2 fields), youth baseball/fast-pitch softball (3 fields), and rugby (1 field)
- construct a new 1.5-mile cross-country running trail that, in conjunction with existing trails and new pedestrian ways, could accommodate 3- to 4-mile cross-country events
- construct a dual-purpose parking lot/paved area for in-line skate hockey
- construct 2 "walk-on" basketball courts and 3 sand volleyball courts
- construct three new service/support complexes to house restrooms, a concession stand, maintenance facilities, storage, mechanical services and program space
- install subsurface drainage facilities from the athletic fields and develop drainage corridors to provide surface conveyance of storm water from the west, north and east perimeters of the project site. Stormwater would be routed through bioswales and vegetated water quality treatment wetlands prior to passing into habitat wetlands.
- create a new open-water embayment to enhance near-shore fish habitat along Lake Washington for endangered Puget Sound chinook salmon and other aquatic species
- provide appropriate infrastructure to facilitate a passive interpretive and educational program for the wetland/habitat complex
- construct environmental education structures and viewing platforms on the perimeter of the wetland/habitat complex
- integrate new water supply, irrigation, electric power and lighting utility structures into the existing Park utility systems, and relocate some existing utility lines

A variety of specific permits and approvals would be needed to implement the proposed action. All facilities or resources developed through the proposed project would be operated and maintained by the Department of Parks and Recreation. Park-sponsored leagues, various league organizations and user groups and the general public would use the athletic facilities. The habitat areas within the Park would be open and accessible to the public. In addition, more formal arrangements with education groups would be formulated to coordinate the use of the habitat area for formal education for K-12 and university level students and the general public. Stewardship and long-term maintenance of some aspects of the habitat restoration would be coordinated between Parks and interested citizen and community groups. The Parks Department

would enter into agreements with organizations as appropriate for use of the facilities and habitat resources.

Lead Agency

City of Seattle, Department of Parks and Recreation (DPR)

Responsible Official

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Required Approvals

Preliminary investigation indicates that the following permits and/ or approvals could be required for the *Proposed Action*. Additional permits/approvals may be identified during the review process.

Agencies with Jurisdiction

- ***United States***
  Army Corps of Engineers
  Clean Water Act, Section 404
  Rivers and Harbors Act, Section 10

- ***State of Washington***
  Department of Fish and Wildlife
  Hydraulic Project Approval

  Department of Ecology
  Construction Stormwater National Pollutant Discharge Elimination System (NPDES) permit

- ***City of Seattle***
  Seattle City Council
  Resolution approving project
  Council Land Use Action for height standards

Department of Design, Construction & Land Use
Master Use Permit, including:

- Grading Permits
- Demolition Permits
- Building Permits
- Mechanical Permits
- Electrical Permits
- Occupancy Permits
- Shoreline Substantial Development Permit
- Comprehensive Drainage Control Plan approvals
- Large-Parcel Drainage Control Plans with Construction Best Management Practices, Erosion and Sediment Control Plan Approvals

Seattle Design Commission
Recommendation for approval of the project design

Transportation Department (SEATRAN)
Recommendation for approval concerning the reconfiguration of the NE 65th Street entrance to Sand Point/Magnuson Park
Street Use Permits (temporary, construction-related)

Authors and Principal Contributors to this SEIS

The Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project Final Supplemental EIS has been prepared under the direction of the Seattle Department of Parks and Recreation. The following consulting firms contributed to the SEIS:

- **Huckell/Weinman Associates, Inc. --** lead EIS consultant and document assembly
- **MFG, Inc.** - *Noise*
- **The Berger Partnership, P.S.** – design team lead consultant; project management; project description
- **Sheldon Associates** – *Animals and Fish (impacts on sports field noise on wildlife)*

Location of Background Data

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Document Being Supplemented

Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project Final EIS, July 2002.

Date of Issuance of this Final Supplemental EIS

May 16, 2003

Date of Final Action

Seattle City Council approval of the final action is anticipated to occur in late spring or summer 2003, following consideration of the Final Supplemental EIS.

Availability/Cost of this Draft SEIS

Copies of this Final Supplemental EIS have been distributed to agencies, organizations and individuals noted on the Distribution List (*Chapter 5* in this document).

Copies of this Final Supplemental EIS are available for review at the Seattle Department of Parks and Recreation, Sand Point Magnuson Park, 7400 Sand Point Way NE. Copies may also be reviewed at the Seattle Public Library Downtown Branch (1000 Fourth Ave) and at the Northeast, University and Lake City Branches of the Seattle Public Library.

Additional copies of this Final Supplemental EIS may be purchased at the Seattle Department of Parks and Recreation, Sand Point Magnuson Park, 7400 Sand Point Way NE at a cost of $3 per copy.

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Summary

1. SUMMARY

This document supplements the Final Environmental Impact Statement (EIS) for the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project, which the City of Seattle, Department of Parks and Recreation (DPR) issued on July 12, 2002. A local citizens group appealed the adequacy of the Final EIS, pursuant to Chapter 25.05 of the Seattle Municipal Code. A Seattle hearing examiner conducted an appeal hearing on January 23 and 24, 2003 and held the record of the proceeding open until February 11, 2003. As documented in a decision dated February 26, 2003 (Hearing Examiner file W-02-003), the hearing examiner remanded the DPR Superintendent's adequacy determination on the Final EIS and required DPR to prepare a Supplemental EIS on the sole issue of the impacts of sports field noise on wildlife. The hearing examiner affirmed the DPR adequacy determination with respect to all other issues addressed in the appeal.

The scope of the Supplemental EIS is limited to the single issue of the impacts of sports field noise on wildlife. The State Environmental Policy Act (SEPA) rules direct that an SEIS "should not include analysis of actions, alternatives, or impacts that is in the previously prepared EIS" (WAC 197-11-620). In response to this direction and the limited scope, the Final Supplemental EIS includes in Chapter 1 summary information repeated from the July 2002 Final EIS sufficient to explain the objectives for the proposal and to describe the proposed action and alternatives, as they were presented in the original EIS and the adequacy appeal. Chapter 2 of the Final SEIS provides information on the affected environment, impacts and mitigation measures that is directly relevant to the single issue of the impacts of sports field noise on wildlife. Other material from the Final EIS is not repeated in the SEIS.

1.1 INTRODUCTION

The City of Seattle, Department of Parks and Recreation (DPR) is proposing to redevelop a portion of the former Puget Sound Naval Station, Seattle through the development of athletic fields and courts, wetland and upland habitat, and an integrated drainage system within a large area of Sand Point Magnuson Park (SPMP), which is located in the northeastern portion of Seattle, Washington (see **Figure 1-1**). Sand Point Magnuson Park (including all of the project site for the proposed action) is located within the former boundaries of the Puget Sound Naval Station, Seattle, a major military installation operated by the U.S. Navy. A large portion of the former naval station, which primarily included the land used for a military airfield, was transferred to the City for park use in 1970. The Navy transferred another parcel including administrative, residential and operations buildings to the City in 1997, following extensive study of the appropriate reuse of that parcel.

Sand Point Magnuson Park currently includes a total area of 352 acres, including 30 acres within the property boundary administered by other entities (see **Figure 1-2**). The geographic scope of the proposed action includes approximately 153 acres, or about 43 percent of the total park area, generally located within the southern and eastern sectors of park. Existing uses within the project site include two areas with multiple grass-surfaced athletic fields, six tennis courts, two picnic areas, park roadways and trails, parking lots, some remaining naval station buildings and related facilities, and extensive, unmanaged

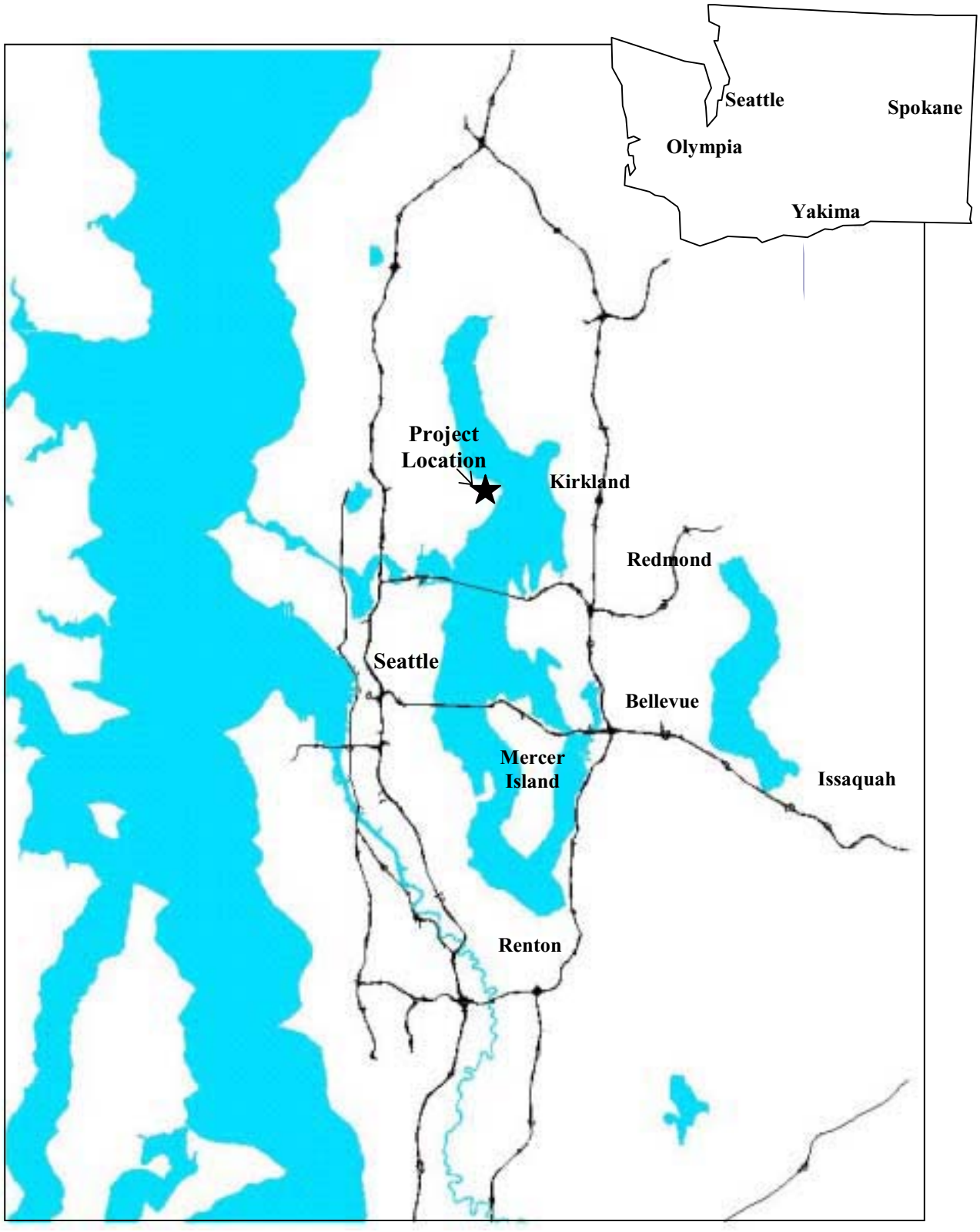

Figure 1-1
Location Map

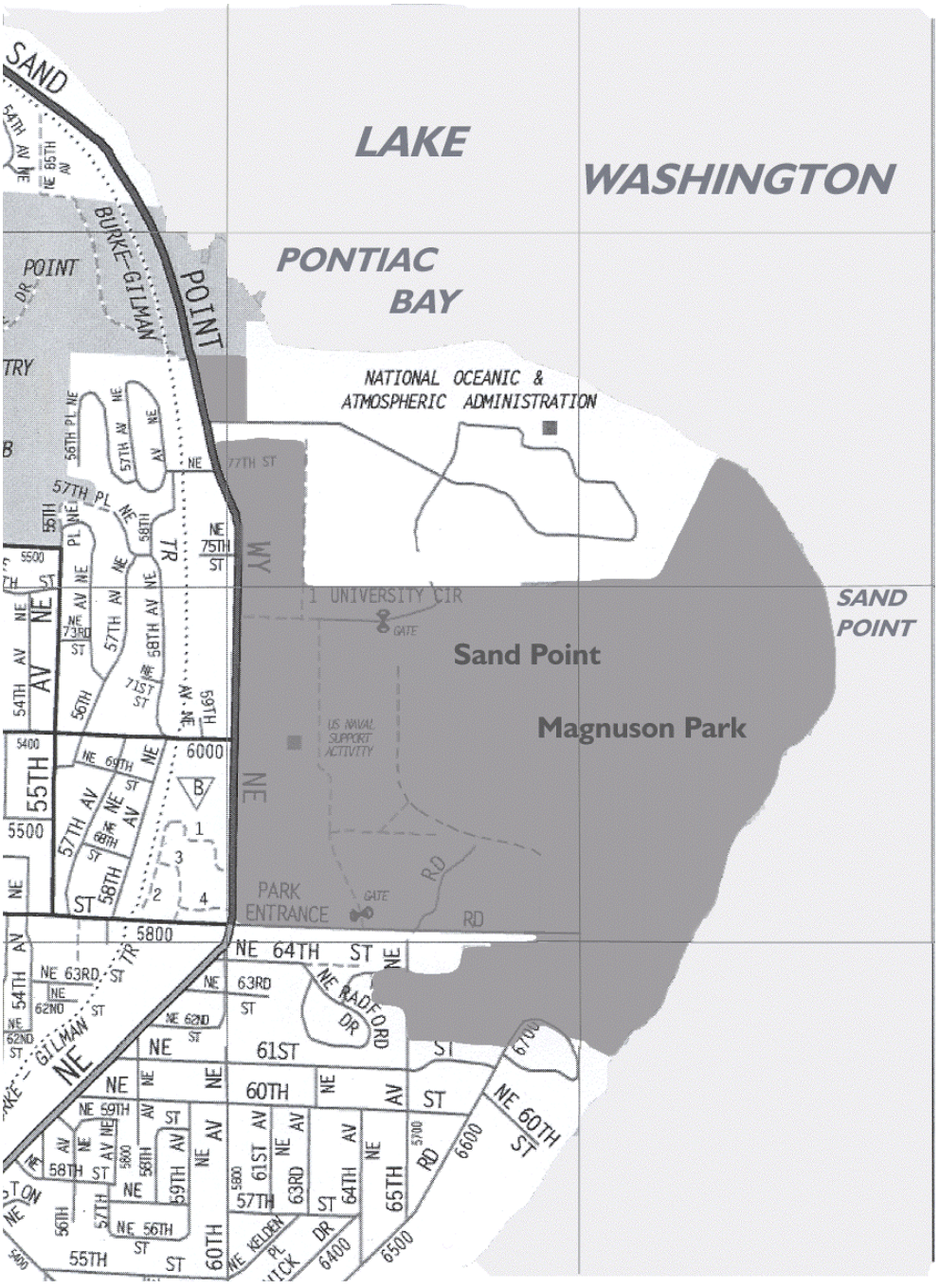

Figure 1-2
Project Vicinity Map

open space areas. Some of these uses would be redeveloped or reconfigured in their present locations, while others would be replaced under the proposal. Park uses within the original Sand Point Magnuson Park property and adjacent to the project site, including a boat launch, a beach area and an off-leash dog exercise area, would remain in their current (or currently proposed) configuration and would not be modified as part of the proposed action. Similarly, the scope of the proposed action does not extend into the area of former Navy buildings along the western edge of the Sand Point site, which are being redeveloped for a variety of community, recreational and residential uses.

The Department of Parks and Recreation (DPR), as the lead agency under the State Environmental Policy Act (SEPA), previously determined that the proposed project may have a significant adverse effect on the environment. Therefore, an environmental impact statement (EIS) is required under RCW 43.21C.030(2)(c). DPR originally prepared a Draft EIS and a Final EIS pursuant to the SEPA rules (WAC Chapter 197-11) and the applicable provisions of the Seattle Municipal Code (SMC). The Draft EIS was circulated in January 2002 for review by agencies and the public. DPR considered all formal review comments on the Draft EIS and incorporated responses to those comments in the Final EIS issued in July 2002.

As noted above, DPR has prepared this limited-scope Draft Supplemental EIS pursuant to the February 26, 2003 hearing examiner decision, as well as the SEPA rules and the SMC. The Draft SEIS is being issued for public review of the information specifically addressing the issue that is within the scope of the SEIS. DPR will consider review comments on the Draft SEIS, and will incorporate responses to those comments in a Final SEIS.

1.2 PURPOSE AND USE OF THIS SUPPLEMENTAL EIS

The purpose of this SEIS is to inform the Mayor of Seattle and the Seattle City Council about a specific set of impacts to wildlife that may occur if the proposed Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project is approved by the City Council and implemented by DPR. The SEIS does not address other conceivable environmental impacts that might result from the proposed action, and it does not repeat discussion of potential impacts that were addressed in the July 2002 Final EIS. The SEIS focuses on the specific topic of the potential impacts of sports field noise on wildlife, based on the direction provided in the February 26, 2003 hearing examiner decision.

The SEIS describes selected aspects of the affected environment for the pertinent element of the environment (wildlife), assesses the significance of likely sports field noise impacts for that element, discusses possible mitigation measures that could avoid or reduce the expected impacts, and identifies significant adverse environmental impacts that could not be avoided. SEPA and the SMC do not require the City to mitigate each adverse environmental impact identified, nor do they require the City to deny the proposed action if there would be impacts that could not be mitigated. The purpose of the SEIS is simply to disclose to the City Council the possible effects (beneficial as well as adverse) of the proposal and alternative courses of action with respect to sports field noise and wildlife. The Council can use the SEIS, in conjunction with the full content of the July 2002 Final EIS, to make a reasoned assessment of the impacts and an informed choice among alternatives. The Council will then weigh the information presented in the Final EIS and the Final SEIS, along with information on social, economic and other pertinent considerations, in determining whether to proceed with the proposal (SMC 25.05.448).

The Final EIS for the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project (as supplemented by this SEIS) documents a discrete portion of a phased environmental review process for DPR planning and project-level activities at the Sand Point site. To a degree, the Final EIS tiers on the Sand Point Reuse Project Final EIS, which the City released in October 1996. The Reuse Project EIS (City of Seattle, 1996) addressed both project-specific and "non-project" or programmatic actions proposed for the western 151-acre parcel of the Sand Point site that was transferred to the City in 1997. Phased environmental review of a sequence of actions spanning project planning and implementation is intended to allow lead agencies and decision makers to focus on issues that are ready for consideration and decision at the appropriate time, and to exclude from consideration issues already decided or not yet ready for decision. The Reuse Project EIS included varying levels of detail for the many project and non-project actions addressed in the document, depending on the nature and proposed implementation timing for the respective actions. The City's intent with the 1996 EIS was to provide legally sufficient review for all of the subject non-project actions (e.g., adoption of defined Sand Point amendments to the Seattle Comprehensive Plan and approval of the Physical Development Management Plan for Sand Point), and for the project actions expected to be ready for permitting within the ensuing 2 years. The 1996 EIS provided environmental review for the programmatic guidance established in the reuse plan to develop sports fields and restore wetlands in what the plan designated as the Magnuson Park Open Space/Recreation Expansion Area. The July 2002 Final EIS provides project-level detail and environmental review specifically for the Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project, which is possible and appropriate now that DPR has developed a specific design for the project.

1.3 OBJECTIVES FOR THE PROPOSAL

The Final EIS provides a complete discussion of the history of the City's planning efforts for Sand Point Magnuson Park, which led to the development of objectives for the Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project. The following text is an abbreviated discussion of project objectives as presented in the Final EIS.

The development of Sand Point Magnuson Park has been an ongoing community discussion for decades, since before the final closing of the Navy airfield in 1970. A consistent theme in the various plans developed for the peninsula was the creation of a City park. Plans for the park developed for the City in the 1970s (Jones and Jones, 1975), the 1980s (Worthy and Associates, 1988) and the 1990s (by Haag and Associates, EDAW, Inc. and Jones and Jones) each include the development of sports fields, sports courts, wetlands and habitat areas. The City Council has affirmed its goals for the development of the park over the years through a variety of actions.

The City Council has approved the Seattle Parks and Recreation Plan 2000 (Seattle Department of Parks and Recreation, 2000), the Joint Athletic Fields Development Program (Seattle Department of Parks and Recreation, 1997a), the Sand Point Physical Development Management Plan (City of Seattle, 1997b) and the Sand Point Magnuson Park Concept Design (1999) as amended (2001). The combination of these documents provides the statement of objectives for the proposal.

The focus of this proposed project was included as part of the programmatic Environmental Impact Statement completed in 1996 for the Sand Point Reuse Plan (City of Seattle, 1996). Based on that environmental review, the City Council approved Resolution 29249 approving the Sand Point Physical

Development Management Plan (PDMP). The PDMP identified the Magnuson Park Open Space/Recreation Expansion Area.

Much of the south end of the naval station property was identified as being added to Sand Point Magnuson Park. Park improvements identified for this area included creating an improved park entrance at the intersection of NE 65th Street and Sand Point Way NE and providing additional sports fields and open space. The principal considerations defined in the Physical Development Management Plan for the development of this area are:

- Expand recreational opportunities
- Enhance open space and natural areas
- Demonstrate environmental sensitivity
- Improve accessibility
- Reuse historic resources

Following the adoption of the 1997 Physical Development Management Plan, refinement of the plans for the Park continued. With the adoption of Resolution 30063 in 1999, the Council approved the Sand Point Magnuson Park Concept Design, which provided updates to the Physical Development Management Plan. In April 2001, the City Council approved Resolution 30293, which amended the Magnuson Park Concept Design and Resolution 30063 to provide additional guidance on the sports fields and courts configuration. The overall objectives for the development of the sports fields and open space/wetlands project remained essentially the same through the adoption of those Resolutions.

The City Council has also approved a Joint Athletic Fields Development Program (JAFDP), which provides programmatic guidance to the Parks Department on the development of athletic facilities citywide. The JAFDP addresses facilities at both Parks Department and Seattle School District properties, and identifies the development of fields at Sand Point Magnuson Park. The original document approved in 1997 outlined numerous specific fields and amenities to be included at Sand Point Magnuson Park. The draft 2002 JAFDP update (City of Seattle Department of Parks and Recreation, 2002) likewise identifies Sand Point Magnuson Park as a location for development for a number of sports fields and indicates that the Pro Parks Levy would provide funding for the development of several fields at this site.

The Sand Point Magnuson Park Concept Design provides the graphic outline of the project components included in the current proposal. The Concept Design clarifies the project objectives, originally stated as principle consideration in the PDMP, by demonstrating graphically the balance between expanding recreational opportunities, enhancing open space and natural areas, and improving accessibility. The text in Resolution 30063 further clarifies the Council's objectives related to expanding recreational opportunities by stating that 5 baseball/softball fields, 6 tennis courts and 2 soccer fields will be lighted. The Council also stated that 11 fields will have synthetic turf and 4 will have natural grass surfaces. The Council left open the possibility of lighting other fields pending additional public input and review.

1.4 DESCRIPTION OF THE PROPOSAL AND ALTERNATIVES

This SEIS focuses on a specific impact issue related to the proposed action, which is for the Department of Parks and Recreation to implement the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project. The project as proposed is described in detail in Section 2.2 of the July 2002 Final EIS. The Final EIS also addresses one action alternative to the proposal, referred to as the lesser-capacity alternative, and the no action alternative (see Section 2.3 and 2.4 of the Final EIS, respectively, for complete descriptions). This SEIS addresses the same three alternatives with respect to the limited scope of the potential impacts of sports field noise on wildlife. The three alternatives are briefly summarized below.

1.4.1 Proposed Action

The proposal includes development of an integrated sports field and courts complex, a wetland/habitat complex, a drainage system, and a circulation system. The guiding concept for the proposal is to integrate the physical features and functions of all of the project components. Specifically, the proposal includes:

- 11 sports fields that would have all-weather, synthetic surfaces and would be lit;
- a sports meadow for both scheduled and unstructured play activities, accommodating up to 4 additional full-size sports fields, that would have a natural grass surface and not be lit;
- replacement of 6 existing tennis courts, a parking lot and access road with wetland/habitat features (the tennis courts to be replaced in the future with approximately 14 courts as part of an adjacent project)
- an inline-skate hockey surface, 3 basketball courts, 3 sand volleyball courts and an open lawn flex space;
- a wetland/habitat complex of approximately 65 acres, with an open-water lagoon connection to Lake Washington between the existing swim beach and the boat launch;
- a total of approximately 991 parking spaces, including 867 spaces with security lighting;
- three building complexes to house restrooms, concession stands and maintenance and education facilities for the sports field, sports meadow and wetland/habitat areas;
- reconfiguration of NE 65th Street within the park boundary, and two interior park roadways;
- a pedestrian trail system through the sports fields and around the wetland/habitat area, some of which would be designed to support cross-country running competition; and,
- relocation and replacement of existing utilities as necessary.

1.4.2 Lesser-Capacity Alternative

The lesser-capacity alternative that is analyzed in detail in the Final EIS is similar to the proposed action, particularly with respect to its overall footprint within the park, and also includes a sports field complex, a wetland/habitat complex, integrated drainage, and a circulation system. The lesser-capacity alternative would accommodate a considerably lower volume of sports field use, however, and a somewhat smaller acreage of wetland/habitat complex. The primary differences with respect to the proposed action are that fewer of the sports fields would have all-weather surfaces and lighting, and an existing roadway and

parking lot in the interior of the park would not be removed and replaced with wetland area. Specifically, the lesser-capacity alternative includes:

- 3 sports fields (rather than the 11 with the proposal) that would have all-weather, synthetic surfaces and would be lit;
- 7 new sports fields that would have natural-grass surfaces and would not be lit;
- a somewhat smaller sports meadow area that would have natural grass surfaces and would not be lit;
- 6 existing tennis courts southeast of the sports meadow to remain, with approximately 8 new courts to be added as part of an adjacent project
- basketball courts and volleyball courts;
- a wetland and habitat area of approximately 62 acres with an open-water lagoon connection to Lake Washington immediately north of the boat launch;
- reconfiguration of NE 65th Street within the park boundary, and two interior park roadways;
- a total of approximately 393 lit and 672 unlit parking spaces;
- retention of the existing sports meadow parking lot and access road;
- two new buildings (rather than the three with the proposal) to house restrooms, concession stands and maintenance and education facilities for the wetland habitat area and the sports fields;
- a scaled-down pedestrian trail system through the sports fields and around the wetland habitat area; and
- existing utilities would be relocated as necessary.

1.4.3 No Action Alternative

The no action alternative represents the most realistic expectation of future conditions if the proposal for a wetland/habitat complex, drainage system, and sports fields/courts were not implemented by the Department of Parks and Recreation. Given the condition of the existing park facility, a few minimal improvements would be expected to occur without the proposal. These would include major maintenance improvements to the drainage and irrigation system at the existing sports fields in Sand Point Magnuson Park. The former Navy Commissary facility, which includes five buildings at the south end of the project area, would be demolished regardless of the disposition of the proposed action. These buildings present a substantial security issue for the City and would likely be demolished even without the project as proposed. The parking areas at the commissary site would remain paved and open to general parking. The existing sports fields at Sand Point would remain in their current condition. The current undeveloped area east of the Sand Point sports fields and south of the existing tennis courts would remain largely unchanged, although the composition of the vegetation would change over time through natural growth and succession. In addition, implementation of the Vegetation Management Plan for the park would result in removal of non-native invasive species within natural habitat areas and replacement with native species. Minor improvements would be made to the existing pedestrian circulation system through the maintenance of trails. The existing parking would remain in its current configuration. Existing utilities would remain in place.

1.5 ILLUSTRATION OF THE PROPOSAL AND ALTERNATIVES

Figures 1-3 through **1-6** graphically represent existing conditions at the project site and configuration of the proposed action and the alternatives. **Figure 1-3** is a map of the Sand Point Magnuson Park site (presented in the Final EIS as Figure 2.1-1), indicating the general configuration of the current facilities within the park and the spatial relation of the park to the surrounding community. **Figure 1-4** is a larger-scale map (presented in the Final EIS as Figure 2.1-2) of the existing conditions within the specific portion of Sand Point Magnuson Park that is the project area for the proposed action. As discussed in the Final EIS, these two figures are generally reflective of the site conditions that would be expected under the no action alternative.

Figure 1-5 is a schematic representation of the site plan for the proposed action; this graphic was included in the Final EIS as Figure 2.2-1. **Figure 1-6** is the corresponding site plan for the lesser-capacity alternative, which was originally reproduced in the Final EIS as Figure 2.3-1. Chapter 2 and Appendix A of the Final EIS included numerous additional graphics that described the proposed action and alternatives in greater detail.

Figure 1-3
Sand Point Magnuson Park Site Map

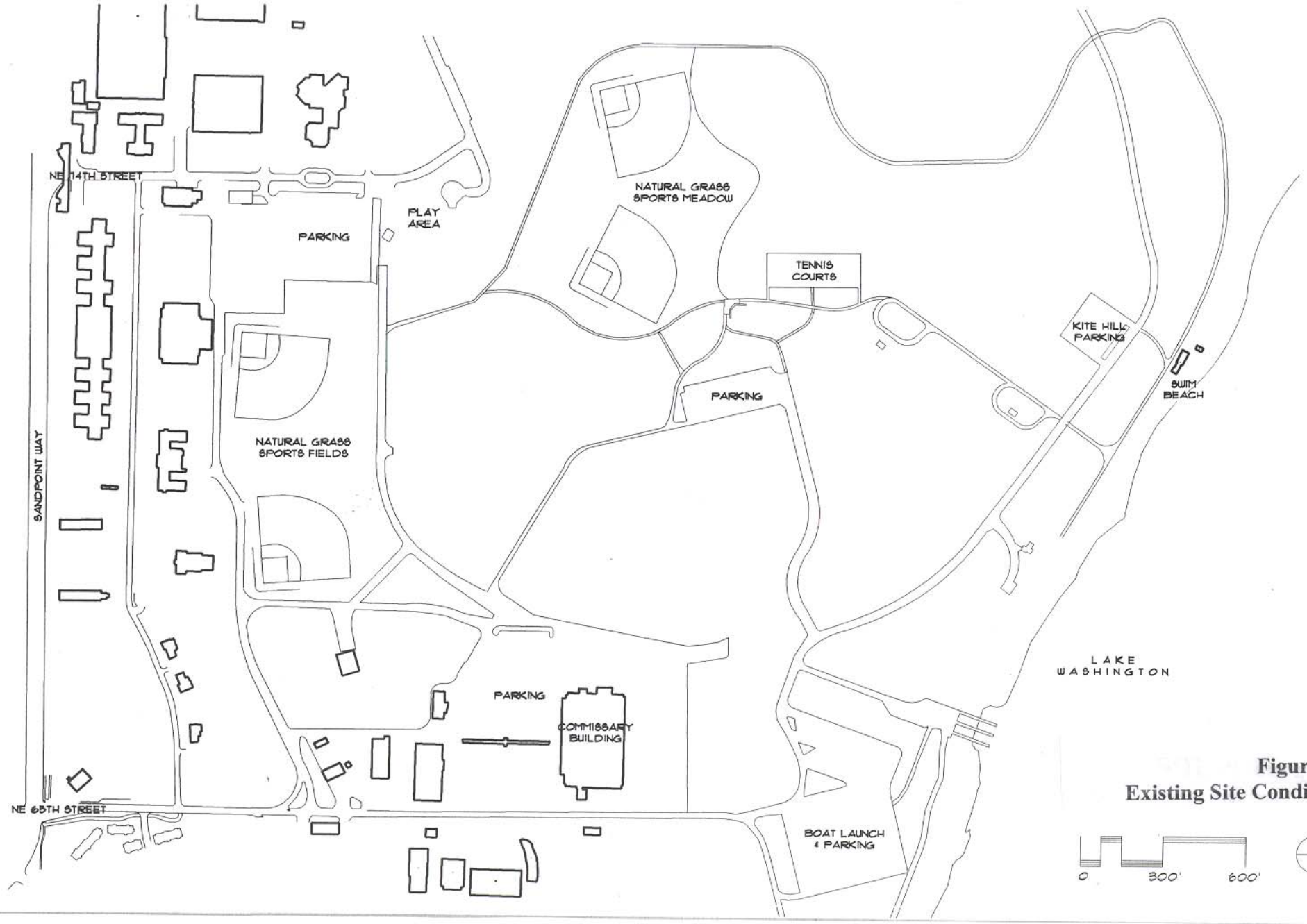

Figure 1-4
Existing Site Conditions

SK-0.04

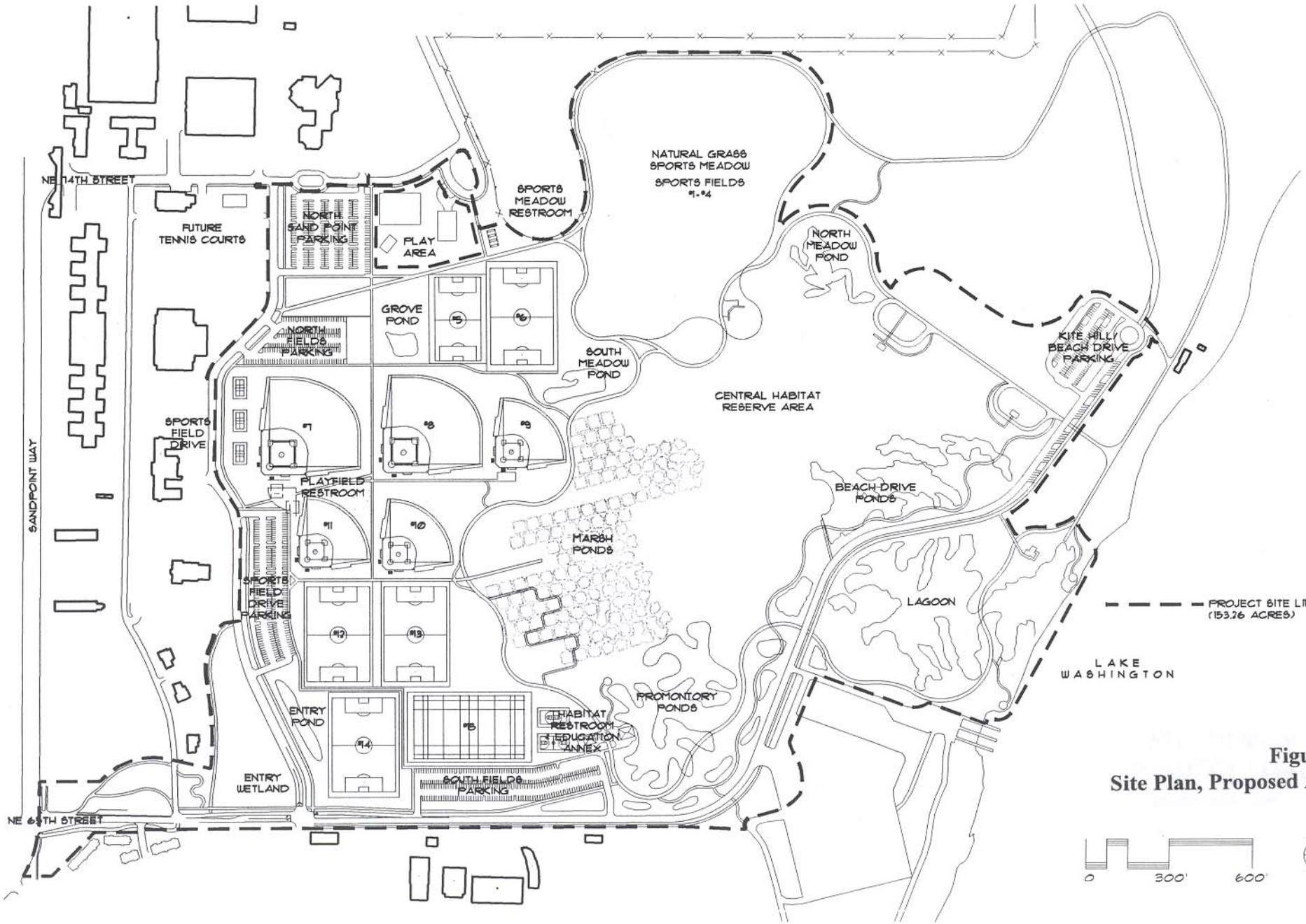

Figure 1-5
Site Plan, Proposed Action

SK-0.01

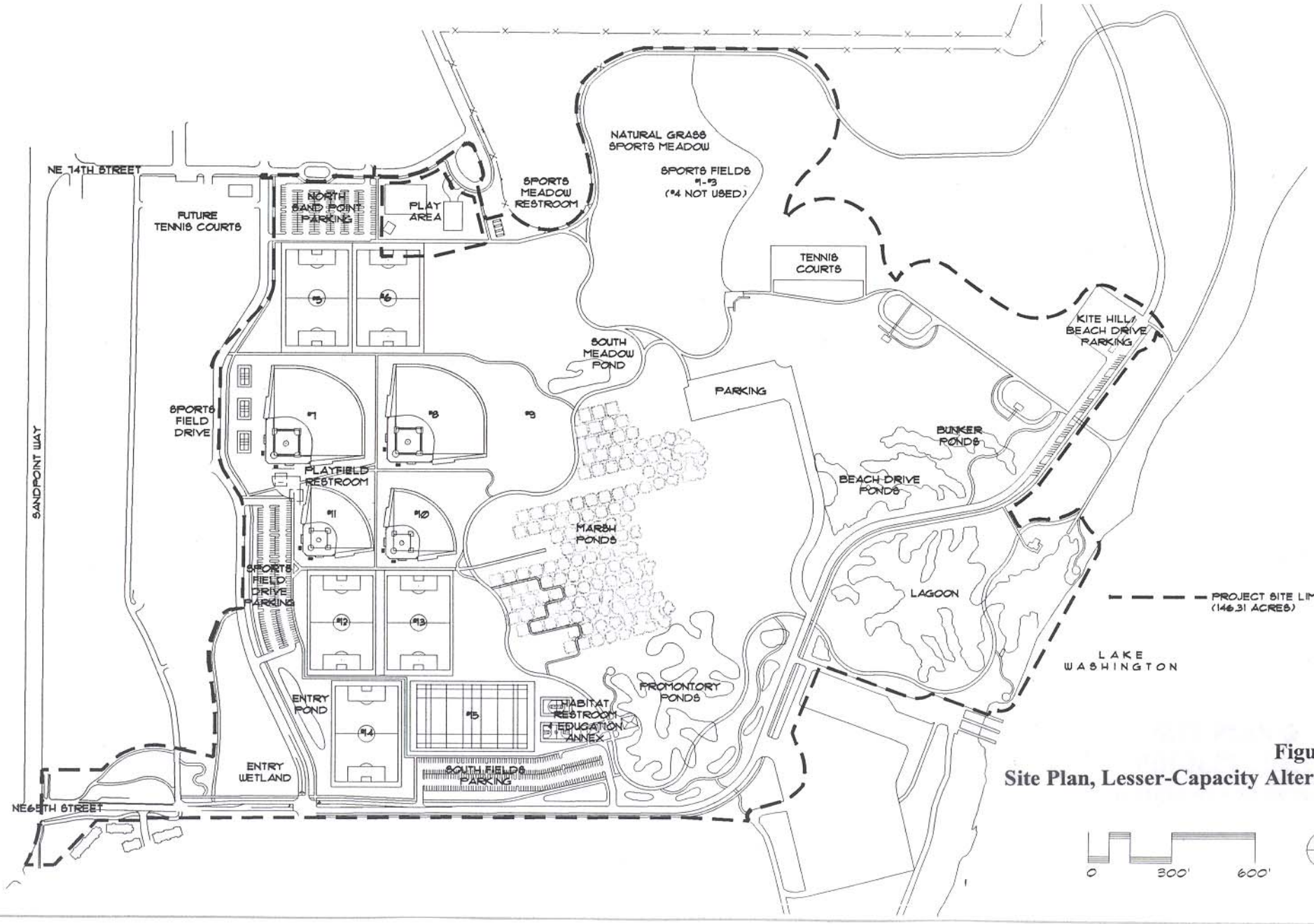

Figure 1-6
Site Plan, Lesser-Capacity Alternative

SK-0.02

1.6 SUMMARY COMPARISON OF ALTERNATIVES

1.6.1 Environmental Impacts

A comparative summary of the expected impacts of sports field noise on wildlife resulting from the proposed action, the lesser-capacity alternative and the no-action alternative has been prepared to assist decision makers and the public in understanding the environmental choices among the alternatives. This summary is provided in **Table 1-1**. Review of the table allows a quick comparison of the impacts of the proposal to those of the other alternatives. The entries in the table are consolidated versions of the impact conclusions documented in **Chapter 2** of the SEIS.

1.6.2 Mitigation Measures

Section 2.6 of the SEIS includes discussion of available mitigation measures following the presentation of the impact analysis for the pertinent element of the environment. The treatment of mitigation measures is keyed to the impact results; applicable mitigation measures are identified if significant potential environmental impacts might be expected, but need not be addressed if significant impacts are not identified.

The discussion of mitigation measures distinguishes between proposed mitigation and possible mitigation. Proposed measures are those that have been adopted by the project proponent (the Department of Parks and Recreation, in this case) and incorporated into the construction and/or operation plans for the project. Possible or potential measures are those that have been identified through the impact analysis as measures that the proponent could consider to address identified impacts, but has not yet adopted or incorporated into project plans.

The status of proposed and potential mitigation measures, as of the release of the Final Supplemental EIS, is summarized below for construction and operation.

Construction

- Mitigation for temporary noise related to the construction of the proposed action would include limiting hours of construction to daytime hours.
- Staging areas for construction vehicles and equipment could be located as far away from current habitat as possible, in order to reduce potential impacts of construction noise to wildlife.
- If possible, heavy construction resulting in significant noise production could occur outside of the breeding season for most wildlife species (e.g. heavy construction could begin in early August and extend until the end of December).

Operation

Noise generated from activities on the proposed sports fields could be reduced using a number of approaches:

- Installing resilient materials on the baseball/softball backstops would help dampen noise. (This measure was specifically incorporated into the proposed action.)
- Reducing the daily hours of field operation would reduce potential negative impacts to nearby wildlife by reducing the frequency and duration of sports field noise. Depending upon the activity patterns of the affected wildlife, this could be applied on an annual basis or only during key periods of the year, such as during breeding season(s).
- It is anticipated that no permanent outdoor sound systems would be installed within the sports field complex.
- Installing an upland forest buffer between the athletic fields and the proposed wetland habitat, while not necessarily functioning for substantial noise reduction, would nonetheless provide some visual screening of the created wetland habitat from the athletic fields. Creating a vegetative barrier to occlude noise sources from animals would help to mitigate for increased noise and activity associated with the proposed athletic fields. The use of earth berms and native vegetation screens could provide further noise reduction along the ground plane.
- Possible actions or practices to help minimize noise impacts from sports field maintenance include use of perimeter landscaping and berms, performing regularly scheduled maintenance of machinery and equipment, and scheduling the noisiest maintenance activities during mid-day hours.

1.6.3 Significant Unavoidable Adverse Impacts

Construction activities associated with the proposed action would result in unavoidable intermittent noise impacts to nearby wildlife habitat. While temporary in nature, noise impacts would persist over a relatively long term (approximately 10 years) and might nevertheless cause some species to selectively move away from habitat in close proximity to the construction site, even if said habitat is not actually physically disturbed during the construction process. After heavy construction activity ceased, the habitat in close proximity to construction sites in the park would eventually be recolonized by many of the species initially displaced by the noise from construction.

Operation of the sports fields would result in a long-term change from the existing ambient noise conditions, and therefore in some degree of noise impacts within the interior areas of Sand Point Magnuson Park. The key dimensions of those impacts would be the frequency and duration of sports field noise, rather than the intensity, as the typical and maximum sound levels would not be appreciably greater than at present. Existing typical (L25) sound levels at a reference location in the habitat area of the park are in the vicinity of 50 dBA, with a maximum sound level of approximately 68 to 70 dBA. Predicted (L25) spring and summer sound levels with the proposed action at the same location range from 42 to 55 dBA, with predicted maximum levels from 61 to 73 dBA. Given that a 3-dBA increase is barely perceptible to the human ear, the magnitude of the potential change in noise levels from operation of the proposed sports fields is slight.

The expanded hours of sports field operation under the proposal would undoubtedly result in a greater frequency and duration of ambient noise during certain times of the year, compared to existing conditions. Increases in frequency of sporting events and the duration of sports field noise would be unavoidable and could potentially adversely impact certain wildlife populations. The degree of impact cannot be conclusively determined (i.e., the impacts may not be "significant"), however, because no research has been conducted specifically regarding noise from athletic fields affecting wildlife. The limited research

findings that are available do not allow the identification or prediction of a significant level of impacts with reasonable certainty.

In addition, the types of noise and the corresponding sound levels would be similar to those that currently occur; if noise levels of the magnitude produced by the proposed sports fields are capable of adversely affecting wildlife using Sand Point Magnuson Park, those wildlife species are already being adversely affected by the existing ambient noise levels. Given the baseline conditions, it is not feasible to predict the incremental impact that might be associated with the greater frequency and duration of noise levels that presently occur.

Furthermore, the configuration of the proposed action and the size of the wetland/habitat complex indicate that any incremental noise impacts on wildlife would not likely extend throughout the entire wetland/habitat complex. While some species might selectively abandon habitat in close proximity to the athletic fields, the proposed action would also increase habitat that is more removed from human activity and noise because it would eliminate access and parking in areas of the park currently impacted by human activity. Therefore, under the proposed action, potentially noise-sensitive species that might be displaced from the habitat in the vicinity of the proposed sports fields could find more suitable habitat in other areas of the park where human activity would be minimized.

While the impact analysis did not result in the conclusive identification of significant impacts to wildlife, it does appropriately narrow the focus of potential impacts to certain types of wildlife. The analysis concluded that the species of mammals occurring at Sand Point Magnuson Park are unlikely to be adversely affected by the change in noise conditions associated with the project. Similarly, the analysis concluded that the proposed action was not likely to result in interference with breeding activity or other behaviors of amphibians or reptiles. To the extent that incremental impacts to wildlife might occur, those impacts would apparently be limited to bird species, and primarily to birds that use park habitat for breeding. Furthermore, comparison of the daily and seasonal timing aspects of bird breeding behavior relative to the increased frequency and duration of sports field noise indicates that the changes in field use and associated noise patterns would have relatively little potential to interact with bird breeding activities; the daily duration of field use would not be substantially different from current conditions during much of the breeding season, and the change in duration would not affect bird activity in the key early morning hours of the day.

Mitigation measures that are capable of reducing noise associated with the proposed action are discussed in **Section 2.6**. These include use of materials that would dampen sound, restrictions on the use of sound systems, use of berms and vegetative barriers, and possible restriction in periods of operation. In addition, monitoring of noise conditions and habitat use could help to determine whether sports field use was having an adverse effect on park wildlife. If monitoring suggested that sports field use was having a significant impact on breeding bird populations, operating conditions could be adjusted to reduce the level of noise impacts. Such an adjustment would logically apply to field use during morning hours, however, and would not be triggered by changes in field use patterns associated with the proposed action.

Table 1-1
Environmental Impacts of the Alternatives

Proposed Action	Lesser Capacity Alternative	No Action Alternative
WILDLIFE		
Construction Temporary, but long-term intermittent noise associated with construction activities, with varying levels of noise in wildlife habitat areas based on project phasing plan. Some species could temporarily move from selected areas, but habitat close to construction sites would likely be recolonized after construction ceased. **Operation** Use of sports fields would result in increased levels of use compared to current conditions and greater frequency and duration of ambient noise, particularly at certain times of the year. Predicted sounds levels in the habitat complex adjacent to the sports fields would typically be from 42 to 55 dBA in spring and summer, with maximum sound levels of 61 to 73 dBA. At more interior locations predicted sound levels would typically be from 42 to 51 dBA, with maximum sound levels of 60 to 68 dBA. Sound levels with the proposed action would be similar to sound levels occurring with the current sports field uses and configuration. Research indicates wildlife can experience adverse responses to noise sources, but the research has been based on quite different types of sound sources and not on sports field activities. Based on the characteristics and behaviors of groups of species, the potential for adverse impacts would primarily apply to birds, especially nesting birds.	**Construction** Temporary, but long-term intermittent noise associated with construction activities, with patterns and effects similar to proposed action. **Operation** Operational noise similar to conditions under the proposed action, but likely somewhat less in extent and duration. Substantial increase in aggregate use of the park, primarily in conjunction with operation of the sports field complex, but the level of increased use would be less than for the proposed action. Noise levels in the western portion of the park reduced relative to the proposed action; however, noise in the eastern portion of the park would remain at current levels rather than being reduced as a result of road and parking lot removal under the proposed action. Greater access to habitat areas would reduce the benefits for more reclusive and noise-sensitive species, relative to the proposed action.	**Construction** Minor improvements to Sand Point Magnuson Park could produce some limited, short-term construction noise. Construction or demolition activities under this scenario would be much less extensive and would generate much less noise than either action alternative. **Operation** Organized use of existing sports fields would continue, with resulting intermittent noise from participants and spectators; this noise source would be limited to daylight hours, as at present. Because ambient noise levels are not expected to increase under the no action alternative, no changes in wildlife impacts from current conditions are anticipated. Noise levels under existing conditions exceed levels identified in research as resulting in decreased breeding bird density. The magnitude of potential noise impacts (based on comparative sound levels) in this case would be essentially the same as under the proposed action.

Proposed Action	Lesser Capacity Alternative	No Action Alternative
Upper ranges of both current and predicted sound levels exceed some levels identified in research as threshold values resulting in decreased breeding bird density. However, sports field noise cannot necessarily be equated to vehicular traffic noise, so potential for adverse effects on bird densities is inconclusive. Timing considerations indicate the potential for adverse impacts would be limited; breeding activity (calling) subject to noise interference occurs primarily in the early morning, when field use conditions would not be changed by the proposal. Breeding seasons are typically from spring to early summer, when existing field use can extend into the evening and daily hours of use would not be greatly extended with the proposal. In addition, potential changes in bird density that might occur from sports field noise could be masked or offset by improved function of habitat in the park with the proposed action. Mammals occurring at project site are unlikely to be adversely affected by changes in noise conditions associated with the project. Noises generated from the sports fields are not expected to attain levels that would adversely affect amphibians or reptiles.	Noise-sensitive breeding bird populations not anticipated to either decrease or increase, based upon expected ambient noise levels relative to current conditions. Current acoustic environments not expected to change significantly for mammals, amphibians or reptiles, so no additional impacts to these types of species.	

Chapter 2

Affected Environment, Environmental Impacts, and Mitigation Measures

2. AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This chapter of the SEIS describes baseline conditions for the relevant element of the environment, documents the expected environmental impacts of the proposed action and the alternatives, and identifies mitigation measures pertinent to those impacts. The intent is to focus specifically on the environmental conditions that would likely be subject to significant change from development of the project, and on the single issue of sports field noise impacts on wildlife as identified in the hearing examiner's February 26, 2003 decision. Consistent with guidance provided by SEPA rules and the hearing examiner's decision, other elements of the environment are not discussed at all. Information from the July 2002 Final EIS is repeated in the SEIS only to the extent needed to understand and document existing noise and wildlife conditions on the site and the methodology used to assess potential impacts of sports field noise on wildlife.

This chapter is organized into seven sections, based generally on the key standard topics identified in the SEPA rules. The affected environment is addressed first, in **Section 2.1**, in a level of detail sufficient to allow an overall understanding of the baseline conditions that are directly relevant to the scope of the SEIS. **Section 2.2** summarizes research information related to the generic effects of noise on wildlife, without specific application to the proposed action. Subsequent material in **Section 2.3** presents the expected consequences of the proposed action with respect to noise impacts on wildlife, given the baseline conditions and the project characteristics summarized in **Section 1.4** (which are described in detail in Section 2.2 of the Final EIS). Impacts are then addressed for the lesser-capacity alternative and the no-action alternative in **Section 2.4**. Because the lesser-capacity alternative involves similar actions within the same project site, impacts for this alternative are presented in comparison to those for the proposed action. Consequences under the no-action alternative consist of the existing conditions on the site projected into the future, as they might likely be shaped by expected park management. Discussion of cumulative impacts, mitigation measures, and significant adverse unavoidable impacts follows in **Sections 2.5, 2.6** and **2.7**, respectively.

2.1 AFFECTED ENVIRONMENT

Section 3.4.1 of the July 2002 Final EIS characterizes existing conditions at and near the project site with respect to wildlife. The Final EIS content describes habitat conditions and current wildlife use of the habitats in the area. That information is sufficient to characterize the affected environment and is not repeated or expanded in the Supplemental EIS.

Section 3.6.1 of the July 2002 Final EIS characterizes existing conditions at and near the project site with respect to noise. The Final EIS content describes noise sources and typical sound levels in the area, and reported the results of sound level monitoring conducted at locations in Sand Point Magnuson Park and in the surrounding community. To support the Supplemental EIS, additional short-term sound level measurements were taken at two locations within the undeveloped habitat areas of Sand Point Magnuson Park (see **Figure 2-1** for locations). One location is approximately 50 feet east of the existing walking path separating the existing Sand Point athletic fields from the existing interior habitat area. The second is approximately midway between the existing Sand Point athletic fields and the Magnuson Park (sports meadow) fields.

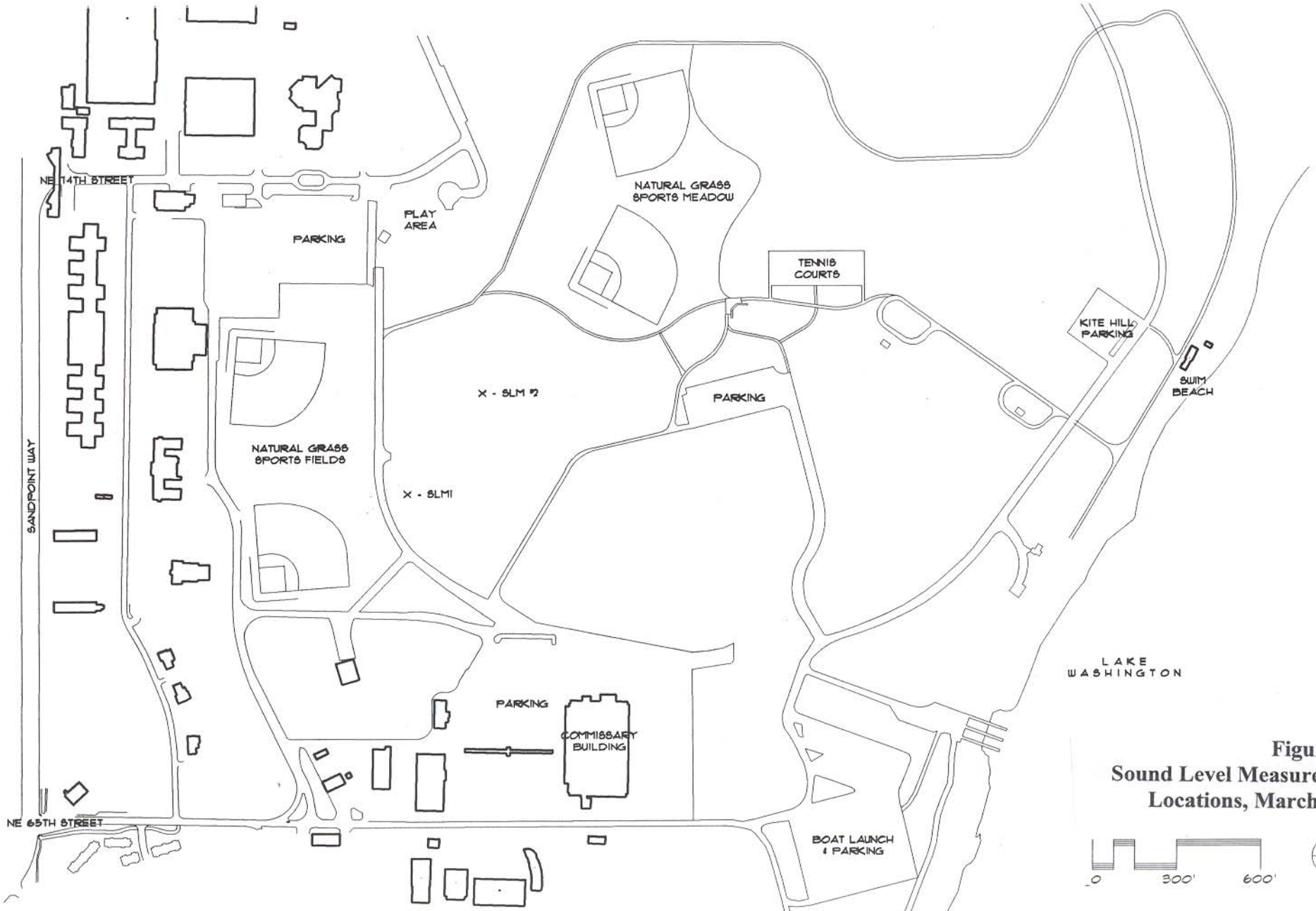

Figure 2-1
Sound Level Measurement Locations, March 2003

SK-0.04

These measurements were taken using a Larson Davis 820 Type I integrating sound level meter, field-calibrated prior to and following the measurements. The sound level measurements were taken on the afternoons of Friday, March 13, 2003 and Sunday, March 16, 2003. During the Friday measurement, lacrosse practice was occurring at both the Sand Point athletic fields and the Magnuson Park sports meadow. During the Sunday measurement, several ultimate frisbee games were being played on both the Sand Point and Magnuson fields.

In addition to the sound level measurements taken within Sand Point Magnuson Park, a short-term measurement was taken at a location on Marsh Island in Seattle. Marsh Island is located on the south side of Union Bay of Lake Washington, adjacent to the Lake Washington entrance to the Montlake Cut and across Union Bay from the southeastern portion of the University of Washington campus. Marsh Island is a small island that is situated between the Museum of History and Industry and Foster Island, and is a component of the larger Foster Island habitat area. Foster Island, Marsh Island and the surrounding shallow-water lagoons and inlets comprise a mixed wetland and upland habitat that is generally considered to be a valuable shoreline ecological area that supports a diverse population of waterfowl and other birds, small mammals, amphibians and reptiles. The Foster/Marsh Island area is surrounded by the Montlake neighborhood, the Museum property and East Montlake Park, the Washington Park Arboretum and Broadmoor Golf Club. Foster Island is bisected by State Route (SR) 520 (the Evergreen Point Bridge), which has a 4-lane configuration as it passes just to the south of Marsh Island. The acoustic environment at the Marsh Island site during the sound level measurement was dominated by vehicle traffic on SR 520. The sound environment and wildlife conditions at this site provide a point of comparison with existing and projected future conditions at Sand Point Magnuson Park. The measured sound levels at Marsh Island are much higher than the existing or projected sound levels within Sand Point Magnuson Park.

Noise sources were noted during the measurements. A summary of the sound level measurement (SLM) results is displayed in **Table 2-1**. Based on the information reported originally in the Final EIS and the new measurements, the predominant sources of existing noise within the wildlife habitat areas of Sand Point Magnuson Park include traffic on Sandpoint Way and aircraft flyovers. Participants and spectators at sporting events produce noise (cheers, whistles, etc.) that can dominate the nearest noise environment within the park, but are generally only occasionally audible. These sources of noise contribute to the acoustic environment in the project area that varies somewhat depending on the time of day and duration of the noise event(s).

Table 2-1

Range of Measured Sound Levels (dBA), March 2003

Location	Day	Time	Duration	Leq	Lmax	L2	L8	L25	L90
SLM1	Friday, 3/14/03	2:49 pm	30 min	51.8	68.0	NA	55.4 [a]	50.3 [a]	47.1
	Sunday, 3/16/03	1:11 pm	30 min	50.6	70.5	57.8	53.7	50.1	45.4
SLM2	Friday, 3/14/03	3:27 pm	30 min	50.4	65.3	NA	54.6 [a]	49.2 [a]	46.1
	Sunday, 3/16/03	1:43 pm	20 min	50.0	65.1	56.6	52.7	50.0	45.4
SLM3	Friday, 3/14/03	4:47 pm	15 min	63.4	74.1	69.5	64.3	63.4	61.4

[a] The sound levels measured at SPMP on Friday 3/14/03 did not capture the L2, L8 or L25. The measurements did capture the L5 and the L33, which are fairly representative of the L8 and the L25. The sound level meter was reprogrammed to capture the L2, L8 and L25 for the Sunday measurement.

SLM1: Taken approximately 50 feet east of the walking path separating the Sand Point athletic fields from the wildlife habitat area. On both measurement days, the background sound level was dominated by traffic on Sand Point Way NE and was also heavily influenced by aircraft. Occasional voices from athletic activities were audible during both measurements, but did not substantially influence the overall measured levels. Other noise sources on both measurement days included birds and other patrons of the park, and operation of a toy plane. On Friday, park maintenance activities and equipment were also audible.

SLM2: Taken in the wildlife habitat area between the Sand Point athletic fields and the Magnuson Park sports meadow. On both measurement days, the background sound level was dominated by traffic on Sand Point Way NE and was also heavily influenced by aircraft. Other sources included birds and operation of a toy plane. On Friday, park maintenance activities and equipment were also audible.

SLM3: Taken near marker #13 on Marsh Island. The dominant source of noise was traffic on nearby SR-520. Other sources included voices from boat activity on the lake, planes, birds, and users of the trail.

Source: Sound level measurements by MFG, Inc., March 2003

2.2 GENERIC EFFECTS OF NOISE ON WILDLIFE

The proposed action includes an increase in the number of sports fields currently at Sand Point Magnuson Park. An increase in the number of users and duration of use would accompany field installation, and the amount of noise (as measured by frequency and duration) generated by increased activity is also predicted to increase.

Noise is commonly defined as “unwanted sound”, and human generated noise is a ubiquitous phenomenon. The deleterious effects of exposure to noise, both on humans (Glass and Singer, 1972) and

wildlife (Busnel and Fletcher, 1978; Kavler, 1975) have been a topic of concern and study for some time. Research on wildlife systems has suffered from a paucity of experimental data and often-conflicting results (Larkin, 1996), depending on the model species and a host of other factors (e.g. Bowles, 1995).

2.2.1 Characteristics of Sound

Animals perceive sound in a very broad sense as pressure; however, certain components of sound can affect the degree to which animals perceive sound and potential consequences of perception. Intensity, frequency, and duration of sound are all aspects of sound generation that can affect both perception and potential for harmful consequences.

Intensity of sound is a measure of its subjective loudness, assuming that the animal can perceive the frequency of the sound itself. Sound intensity is expressed on a logarithmic scale of decibels (dB). Therefore, a doubling of a noise source strength produces a 3-dBA increase in average noise, and an increase of 10 dB represents a tenfold increase in sound intensity (Crocker, 1998). Two adjacent, discrete noise events occurring simultaneously would result in a 3-dBA increase over the sound produced by only one of the events. Such an increase would not be perceived as a doubling in noise *loudness*, however, as that would require a 10-dBA increase. In a complex outdoor noise environment, sound level changes of 2 or 3 dBA might not be noticeable to most people, while a 5-dBA change would likely be perceived as a clear and noticeable change. Sound attenuates with distance from the sound source, and intensity decreases geometrically by approximately 6 dB for every doubling of distance from the point source.

Sound is a disturbance that propagates through an elastic medium, in this case air. A single cycle of the motion of the air is called a wave. Frequency is defined as the number of times per second that the cyclic movement repeats itself, and the standard unit used to describe frequency is the hertz (Hz), defined as the number of cycles per second.

To an animal, frequency is the perceived pitch of sound, and different animals show different sensitivities to the same range of frequencies. An audiogram is a plot of an animal's ability to perceive threshold levels of sound as a function of the sound's frequency. Generally, smaller mammals such as rodents, shrews, bats, etc. have a greater sensitivity to higher frequencies—often within ranges exceeding 20,000 Hz, the upper limit of human sound perception. Larger mammals, commensurately, show auditory sensitivity to low frequencies, and may be able to detect sound at or below 10 Hz. While most birds show auditory sensitivity similar to humans (20-20,000 Hz), certain birds (e.g. rock doves) can also perceive low frequency sounds, often with much greater sensitivity than their larger mammalian counterparts (Kreithen and Quine, 1979). Some frogs and toads also show low frequency sensitivity (Hetherington, 1992), and even some small mammals are capable of discerning sounds of only a few Hz (Plassman and Kadel, 1991).

Sound type and duration may be divided into several classifications including: continuous sounds which last for a long time with little or no interruption, and impulse sounds lasting only for a little while (Larkin *et al*., 1996). Impulse sound and continuous sound appear to have different physiological and behavioral effects. For example, noise-induced hearing loss is more often associated with impulse noise than continuous noise for a variety of reasons, one of which is the tendency for birds and mammals to reflexively dampen the motion of the middle ear bones when confronted with continuous noise vs. impulse noise. Generally, impulse noise appears to be more stressful to wildlife, at least in part due to the unpredictability of such noise (Larkin, 1996). Other classifications of noise sources describing the

temporal nature of sound include intermittent and periodic sources. The noise associated with the proposed sports field activities would primarily be intermittent in character. Existing noise sources in the project vicinity include continuous sources, such as traffic on Sand Point Way, and intermittent sources such as existing sports field activities, other activities by park patrons and aircraft.

With the above discussion of the differing characteristics of noise and how these characteristics might have varying effects on wildlife, it is apparent that different types of noise would be unlikely to elicit similar responses, even if the types of noise have equivalent A-weighted sound levels. Human responses to differing types of noise can vary, and research has shown that wildlife response also differs. For instance, the sudden, unpredictable onset of an acoustic stimulus elicits flight or other startle responses more than the gradual onset of sound, or the onset of a predictable noise (Larkin, 1996)—even given an equivalent A-weighted level among the sound types. Sounds that are inherently complex, such as those produced by helicopters, can generate harmonics or so-called "blade slap" sounds that may extend into frequencies that are more audible to wildlife (Larkin, 1996), vs. a pure tone of the same sound level. Thus, all noise types cannot be considered equivalent, and care must be taken in extrapolating animal responses to one type of sound to another type of sound at the same dB level.

2.2.2 Biological Consequences of Sound

Overall, the literature suggests that species differ very much in their response to various types, durations, and sources of noise (Manci *et al.,* 1988). However, noise effects on domestic animals and wildlife may be broadly classified as primary, secondary, and tertiary. *Primary effects* are direct, physiological changes to the auditory system, and may be considered to include the "masking" of auditory signals. Masking is defined as the inability of an individual to hear important environmental signals that may arise from mates, predators, or prey. There is some potential that noise could disrupt an individual's ability to communicate, or could interfere with behavioral patterns (Manci, *et al.,* 1988), and may have consequences at the population level (see below). Other primary effects, such as ear drum rupture or temporary and permanent hearing threshold shifts, are also possible given exposure to noises of high intensity.

Secondary effects may include non-auditory physiological effects such as stress and hypertension, as well as behavioral modifications that include interference with mating or reproduction and impaired ability to obtain adequate food, cover, or water. *Tertiary effects* are the direct result of primary and secondary effects at a population level, and include population decline and habitat degradation. Most of the effects of noise are mild enough that they may never be detectable as variables of change in population size or population growth against the background of normal variation (Bowles, 1995). Other environmental variables (e.g. predators, weather, changing prey base, ground-based disturbance) also influence secondary and tertiary effects of noise. Tertiary effects of noise such as species population declines, for example, may be exacerbated by confounding variables such as poor weather, loss of prey base, etc. Confounding variables make it very difficult to identify noise as the ultimate factor in limiting productivity of a certain nest, area, or region (Smith, *et al.,* 1988).

Physiological Responses

Heart rate has been used to measure response to noise. Increases in heart rate may accompany exposure to noise, and such increases have been biologically interpreted as increases in overall energy expenditure in animals (Diehl, 1992; Krausman *et al*., 1993). Other authors have been more cautious in linking

increased heart rate with increased energy expenditure, citing the transitory nature of elevations in heart rate in response to noise, and the difficulty of demonstrating the effects of transient periods of elevated heart rates on animals' daily energy budgets (MacArthur *et al.,* 1979; Anderssen *et al.*, 1993).

Primary effects of noise have been shown for certain desert-dwelling reptiles, mostly concerning the effects of off-road vehicles such as dune buggies and motorcycles. Reptiles such as desert iguanas and Mojave fringe-toed lizards suffered hearing losses associated with exposures to dune buggy noise intensities ranging from 95-114 dB (Bondello *et al*., 1979; Brattstrom and Bondello, 1983).

Evidence is accumulating that wildlife may also be subject to noise-induced stress, even absent behavioral responses to noise. Elevated levels of circulating glucocorticoids, so-called stress hormones, can be induced by exposing animals to noise stimuli (Arnsten and Goldman-Rakis, 1998; Creel *et al*., 2002). Long-term developmental consequences of noise-induced stress have been shown in brain development in primates, particularly in the hippocampal region, but noise stress also appears to inhibit cognitive function as well (Arnsten and Goldman-Rakis, 1998). Noise produced by snowmobiles is correlated with increased glucocoticoid levels in elk and wolves (Creel *et al*., 2002). Although recent advances in endocrinological techniques have allowed researchers to track stress hormone levels in wildlife (Wasser *et al*., 1997), behavioral and population level consequences of elevated stress hormones are still unclear. Nonetheless, evidence is mounting that chronically elevated stress hormone levels in vertebrates interfere with the immune system, inhibit reproduction, and cause other health problems (Fletcher, 1990)

Behavioral Responses

Intuitively, perhaps it is easier to understand clearly observed behavior of animals in response to noise. Activities ranging from so-called "alarm responses" (Krasuman, et al., 1993), i.e. flight, trampling, stampeding, jumping, or running, to "alert responses" such as orientation of the head in the apparent direction of the noise source, are common in many wildlife species exposed to loud noise. Much of the literature informing noise effects on wildlife, however, deals with aircraft (Larkin, 1996) such as fixed-wing planes and helicopters (Manci *et al*., 1988; Krausman *et al*., 1993, Kull, 1993), and the behavior of wildlife species that encounter such aircraft. Often, behavioral responses to the noise of aircraft are confounded with the visual cues that the aircraft provide to the animals, making it difficult to clearly ascribe noise as the operant factor inducing the response.

Importantly, behavioral responses to noise show a high degree of variation among different species and even within the same species. For example, some bald eagles can be very tolerant of auditory stimuli when the sources are screened from view (Stalmaster and Newman, 1978), but other raptor species such as prairie falcons will flush from perches and nests at sudden loud noises (Harmata, *et al*., 1978). Within a species, the amount of exposure to loud noises can alter the frequency of behavioral responses. Animals may habituate to repeated stimuli, and responses can decrease in both frequency and magnitude. Krausman *et al*. (1986) studied desert ungulates exposed to aircraft noise, and noted that short-term habituation to aircraft noise occurred with repeated exposure to the stimulus. Eventually, the animals may acclimate to the stimulus. For instance, sandhill cranes nesting meters away from a Florida highway showed no response to passing traffic (Dwyer and Tanner, 1992). Exposure to noise stimuli, particularly if the stimuli are consistently repeated, can alter the probability of behavioral responses from individuals within the same species and even within the same population. Thus, the effects of noise vary not only with the type of noise in question, but with an individual animal's experience, time of day (Herbold *et al*.,

1992; Gese *et al*., 1989), and reproductive cycle (Platt, 1977)—making consistent predictions about the effects of noise on different wildlife species difficult indeed.

Certain types of behavior in response to noise may involve increases in wildlife mortality. Activities such as trampling, falling, and collisions sometimes occur in animals experiencing aircraft flyovers (National Park Service, 1994). Certain bird species will fly from their nests in response to approach by aircraft, and accidental breaking of eggs in the process of nest departure has been noted (Larkin, 1996). Extended absence from the nest as a result of noise-induced flushing can increase chances of eggs or young perishing from cold, heat or predation (Larkin, 1996). However, many bird species show remarkable tolerance to the close proximity of loud noises. Fraser *et al.* (1985) suggested that raptors habituate to overflights rapidly, sometimes tolerating aircraft approaches of 65 feet or less.

Some evidence exists that loud noise in the form of jet fighter flights can increase the likelihood of injuries to caribou calves and increase the probability of cow-calf separations (Harrington and Veitch, 1991). In addition, many wildlife species show habitat selection as a behavioral trait. Therefore noise can potentially act as a stimulus to shift habitat in some species. Using elk, Kuck *et al*. (1985) experimentally induced noise-mediated habitat shifts away from more optimal calf rearing habitat into more marginal habitat, potentially reducing calf survival over the long term—although no differences in survivorship between disturbed and undisturbed calves were noted during the study. Other noise-induced behavioral responses can have significant consequences for animal mortality. For example, the sounds of off-road motorcycles and other vehicles can mimic thunder, and induce spadefoot toads, a desert-dwelling species, to emerge from their burrows at inappropriate times of the year and incur a much greater probability of mortality (Brattstrom and Bondello, 1983).

Population-Level Responses

Physiological and behavioral responses to noise can interact to form patterns at the population level. Flight behavior is costly in terms of energy expenditure, particularly during times of food limitation and/or metabolically challenging periods (e.g., during winter, migration, moult or lactation). Energy expended during these critical periods may decrease the amount of energy available for future reproduction. Reproductive output may decrease, even though responses to noise occurred in the past. Platt (1977) noted that gyrfalcons disturbed by helicopter overflights during the winter experienced diminished nest success the following spring compared to undisturbed birds. Yarmaloy *et al*. (1988) showed that mule deer that had experienced numerous approaches from off-road vehicles during the fall displayed decreased reproductive success the following spring.

Behavioral responses such as habitat shifts, and reproductive consequences of behaviors that are energetically costly, may result in population density decreases in noisy areas. Woodland (Reijnen *et al*., 1995) and grassland (Reijnen *et al*.,1996) bird populations in the vicinity of roadways showed decreased breeding densities across a number of species. The authors use a threshold model to explain the density decreases. Ambient noise up to a given level results in no density decreases in bird populations; however, once the ambient noise threshold level is exceeded, densities decrease exponentially with increased noise load. Threshold levels were found to range from 36 dB to 58 dB, depending upon the species in question, with an average generally from 42 to 52 dBA for woodland bird species. The zones of decreased breeding densities surrounding the roadways ranged up to 810 meters for particularly sensitive species near busy roadways. Thus, apparent habitat avoidance by individual birds depresses relative densities at the population level, in habitat that putatively would otherwise be suitable for breeding.

2.3 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

2.3.1 Projected Sound Levels with the Proposed Action

Construction

The proposed action would create temporary, intermittent noise associated with construction and demolition activities. The primary sources of construction noise would be heavy equipment used for grading and excavating the site to prepare for developing the sports fields and wetland/habitat area, and for installing utility improvements. Construction workers and equipment would also generate noise associated with travel to and from the site. These activities would typically occur during daylight hours.

The proposed action would be constructed in four phases over a period of approximately 10 years. During each of the four phases, heavy earthmoving equipment would be used for approximately 3 consecutive months. The remainder of time during each phase would see less intensive levels of construction, with much lower levels of construction noise.

The phasing of the proposed project would result in highly varying levels of construction noise received in the primary wildlife habitat areas. In terms of distance from these areas, construction activities with Phase 1 would vary from approximately 50 to 1,000 feet, Phases 2 and 3 would range from adjacent to 1,200 feet, and Phase 4 would range from approximately 50 to 800 feet. **Table 2-2** displays ranges of noise produced by typical construction equipment at 50, 400, and 1000 feet to indicate the range of construction noise that may be received in wildlife habitat areas during the construction period.

Table 2-2

Typical Construction Equipment Noise (dBA)

Activity	Range of Hourly Leqs		
	At 50’	At 400’	At 1000’
Clearing	83	65	57
Grading	85-88	67-70	59-62
Paving	82-88	64-70	56-62
Erection	82-84	64-66	56-58
Source: EPA, 1971			

Operation

The proposed action would result in new and increased ongoing noise sources created by a variety of uses of the new park resources. The primary potential sources of operational noise impacts on adjacent wildlife would be seasonal programmed activities, such as participant and crowd noise associated with

outdoor sports. The sports field component of the proposed action is focused on recreational sports, as opposed to competitive or spectator sporting events; bleacher seating for spectators would be limited, so large crowds of spectators would not be present on the fields. Sports field use would produce intermittent noise during some portions of the day (primarily late afternoon and evening hours on weekdays, plus more daytime hours on weekends), rather than on a constant basis.

The Final EIS described sound level measurements taken of various sports events at Sand Point Magnuson Park to characterize the types and levels of noise associated with these events. The source noise measurement results shown in **Table 2-3** would likely vary from game to game. This seems particularly true for the adult baseball/softball game measurement, because the game measured for this analysis was at 7 p.m. and had many spectators, including numerous children. Games occurring between 10 and 11 p.m. are unlikely to have as many spectators, and the measured L25 is anticipated to be somewhat lower than indicated. Also, all of the measurements were somewhat "contaminated" by other nearby human activities, traffic, and airplane noise. To the degree possible, these extraneous sources were removed from the measured levels of the activity noise, but it was not possible to completely remove all the extraneous noise. Therefore, the measured source noise levels displayed in **Table 2-3** are somewhat higher than would be likely with the proposed action.

Table 2-3

Athletic Source Noise Events at 100 feet (dBA)

Event	L25	Lmax
Youth Baseball Practice	52	68
Youth Baseball Game	52	75
Adult Baseball/Softball Game	56	79
Youth Soccer/Ultimate Practice	55	75
Youth Soccer/Ultimate Game	55	75
Adult Soccer Game	48	69

Based on the projected source noise events, sound levels from sports field activities were calculated at locations 50 and 200 feet east of the walking path separating the existing athletic fields from the primary wildlife habitat. These calculations were based on distance attenuation alone. Additional noise reduction (beyond these calculated levels) would likely occur from atmospheric absorption, structural or topographic obstructions, and absorption from soft intervening ground. However, these additional reductions have not been included in the sound level calculations.

Sound levels from each of the activities were predicted for various seasons and times of day, and were added together to estimate the overall sound level with all of the anticipated activities occurring simultaneously. The level of activity can generally be grouped into a Fall/Winter season (October through March) and a Spring/Summer season (April through September). The highest calculated sound levels for each time of day, day of week, and season are discussed below.

Predicted sound levels (L25s) from sports field activities during the winter and fall months range from 35 to 55 dBA at 50 feet from the walking path, and from 35 to 52 dBA 200 feet from the path. Predicted maximum sound levels (Lmax) range from 54 to 73 dBA 50 feet from the walking path and 54 to 66 dBA

200 feet from the path. The primary use of the athletic fields during the fall and winter is for youth and adult soccer, rugby, or ultimate frisbee games.

The spring and summer months would entail heavier use of the sports fields. Predicted sound levels (L25s) from sports field activities during the spring and summer months range from 42 to 55 dBA at 50 feet from the walking trail, and from 42 to 51 dBA 200 feet from the trail. Predicted maximum sound levels (Lmax) range from 61 to 73 dBA 50 feet from the walking path and 60 to 68 dBA 200 feet from the path. The primary use of the athletic fields during the spring and summer is for youth and adult games and practice for softball and baseball, soccer, rugby, or ultimate frisbee.

Although it may seem counterintuitive, the projected sports field sound levels in the future would not be expected to be noticeably greater than the sound levels that occur today during the highest current uses of the sports fields. The proposed future configuration of the sports fields would disperse these activities over a larger area, compared to the current sports field configuration. Once dispersed, noise from activities nearest the receiving location would likely dominate the sound environment compared with noise from more distant athletic activities, and more distant activities would have very little affect on the overall sound levels close to other fields. The Final EIS described sound measurements taken during an ultimate Frisbee tournament that represents a relatively dense field use condition that would be unlikely with the proposed sports field configuration. Based on the field configuration, it is likely that the highest sound levels that can occur today are at least as high, and possibly higher than, the sound levels that might occur in the future under the proposed action.

The predicted sound levels also reflect the physical properties that apply to sound propagation, specifically the concept that sound levels from multiple adjacent sources are not additive. The increase in sports facilities from 4 to 8 existing fields (depending upon specific configuration and the activities being accommodated at any given time) to 15 proposed fields would not cause a corresponding nearly four-fold or two-fold increase in the sound levels present in the wetland/habitat complex. As discussed in Section 2.2.1, a doubling of a noise source would result in a 3-dBA increase in the noise level at the source, if the sources were located together. Therefore, if the fields were co-located (i.e., if all 15 of the proposed fields could be placed on top of each other) and were being used to the fullest extent, the additional sports field activity during maximum field use would represent slightly less than a doubling of the noise source. This would result in an increase in noise of just under 3 dBA (approximately 2.7 dBA), which would be barely audible by most standards. Because the future field configuration would disperse the sports activity over a larger area than the current configuration, much of the additional activity and associated noise would be further from receivers than the existing activities, and the actual increase in the noise level would be somewhat less than 2.7 dBA. Based on the range of sound perception capability, the projected increase in sound level is expected to be minimal. However, in the future with the proposed project the higher levels of sports field use would occur more often and during longer hours than currently.

Operation and maintenance of the sports fields (as described in detail in Section 2.2.14 of the Final EIS) would include the use of power equipment such as lawn mowers, vacuums and sweepers. Use of this equipment would be consistent in hours of use and type of equipment with current operations and maintenance activity at Sand Point Magnuson Park and other DPR facilities, and in accordance with DPR operation and maintenance guidelines. The sound levels produced by future maintenance activities and equipment are anticipated to be similar to those produced by current activities at the existing park facility.

Future sound levels in off-site areas near Sand Point Magnuson Park would be lower than those indicated above for the wetland/habitat complex locations. As shown in Table 3.6-5 of the July 2002 Final EIS, predicted hourly sound levels with the proposed action range from 32 to 41 dBA in the neighborhood to the south of the park and from 29 to 43 dBA in the View Ridge neighborhood. The measured existing ambient sound levels in these neighborhoods generally range from the low 40s to mid 50s dBA (as shown in Appendix E of the Final EIS), although the measured sound levels were generally higher in the View Ridge neighborhood. Therefore, during the quietest hours of the day, when existing sound levels are generally in the low 40s dBA, the projected sound levels with the proposed action (with sports field noise included) would be slightly higher than the existing ambient condition.

With respect to local wildlife in off-site areas, the proposed action would likely have little to no effect. Because existing sound levels are in the mid 40s to mid 50s for much of the day in the adjacent off-site neighborhoods, any wildlife populating those neighborhoods would necessarily already be acclimated to much higher noise levels than would be caused by future sports field activities at Sand Point Magnuson Park. Therefore, the potential for operational noise impacts to wildlife in adjacent off-site neighborhoods is minimal to nonexistent.

2.3.2 Potential Wildlife Response

The degree of variation in noise types and species responses in the relevant literature has been noted and acknowledged (Fletcher, 1990; Larkin, 1996; Radle, 1997). Most of the research regarding noise effects on animals concerns impulse noise of high intensity levels, such as aircraft sounds, off-road vehicle noise or explosions. The disturbance to animals often resulted not only of the noise itself, but the visual presence of the helicopter, airplane, snowmobile, etc. In addition, the variation in animal response to noisy disturbances is quite high, and shows a range of variability at the level of the individual, the population and the species. Time of year, daily timing of noise occurrence, age of organism and reproductive investment are all variables that help determine the context for animal responses to noise.

The proposed sports fields at Sand Point Magnuson Park would increase the numbers of people using the fields, and would increase the duration of daily field use hours. However, in the research literature the type of noise generated from sports complexes has gone virtually unexamined in the context of wildlife responses. Much of the sound stimuli (vehicle noise, aircraft, etc.) addressed in the literature involves not only high intensity levels, but potentially may contain lower frequencies than generated by human voices. Lower frequency sounds do not attenuate to the degree that sounds of higher frequencies do; thus, lower frequency sounds travel further at higher intensities. As described previously, the types of sounds associated with aircraft and vehicle noise may be quite complex, and can involve harmonics that extend into frequency ranges that are more readily detected by wildlife. In addition, many sources of sound addressed in the literature were moving and visible to the animals (e.g. aircraft flying overhead, off-road vehicles moving along trails, etc.). A combination of sound and the visible cue of a moving sound source has been shown to exacerbate any responses by wildlife to the sound; e.g. red squirrels reacted to helicopter noise only when the helicopter was in sight (Young, 1994). The athletic fields would likely not involve comparable movement of humans (the sound sources) towards the nearby habitat. Because the sources of sound and the context of sound generation that elicit the types of wildlife response patterns studied in the literature are quite different from the expected sound types anticipated from the athletic fields, it is very difficult to make substantive correlations between sound levels and wildlife responses. The conclusions concerning the effects of noise generated by sound sources associated with the athletic fields on wildlife potentially occurring in the nearby habitat are discussed below.

Birds

Much of the data on noise levels, sources, and their effects on avian taxa from the literature are unlikely to be relevant with respect to the proposed action at Sand Point Magnuson Park. Helicopter and airplane noise and flyovers currently occur in the vicinity, and are not germane to project-related impacts, nor are specific noise stimuli such as sonic booms and artillery explosions. Noise levels associated with project construction, however, are relevant and tend to be on the order of magnitude of 75 dB or so at 200 ft., and may temporarily displace some bird species. Recolonization of vacated habitat by displaced animals might occur following termination of construction, however.

Species that are tolerant of human presence and urbanization may well remain on the site after construction begins. Those species are already present and display a high tolerance to human disturbances, and include birds such as crows, pigeons, robins, and house sparrows. Species likely to be displaced by construction noises would tend to be less tolerant to noise. Breeding songbirds, for example, are reasonable candidates for displacement—these species rely on vocalization for communication and reproductive success. Assuming that species of songbird use habitat near the proposed construction as breeding territories, they might vacate those territories, or spatially shift territory boundaries away from construction activity.

Bird species foraging in habitat impacted by project-related construction are also likely to be displaced, and would likely utilize nearby habitat for foraging purposes, instead. Aerial insectivores such as the various swallow species, for instance, are likely to forage in the open areas of Magnuson Park slated for project-related construction. Those species would probably shift their foraging to alternative habitat during construction, as a result of temporary habitat loss and human disturbances, including noise. As noted above, however, many of the displaced species are expected to resume foraging in habitat near the construction sites once construction is complete.

Currently, the upper ranges of ambient sound levels during active spring/summer field use (see **Tables 2-1** and **2-3**) exceed sound levels cited as threshold values resulting in decreased breeding density for bird species (Reijnen *et al*., 1996). Maximum sound levels recorded in March 2003 exceeded 70 dBA at SLM 1 and 65 dBA at SLM 2 (**Table 2-1**). Calculated maximum sound levels for sports field uses expected with the proposed action range from 61 to 73 dBA and 60 to 68 dBA at the respective locations, as indicated in **Section 2.3.1**. An increase in noise levels, assuming that suitable nearby habitat exists for breeding birds, might result in further depression of potential breeding populations of birds in the area. However, the type of noise associated with athletic fields cannot necessarily be equated with noise generated by vehicular traffic, making predictions about noise effects on bird densities tenuous at best.

If noise levels associated with the athletic fields have the potential to reduce breeding bird densities, timing of activity associated with noise could play a role in determining the likelihood and level of impacts on bird species. Unlike the Reijnen studies, in which road noise occurred throughout the day and night, athletic activities would be limited to certain times of the day. The daily duration of athletic field activity would be increased, relative to current conditions, under the proposal. This increase would be greatest during the late fall, winter, and early spring seasons as a result of play extended into hours of darkness, when use of the existing fields would typically cease by about 6 pm. During late spring and summer months, when use of the existing fields is often possible beyond 9 pm, the daily duration of field activities is not anticipated to increase substantially beyond current levels. Thus, the daily duration of

athletic field use and associated noise would not differ substantially from current conditions in much of the breeding season for birds. Furthermore, the increase in the daily duration of activity associated with the athletic fields would occur during the evening hours—a time during which bird activity as related to breeding and reproduction is minimal.

The potential for sports field noise to disrupt bird reproductive activity could be reduced through changes in event timing. The degree to which any potential bird population decreases occurred as a result of ambient noise might be reduced, for example, by limiting events with greatest expected levels of crowd noise to non-early morning hours to avoid territory singing activities by birds, or by limiting such activities in the spring breeding season. (If such a measure were implemented, it would be to mitigate for potential effects of existing sports field uses and scheduling, and would not be an action warranted by changes in field use patterns associated with the proposed action.) Finally, bird numbers and diversity are expected to increase with the increase in bird habitat under the proposed action, further offsetting any potential decrease in breeding populations due to ambient noise.

In addition to the changes in avian diversity that is expected from increased habitat types on the site, some bird species in the nearby habitat are more tolerant of increased noise levels; therefore, changes in the avian community structure could occur. Relative abundances of species might shift as more noise-tolerant bird species make use of habitat with increased ambient noise levels, and less noise-tolerant bird species selectively avoid such habitat for breeding purposes. While possible, such species abundance shifts are not certain, as many bird species show acclimation to increased ambient noise levels. The sound level measurements conducted at Marsh Island show much higher L25 levels than are anticipated at Sand Point Magnuson Park due to operation of the proposed sports fields. Marsh Island and nearby Foster Island are both in close to SR 520, yet still provide adequate habitat for a variety of bird species. Of the various types of habitat present at Marsh Island, approximately 115 species of birds have been recorded as present in or are expected to make use of the habitat types (DPR, 2001). These include a variety of songbirds, in addition to the many species of waterfowl for which the two islands are known.

Community-level species changes at Sand Point Magnuson Park could be predicted even in the absence of any potential noise increases. Adding and improving function of habitat in the park would likely alter the species composition of birds in this system—presumably increasing overall species diversity as additional bird species move into the park, and greater overall bird numbers as increased wetland area and function potentially provide greater invertebrate densities for forage. Removal of the interior road associated with the existing tennis courts and the nearby parking lot would decrease ambient noise levels in the eastern portion of park, improving the current acoustic environment and habitat value for noise-sensitive birds in those areas.

Mammals

The research findings on noise levels, sources, and their effects on mammalian taxa from the literature are not likely to be relevant at Sand Point Magnuson Park. No large mammals, which include ungulates such as deer, moose, etc., and larger carnivores such as black bear, cougar, and the like, currently use the park habitat, and none are expected under the proposed action. Smaller mammals such as raccoons, opossums, and even coyotes tend to be fairly tolerant of human disturbance—the fact that such species find their way into and thrive in suburban habitat is indicative of this tolerance. Noise-related impacts to these species would consist of behavioral avoidance of impacted areas, assuming such areas were previously used for foraging and other activity.

Most of the mammals that do inhabit the park habitat near the current athletic fields are small and occur in open habitat, and are generally active at night. Many of these small mammal species animals show fossorial or semi-fossorial behavior (burrowing/underground-dwelling for at least a portion of their activity cycle). Thus, these animals would be less exposed to airborne sound from construction or operation of the playing fields, although vibrations associated with heavy construction machinery might temporarily displace animals that are closer to the construction site. In addition, small mammal species of the sort expected in open habitat at Sand Point Magnuson Park are not as associated with vertical perching and vantage points as birds. Wildlife listening from closer to the ground may hear less noise and hear noise at a lower intensity than animals listening from a vantage above the ground (Larkin, 1996). Therefore, the kinds of mammals occurring at Sand Point Magnuson Park in the vicinity of the athletic fields may be less susceptible to ambient noises, and are unlikely to be negatively impacted by the change in noise conditions associated with the project.

In general, of the mammals that are likely to occur in the project vicinity, away from the waters of Lake Washington, most are nocturnal, crepuscular, or fossorial. These mammalian species are likely to be active during periods when construction is not taking place, or are active below ground. During periods of nighttime sports field operation, nocturnal mammalian species are anticipated to avoid the habitat near the sports fields, or to shift activity patterns to forage after sports field operations have ceased for the night. Diurnal species potentially utilizing habitat exposed to project-related noise (e.g. Eastern gray squirrels, rabbit spp) might be displaced from habitat in the immediate vicinity of construction and sports field activity—although these species show a relatively high tolerance to nearby human activity.

Amphibians and Reptiles

Ambient noise generated by other calling frogs can mask the acoustic signals produced by male frogs, reducing mate choice for females to nearby males (Gerhardt and Klump, 1988), or resulting in different female preferences for male calling frequency (Wollerman and Wiley, 2002). However, such acoustic interference occurs within the chorusing group of frogs, and thus occurs over a very small spatial scale. Some evidence indicates that reproductive output may be decreased in anurans breeding near highways due to acoustic interference (Barass, 1985 in Larkin, 1996), but no other data concerning anthropogenic noise resulting in acoustic masking was found in the literature.

Potential masking of acoustic signals relevant to amphibian reproduction depends not on absolute background levels of noise, but on the signal to noise ratio the animal experiences. In the case of chorusing frogs, the signal is a male's call, and the noise is background noise (the background chorusing, anthropogenic noise, etc.). The ratio can be expressed as a differential between the signal and noise; e.g. a +2 dB ratio means that the signal is 2 dB greater in intensity than the noise, whereas a –4 dB indicates that the signal is 4 dB less than the noise. Calling tree frogs can produce a surprisingly high level of sound; the hourglass tree frog (*Hyla ebraccata*) male produces a call with an intensity of 85.1 dB at 1 meter and 80.6 dB at 2 meters, for example (Wollerman, 1998). Female frogs from different tree frog species can detect signals (individual calling males) at ratios ranging from +0 dB (Gerhardt and Klump, 1988, uncorrected for species-specific frequency perception of the frogs' ears) for green tree frogs (*Hyla cinera*) through +3 dB for hourglass tree frogs (Wollerman, 1998) to +8 dB for green tree frogs (Ehret and Gerhardt, 1980; Wollerman, 1998; corrected for species-specific frequency perception of the frogs' ears). Anthropogenic background noise levels at Frog Pond are not anticipated to achieve levels close (i.e. in the 72-80 dB range) to those that would mask any signals that female Pacific chorus frogs might

receive in a mating chorus, so no project-related negative effects associated with noise are anticipated. In general, noises generated from the new sports fields at Sand Point Magnuson Park are not expected to attain levels that would interfere with breeding activity or other behaviors for amphibians or reptiles occurring within park habitat.

2.4 IMPACTS OF THE ALTERNATIVES

2.4.1 Lesser-Capacity Alternative

The lesser-capacity alternative has a substantially different artificial-turf field configuration than the proposed action, fewer new parking lots on the west side of the park, and fewer illuminated fields. For the lesser-capacity alternative, the existing tennis courts and associated interior road and parking lot would be retained, allowing continued human access to the interior of the proposed habitat area.

Operational noise associated with the lesser-capacity alternative would be similar to conditions under the proposed action, but the noise would likely be somewhat less in magnitude, extent and duration. This alternative would result in a substantial increase in aggregate use of the park, primarily in conjunction with operation of the sports field complex, but the level of increased use would be less than for the proposed action. Traffic produced by sports field users would still increase, but by a smaller volume.

With the lesser-capacity alternative, noise from the sports field activities during evening hours would be less extensive because only 3 fields (compared to 11 fields with the proposed action) would be lit and used in the evenings. During daylight hours, noise of athletic activities is expected to be similar to the proposed action. One less field is expected (i.e., Field 9) and Fields 5 and 6 would be moved further from the primary wildlife habitat. The fields that would be lit in this case are Fields 7, 11, and 12.

Predicted sound levels (L25s) from sports field activities during the winter and fall months range from 25 to 55 dBA at 50 feet from the walking path, and from 25 to 51 dBA 200 feet from the path. Predicted maximum sound levels (Lmax) range from 46 to 73 dBA 50 feet from the walking path and 45 to 66 dBA 200 feet from the path. The primary use of the athletic fields during the fall and winter is for youth and adult soccer, rugby, or ultimate frisbee games.

The spring and summer months would entail heavier use of the sports fields. Predicted sound levels (L25s) from sports field activities during the spring and summer months range from 35 to 55 dBA at 50 feet from the walking trail, and from 35 to 51 dBA 200 feet from the trail. Predicted maximum sound levels (Lmax) range from 55 to 73 dBA 50 feet from the walking path and 55 to 66 dBA 200 feet from the path. The primary use of the athletic fields during the spring and summer is for youth and adult games and practice for softball and baseball, soccer, rugby, or ultimate frisbee.

Noise levels and the frequency and duration of sports field noise in the western portion of the wetland/habitat complex would be reduced relative to the proposed action, as a result of the difference in field configuration and lighting patterns. Noise levels and timing patterns in the eastern portion of the wetland/habitat complex would remain essentially the same as the existing conditions, because the interior road and parking lot (which would be removed under the proposed action) would remain as the primary origin of noise sources under the lesser-capacity alternative. Greater access by foot traffic into the expanded wetland, meadow and savannah habitats (because of the continued presence of the interior roadway and parking lot), coupled with any noise associated with such access, would reduce the benefits

for more reclusive and noise-sensitive species, relative to the proposed action. Overall, in comparison to the proposed action, noise conditions would be better in some parts of the wetland/habitat complex and worse in others. Because the lesser-capacity alternative could not provide the same degree of central refuge area, it would not provide advantageous conditions for wildlife from a noise perspective.

Noise-sensitive breeding bird populations are not anticipated to either decrease or increase under the lesser-capacity alternative, based upon expected ambient noise levels relative to current conditions. Current acoustic environments are not expected to change significantly for mammals, amphibians or reptiles in Sand Point Magnuson Park. Therefore, no additional impacts to these types of species due to noise are expected for the lesser-capacity alternative.

2.4.2 No Action Alternative

A few minor improvements to Sand Point Magnuson Park would likely occur under this alternative, which could produce some limited, short-term construction noise. The most likely source of noise in this case would be the planned demolition of several existing buildings on the site, including the former navy commissary complex. Construction or demolition activities under this scenario would be much less extensive and would generate much less noise than either action alternative. Organized use of the existing sports fields would continue, with resulting intermittent noise from participants and spectators; this noise source would be limited to daylight hours, as at present. Overall, considering both construction and operational sources, potential noise levels under the no action alternative would not likely be significant. Because ambient noise levels are not expected to increase under the no action alternative, no changes in noise-related wildlife impacts from current conditions are anticipated. The existing ambient noise levels in the park may be adversely affecting noise-sensitive wildlife species, however. The L25 figures in **Table 2-1** show that current sound levels in the existing habitat areas routinely are around 50 dBA, which is well within the range of threshold sound levels for breeding birds reported in Section 2.2.2.

Bird use patterns and species composition in Sand Point Magnuson Park are expected to change over the next 25 years through both natural succession and implementation of the Vegetation Management Plan (VMP). The VMP defines management of existing vegetation throughout the park with the goals of increasing native vegetation diversity, reducing invasive species infestation, and increasing the forest canopy in appropriate habitat areas. Noise-sensitive breeding bird populations are not anticipated to either decrease or increase based upon ambient noise levels relative to current conditions.

Current acoustic environments are not expected to change significantly for mammals, amphibians or reptiles in Sand Point Magnuson Park. Therefore, no additional impacts to these types of species due to noise are expected for the no action alternative.

2.5 CUMULATIVE IMPACTS

Creation of new sports fields and the establishment of formal educational uses in the wetland/habitat complex would likely increase the public awareness of the expanded habitat areas within the park, and would almost certainly increase the numbers of park users. For some species of wildlife, particularly those sensitive to increased noise and human pedestrian disturbance, this increase in human presence could be a deterrent to their use of the site. However, those species would not be attracted to use the site without the proposed increase and diversification of habitat types proposed with either action alternative. Aside from the increased human presence within the habitat areas of the park, the proposed action would

result in greater frequency and duration of sports field noise within the habitat areas. On balance, however, the analysis of the potential impacts of sports field noise on wildlife did not identify expected wildlife effects that would modify the conclusions about cumulative wildlife impacts presented in the July 2002 Final EIS. The potential for adverse impacts associated with sports field impacts would primarily apply to certain species of birds, and not to local wildlife populations generally. Based on the relatively small incremental change in predicted noise conditions, it does not appear that the proposed action would represent a large cumulative impact to the ambient sound environment in Sand Point Magnuson Park.

2.6 MITIGATION MEASURES

2.6.1 Construction

The July 2002 Final EIS indicated that compliance with the City's noise ordinance, along with ongoing monitoring, would be the primary tool to limit construction noise impacts. Compliance with the noise ordinance would limit construction activity to daylight hours. While such a limitation would not mitigate for disturbance to diurnally active species, it would serve to help mitigate impacts to nocturnally active animals. Staging areas for construction vehicles and equipment could be located as far away from current habitat as possible, in order to reduce potential impacts of construction noise to wildlife. If possible, heavy construction resulting in significant noise production could occur outside of the breeding season for most wildlife species (e.g. heavy construction could begin in early August and extend until the end of December).

2.6.2 Operation

The July 2002 Final EIS indicated that a program to monitor operational noise impacts would be a key component of the mitigation measures for the proposed action or the lesser-capacity alternative**.** This program was identified in response to potential community noise impacts, but could be defined to include a component related to potential noise impacts in the habitat areas of the park. Such a monitoring component would include periodic measurements of sound levels at reference locations within the wetland/habitat complex and observations of wildlife use patterns. Sound level measurements would not be used to assess compliance with any specified noise limits, however, as the Seattle noise ordinance limits apply to nearby residential receptors.

The Final EIS also noted that the use of loudspeakers, air horns and similar devices is already prohibited at all athletic events in City parks, particularly between 10 and 11 p.m., by the Seattle Municipal Code (Section 18.12.170), unless authorized for specific events and times. Signs detailing this restriction would be placed at key locations near the sports fields.

The Final EIS also discussed a number of additional operational or design measures by which noise generated from activities on the proposed sports fields could be reduced, which are summarized as follows:

- Installing resilient materials on the baseball/softball backstops would help dampen noise. (This measure was specifically incorporated into the plans for the proposed action.)
- Reducing the daily hours of field operation would reduce potential negative impacts to nearby wildlife by reducing the frequency and duration of sports field noise. Depending on the activity

patterns of the affected wildlife, this could be applied on an annual basis or only during key periods of the year, such as during breeding season.

- It is anticipated that no permanent outdoor sound systems would be installed within the sports field complex.
- Installation of an upland forest buffer between the athletic fields and the proposed wetland habitat, while not necessarily functioning for substantial noise reduction, would nonetheless provide some visual screening of the created wetland habitat from the athletic fields. There is ample evidence that noise-related disturbance to wildlife is exacerbated when the source of noise is also visible to the animals (Young, 1994; Stalmaster and Newman, 1978; Stalmaster, 1987). Creating a vegetative barrier to occlude noise sources from animals would help to mitigate for increased noise and activity associated with the proposed athletic fields. The use of earth berms and native screening vegetation could provide further noise reduction along the ground plane.

Maintenance of the proposed athletic field facilities would require expanded periodic use of power equipment. Maintenance workers can operate equipment to limit excessive noise and vibration. Some precautions to help minimize unnecessary off-site impacts are:

- Use of perimeter landscaping to block on-site noise levels.
- Regular scheduled maintenance of machinery and equipment.
- On-site management to plan noisiest activities during mid-day hours.

2.7 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Construction activities associated with the proposed action would result in unavoidable intermittent noise impacts to nearby wildlife habitat. While temporary in nature, noise impacts would persist over a relatively long term (approximately 10 years) and might nevertheless cause some species to selectively move away from habitat in close proximity to the construction site, even if said habitat is not actually physically disturbed during the construction process. After heavy construction activity ceased, the habitat in close proximity to construction sites in the park would eventually be recolonized by many of the species initially displaced by the noise from construction.

Operation of the sports fields would result in a long-term change from the existing ambient noise conditions, and therefore in some degree of noise impacts within the interior areas of Sand Point Magnuson Park. The key dimensions of those impacts would be the frequency and duration of sports field noise, rather than the intensity, as the typical and maximum sound levels would not be appreciably greater than at present. Existing typical (L25) sound levels at a reference location in the habitat area of the park are in the vicinity of 50 dBA, with a maximum sound level of approximately 68 to 70 dBA. Predicted (L25) spring and summer sound levels with the proposed action at the same location range from 42 to 55 dBA, with predicted maximum levels from 61 to 73 dBA. Given that a 3-dBA increase is barely perceptible to the human ear, the magnitude of the potential change in noise levels from operation of the proposed sports fields is slight.

The expanded hours of sports field operation under the proposal would undoubtedly result in a greater frequency and duration of ambient noise during certain times of the year, compared to existing conditions. Increases in frequency of sporting events and the duration of sports field noise would be unavoidable and could potentially adversely impact certain wildlife populations. The degree of impact cannot be

conclusively determined (i.e., the impacts may not be "significant"), however, because no research has been conducted specifically regarding noise from athletic fields affecting wildlife. The limited research findings that are available do not allow the identification or prediction of a significant level of impacts with reasonable certainty.

In addition, the types of noise and the corresponding sound levels would be similar to those that currently occur; if noise levels of the magnitude produced by the proposed sports fields are capable of adversely affecting wildlife using Sand Point Magnuson Park, those wildlife species are already being adversely affected by the existing ambient noise levels. Given the baseline conditions, it is not feasible to predict the incremental impact that might be associated with the greater frequency and duration of noise levels that presently occur.

Furthermore, the configuration of the proposed action and the size of the wetland/habitat complex indicate that any incremental noise impacts on wildlife would not likely extend throughout the entire wetland/habitat complex. While some species might selectively abandon habitat in close proximity to the athletic fields, the proposed action would also increase habitat that is more removed from human activity and noise because it would eliminate access and parking in areas of the park currently impacted by human activity. Therefore, under the proposed action, potentially noise-sensitive species that might be displaced from the habitat in the vicinity of the proposed sports fields could find more suitable habitat in other areas of the park where human activity would be minimized.

While the impact analysis did not result in the conclusive identification of significant impacts to wildlife, it does appropriately narrow the focus of potential impacts to certain types of wildlife. The analysis concluded that the species of mammals occurring at Sand Point Magnuson Park are unlikely to be adversely affected by the change in noise conditions associated with the project. Similarly, the analysis concluded that the proposed action was not likely to result in interference with breeding activity or other behaviors of amphibians or reptiles. To the extent that incremental impacts to wildlife might occur, those impacts would apparently be limited to bird species, and primarily to birds that use park habitat for breeding. Furthermore, comparison of the daily and seasonal timing aspects of bird breeding behavior relative to the increased frequency and duration of sports field noise indicates that the changes in field use and associated noise patterns would have relatively little potential to interact with bird breeding activities; the daily duration of field use would not be substantially different from current conditions during much of the breeding season, and the change in duration would not affect bird activity in the key early morning hours of the day.

Mitigation measures that are capable of reducing noise associated with the proposed action are discussed in **Section 2.6**. These include use of materials that would dampen sound, restrictions on the use of sound systems, use of berms and vegetative barriers, and possible restriction in periods of operation. In addition, monitoring of noise conditions and habitat use could help to determine whether sports field use was having an adverse effect on park wildlife. If monitoring suggested that sports field use was having a significant impact on breeding bird populations, operating conditions could be adjusted to reduce the level of noise impacts. Such an adjustment would logically apply to field use during morning hours, however, and would not be triggered by changes in field use patterns associated with the proposed action.

Chapter 3

Response to Comments

3. RESPONSE TO COMMENTS

The Seattle Department of Parks and Recreation issued the Draft Supplemental EIS for the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project on March 21, 2003. The formal review period for public and agency comment on the Draft SEIS closed on April 21, 2003. All comments on the Draft SEIS received by the close of business on April 21 were considered in the preparation of the Final SEIS.

Written comments on the Draft SEIS were received in letter form and by electronic mail. Verbal comments were submitted primarily as testimony and recorded by a court reporter at a public hearing held on April 17, 2003 at the Sand Point Community Activity Center.

Written comment records were arranged in date order and numbered sequentially in that order. Based on the number of written comment records received, the comment record identifiers ranged from W1 to W23. Verbal testimony provided at the public hearings was recorded and documented in a written transcript of the hearing. Testimony statements from the 38 speakers at the hearing were labeled T1 through T38. **Table 3-1** provides a list of all written comment records and testimony statements by source.

The SEIS preparers reviewed all comment letters and hearing statements. Specific passages from the letters and testimony that constituted comments on the Draft SEIS were marked with vertical bars in the margin of the letter or statement, and all comments within a letter or statement were numbered sequentially.

Copies of all of the comment records are included in **Appendix A**. These copies include the markings that identify the comment record and the comment numbers. For cross-referencing purposes, **Table 3-1** is repeated as **Table A1** in the appendix, to provide a complete list all of the sources submitted as Draft SEIS review input.

This chapter of the Final SEIS presents responses to the issues raised in the public review comments on the Draft SEIS. Overall, the comment review process identified 67 individual comments within the 23 written comment records and 74 individual comments within the 38 testimony statements, for a total of 141 separate comments.

The text following **Table 3-1** provides the responses to the comments, addressing first the written comments and then the testimony comments. As described in Chapters 1 and 2, the SEIS addressed a very specific scope involving the single issue of the impacts of sportsfield noise on wildlife. Many of the review comments submitted as testimony or as written comments did not address this issue or the content of the Draft SEIS. Instead, these comments address non-SEIS issues such as sportsfield lighting, traffic or noise experienced by humans in surrounding neighborhoods; address issues such as taxes, financing or government decision processes that are not elements of the environment subject to SEPA review; or simply express opposition to or support for the proposed action. The Final SEIS includes specific responses to all comments that address the specific scope and/or content of the Draft EIS. In other cases, the responses indicate comments on issues that were addressed in the July 2002 Final EIS for the project or are not within the scope of the SEPA review.

Table 3-1
Draft SEIS Comment Log

1. Written Comments

Comment Record ID	Writer	Affiliation	Date of Record	No. of Comments
W1	Toivo Rovainen		4/4/03	3
W2	Lynn Ferguson	Magnuson Environmental Stewardship Alliance (MESA)	4/7/03	4
W3	David White		4/7/03	3
W4	Victoria Simmons		4/7/03	3
W5	Richard Deyo		4/7/03	3
W6	Molly Hashimoto		4/7/03	1
W7	Sarah Kupor		4/7/03	1
W8	Baria Belza		4/7/03	3
W9	Al Skaar/Joyce Teshima		4/7/03	3
W10	Kim Gittere Abson/Michael Scupine		4/7/03	1
W11	David Hashimoto		4/7/03	5
W12	Bonnie E. Miller		4/14/03	8
W13	Mike Keran	DiscNW	4/15/03	4
W14	Yvonne M. Mattson		4/17/03	13
W15	Gail Chiarello		4/17/03	2
W16	Peggy J. Printz		4/19/03	1
W17	Joan and Chuck Slenklewicz		4/20/03	1
W18	Herbert Blau		4/18/03	1
W19	Kimberly Wels		4/18/03	1
W20	Alan Singer		4/21/03	1
W21	Pad Gallagher		4/21/03	2
W22	Michael Fenton		4/21/03	2
W23	Gail Chiarello		4/21/03	1

2. Testimony Comments (April 7, 2003 Public Hearing)

Comment Record ID	Speaker	Affiliation	No. of Comments
T1	Phillip Wagenaar		2
T2	Vance Thompson		1
T3	Donald Hesch		1
T4	Bodel Bak Jones		2
T5	Larry Rogovoy		4
T6	Peter Dahl		5
T7	Marge Sampson		1
T8	Peggy Printz		1
T9	David White		3
T10	Victoria Simmons		6
T11	Carol Stewart		1
T12	Maggie Kitch		1

T13	Arden Forey		1
T14	Lynn Ferguson	Magnuson Environmental Stewardship Alliance (MESA)	4
T15	Eric Versuh		2
T16	Jeanette Williams	Sand Point Community Liaison Committee	2
T17	Sara Cooper		1
T18	Ellen Juhl		1
T19	Michael Callahan		1
T20	Diana Kincaid		2
T21	Robert Hunt		1
T22	Dennis Martynowych		1
T23	Doug Anconda	Friends of Sand Point Magnuson Park	2
T24	Pad Gallagher		2
T25	Mark Roller		2
T26	Linda Massey		1
T27	Larry Kutz		1
T28	Mary Liu		1
T29	Richard Deyo		3
T30	Lisa Decker		4
T31	Janice Bragg		5
T32	Bruce Firestone		2
T33	Bob Dorres		1
T34	James Ward		1
T35	Marilyn Nichols		1
T36	Tom Hinckley		2
T37	Eileen Bryant		1
T38	David Gordon		1

3.1 RESPONSES TO WRITTEN COMMENTS

Record W1, Toivo Rovainen

Comment W1-1: Effects of arc lights, asphalt and artificial turf

Response:

The comment is beyond the specific scope and content of the SEIS. Lighting impacts, drainage and habitat conversion were addressed in detail in the July 2002 Final EIS.

Comment W1-2: Spending millions of taxpayer dollars on the proposed project

Response:

The comment is beyond the specific scope and substance of the SEIS, therefore no formal response is warranted in this document. Government spending priorities are not elements of the environment subject to review under SEPA, although the decision makers may consider this input when evaluating the proposal.

Comment W1-3: Empty, unused, lit fields around the city

Response:

The comment is beyond the specific scope and content of the SEIS. The July 2002 Final EIS described DPR's objectives for the proposed action, specifically including the objective to expand recreational opportunities.

Record W2, Lynn Ferguson (MESA)

Comment W2-1: Balance of the current plan

Response:

Sections 1.3 and 2.1 of the July 2002 Final EIS provide a discussion of the long-term planning process and the guidance from the Seattle City Council that resulted in the identification of the proposed action for this project. Section 2.5 of the Final EIS addresses other possible alternatives for the proposal and how DPR evaluated those alternatives in light of the City Council direction. DPR believes that the City Council has provided clear direction concerning the desired configuration of Sand Point Magnuson Park and the desired balance between active recreational facilities and open space/natural areas, and believes that the proposed action is balanced and is consistent with the Council direction.

Comment W2-2: Effects of sound on wildlife

Response:

No specific data on species that are more tolerant to noise vs. species that are less tolerant is available for the species present at Sand Point Magnuson Park. The comment predicts that species that are tolerant of human presence and urbanization would remain on the site after construction begins, and this is certainly a reasonable prediction. Those species are already present and display a high tolerance to human disturbances. Bird species that are less tolerant of noise might be displaced from habitat currently in use by those species; breeding passerine birds that rely heavily on song in their mating dynamics, for example, are potential candidates for "less tolerant" status. However, predicting the exact species at Sand Point Magnuson Park that might be displaced—particularly in the absence of spatial data concerning nest sites, the timing of breeding activity, the current levels of habituation to noise that might exist, etc.—is exceedingly difficult if not impossible.

Many of the bird species listed in Appendix C of the July 2002 Final EIS as occurring in Magnuson Park are winter residents, migrants, or simply do not use the park for breeding purposes. Thus, noise-related impacts for these species would be limited to possible displacement away from foraging habitat, rather than direct decreases in reproductive success. In addition, many of the species listed in the Appendix are associated with water habitat, and would thus be at some remove from any construction directly associated with the athletic fields themselves. Fewer noise-related impacts to waterfowl are anticipated as a result of sports field operation, due to the distances at which noises are expected to occur relative to the birds themselves and the associated attenuation of noise.

Of the bird species showing demonstrated population declines listed in the comment, none are known to use Sand Point Magnuson Park as breeding habitat. Of the birds that are known to breed at Sand Point Magnuson Park, many are fairly common (e.g. American goldfinch, red-winged blackbird, American crow, etc.) or are introduced species (e.g. ring-necked pheasant, California quail, house sparrow, etc.). Other bird species known to breed in Sand Point Magnuson Park may well experience elevated noise levels, and displacement away from potential breeding habitat was a possible consequence explicitly noted in the Draft SEIS.

Comment W2-3: Effects of sound on large mammals

Response:

The Final SEIS clarifies the point that large mammals would not be impacted because none are present on the site. Large mammals include ungulates such as deer, moose, etc., and larger carnivores such as black bear, cougar and the like. No such mammals occur at Sand Point Magnuson Park. The comment mentions small mammals such as raccoons, opossums, muskrats and coyotes as mammalian species occurring at Sand Point Magnuson Park. Raccoons, opossums, and even coyotes tend to be fairly tolerant of human disturbance—the fact that such species find their way into and thrive in suburban habitat is indicative of this tolerance. Noise-related impacts to these species would consist of behavioral avoidance of impacted areas, assuming such areas were previously used for foraging and other activity. Mountain beaver are very unlikely to occur near the construction site or future sports fields; the nearby habitat is unsuitable for this species, and the history of the park and nearby land use makes the presence of

mountain beaver even more unlikely. As stated in the July 2002 Final EIS, mountain beaver, if present, would be found in the forested habitat of Promontory Point, rather than near the proposed sports fields.

Pacific chorus frogs do occur at Sand Point Magnuson Park, and they breed in the habitat known as Frog Pond. Group chorusing in this species can attain relatively loud levels (Leonard, *et al*., 1993), and the research conducted on congeneric species of frog has focused on acoustic interference that nearby calling male frogs can impose on female frogs, rather than ambient noise from more distant sources. Construction would not take place during nighttime hours, and no construction-related noise impacts are expected for this species. The project is not expected to involve increased human activity in the immediate vicinity of Frog Pond; the Final EIS states that the project has been carefully designed to avoid Frog Pond during construction and in future conditions. As stated in the Draft SEIS, noises at night from the new sports fields are not expected to attain levels that would interfere with breeding in the Pacific chorus frogs at Sand Point Magnuson Park. See also the response to comment W14-12.

Comment W2-4: Disposition of interior roadway and parking lot

Response:

The specification of the lesser capacity alternative in the Draft and Final SEIS is the same as presented in the July 2002 Final EIS. Based on the hearing examiner's decision, definition of the alternatives was not an issue included within the scope of the SEIS. The July 2002 Final EIS described in detail the characteristics of the alternatives and explained the logic for the phasing plan in each case (see Section 2.2.12 of the FEIS). The phasing plan calls for the removal of the interior parking lot in Phase 3 because the logical construction sequence does not include development of replacement parking capacity in earlier phases, and because continued access would be needed to the renovated sports meadow and the existing tennis courts (until those facilities were replaced).

Record W3, David White

Comment W3-1: Distinguishing different types of noise

Response:

Both the contention in the comment that types of noise are not considered in A-weighted measurements and the implication that the discussion of types of noise is flawed are incorrect. In fact, much research in environmental noise has focused on different kinds of noise and noise sources (i.e., continuous, intermittent, impulsive, or periodic) that create equivalent A-weighted sound levels but result in different reactions to that noise.

The fact that sounds with the same equivalent A-weighted decibels (dBA) can elicit vastly different community reactions is well established, and has been the focus of numerous noise studies assessing different reactions to different noise sources with equivalent A-weighted sound levels. For example, the paper "Community Noise" (Birgitta Berglund and Thomas Lindvall for WHO in 1995), states the following, "A number of studies have concluded that equal levels of different noise types lead to different annoyance. For example, equal LAeq,T levels of aircraft noise and road traffic noise will not lead to the same mean annoyance in groups of people exposed to these noises." Similarly, "Guidelines for Community Noise" (Birgitta Berglund, Thomas Lindvall, and Dietrich Schwela for the World Health

Organization, 1999), says, “A number of studies have shown that equal levels of traffic and industrial noises result in different magnitudes of annoyance. This has led to criticism of averaged dose-response curves determined by meta-analysis, which assumed that all traffic noises are the same." Noise studies cited in the previous two papers that also considered differing reactions to different sounds with equivalent sound levels include FL Hall et al. 1981; ID Griffiths 1983; HME Miedema 1993; JS Bradley 1994; HME Miedema & H Vos 1998; R Paulsen & J Kastka 1995; E Öhrström 1997; B Berglund et al. 1996; H Vos 1996; GF Smoorenburg 1998; R Klæboe et al. 1998; B Berglund et al. 1976; E Zwicker 1989; BF Berry 1995; and G Kerry et al. 1997. It is clear from copious studies that community responses to noise are often affected by the *types* of noise sources included in the A-weighted sound levels.

Another noise study (Noise Control Engineering Journal, Shafiquzzaman K and Dickson C, July-August 2002), discussed that both sound quality and resulting annoyance of wheel loader noise could be affected by reducing certain tonal elements of the noise, even though it would not reduce the overall A-weighted sound level. This article stated, "Most research and development in the vehicle industry…emphasized reductions in A-weighted noise emission in order to meet current and future legislative requirements. But since vehicles emitting noises with equal A-weighted sound pressure levels can give different annoyance responses, reductions in such levels do not necessarily improve the sound quality of wheel loaders."

Please note that the studies of the variations in reactions to different noise sources have focused on those sources most likely to impact nearby populations (e.g., highways, airplanes, railroads, artillery, helicopters, snowmobiles, personal watercraft, etc.). Noise from unamplified human voices and recreational sports activities are generally not considered major noise producers with a high potential to cause noise impacts and, therefore, have not been considered in these studies.

In summary, it is apparent that sounds of equivalent A-weighted levels can elicit different reactions. Since little to no research has been conducted on the effects of sports field noise on wildlife, it is presumptuous to assume that an A-weighted sound level of a source such as traffic would elicit the same response from the wildlife as would noise from athletic activities, because these noise types have completely different sound characteristics. It remains unknown whether noise from the athletic activities would have a greater or lesser impact on adjacent wildlife than traffic noise of equivalent A-weighted sound levels. Thus, the SEIS acknowledges the predicted sound levels of sports field noise could be sufficient to constitute an impact to adjacent wildlife.

Comment W3-2: Changes in bird density/funding for wetland restoration

Response:

The SEIS indicates that noise associated with athletic field operations might impact portions of the future wetlands located in proximity to the athletic fields (primarily emergent wetland), decreasing the potential specific habitat functions of the wetland for noise-sensitive wildlife. Species that show sensitivity to noise are anticipated to use emergent wetland habitat at some remove from the athletic fields. Such species could potentially show smaller population numbers, relative to similar wetland unaffected by noise, as a result of behavioral avoidance of otherwise suitable habitat. However, existing functional conditions within the emergent wetland at Sand Point Magnuson Park generally rank low to moderate (see Appendix C in July 2002 Final EIS, Volume 2). Emergent wetlands at Sand Point Magnuson Park were characterized as having moderate natural biological support features: they showed low plant diversity, low vegetative structure and organic accumulation, and few habitat features. Specific habitat

functions as they relate to wildlife indicated that the existing Sand Point Magnuson Park emergent wetlands showed low invertebrate, mammal, and bird habitat functions, and moderate amphibian habitat function.

Future emergent wetlands, as proposed under the project, are anticipated to have much greater biological support functions. The overall acreage of emergent wetland would be increased in Phase 2 of the proposed project, creating more habitat for wildlife species that utilize wetlands. (Expected increases in functions such as habitat size, organic accumulation, vegetative complexity, and number of habitat types will drive increases in specific habitat functions as they relate to wildlife. Future emergent wetlands at Sand Point Magnuson Park are anticipated to show high invertebrate habitat function, high amphibian habitat function, high bird habitat function, and moderate mammal habitat function—all improvements over the current conditions. Increases in wildlife habitat functions are anticipated to increase both species diversity and population densities of wildlife that utilize wetland habitat, even under conditions of potentially increased noise levels.

DPR believes the comment is incorrect with respect to funding for wetland enhancement and the basis for projecting improved function of the future habitat in the park with the proposed action. Phase 1 and Phase 2 are, by definition, already funded phases of the project, as addressed in detail in the July 2002 Final EIS. Phase 2 includes excavation and drainage actions for generally the southern and western features of the proposed wetland/habitat complex (the Promontory Ponds and southern Marsh Ponds), which is needed to provide fill for several of the proposed sports fields. The northern and eastern portions of the wetland/habitat complex would be completed in Phase 3, as this work would be needed to provide fill for several additional sports fields. Consequently, the major work elements for the wetland/habitat complex would be completed concurrently with 6 of the proposed new sports fields, and in advance of the remaining 5 fields and completion work on the project facilities. Development of wetland habitats such as those included in the proposed action is technically feasible and has been demonstrated in actual field situations. Contrary to the implied suggestion in the comment, there is no basis in SEPA law or regulations for assessing the impacts of something other than, or less than, the full development and characteristics of the proposed action.

Issues concerning the potential impacts of sports field lighting on wetlands and other resources were addressed in detail in the July 2002 Final EIS and are not within the scope of the SEIS.

Comment W3-3: Predominant sources and levels of existing noise

Response:

Describing the existing noise environment and the sources contributing to a measured noise level is standard practice for environmental noise documentation, and the description in the Draft SEIS is accurate. During the sound level measurements taken at interior locations of the park on the afternoons of Friday, March 14 and Sunday March 16, 2003, traffic traveling on Sand Point Way dominated the background sound level. Other contributors to the noise environment (i.e., airplanes, athletic activities on nearby fields, park users and their dogs, maintenance activities, birds, and toy airplanes) were also noted. Traffic on local roadways was also identified in the July 2002 Final EIS as a source of noise affecting Building 224 of the SPCHA, and the Final EIS identified measured sound levels at Building 224 during the Friday morning and afternoon commute periods in the low 50s dBA.

Sports field noise did not dominate the measurement taken in March 2003 in the interior portions of the SPMP wildlife habitat. Sports tournaments capable of generating enough noise to dominate the soundscape, such as the ultimate frisbee tournament captured in the sound level measurements taken for the Final EIS, occur infrequently and are, therefore, difficult to capture in a short-term sound level measurement of typical conditions. Sound level measurements are often used to characterize a typical existing sound environment, and so may not include the highest levels or the worst-case situation.

The lack of a major tournament activity during the measurements of existing conditions does not invalidate the usefulness or applicability of the sound level measurements reported in the SEIS. The measurements were used only to describe typical existing sound levels in the project vicinity, and were not used to characterize a highest use or worst-case situation. Although no major athletic events occurred during the measurements in the interior park locations, activities during the measurements included lacrosse practice during the Friday measurement, and numerous ultimate frisbee games during the Sunday measurement. The ultimate frisbee games were more dispersed during the Sunday measurement than the games in the tournament measured for the Final EIS. Therefore, much of this activity was much further from the measurement location and contributed little to the overall measured sound level.

The impact assessment used noise calculations instead of measurements to characterize the potential future sound levels in the interior wildlife habitat due to heavy usage of all of the proposed sports fields with the proposed action. This was an appropriate approach because it is not possible to *measure* sound levels from a field configuration that does not currently exist. Predicted future sound levels from heavy park usage generally ranged from the low 40s to mid 50s dBA in the peak summer months at locations 50 feet east of the walking trail. These predicted levels and potential related impacts on the affected wildlife were discussed in the Draft SEIS.

Record W4, Victoria Simmons

Comment W4-1: Distinguishing different types of noise

Response:

See the response to comment W3-1.

Comment W4-2: Funding for wetland restoration

Response:

See the response to comment W3-2.

Comment W4-3: Predominant sources and levels of existing noise

Response:

See the response to comment W3-3.

Record W5, Richard Devo

Comment W5-1: Effects of noise on other park users

Response:

The comment is beyond the specific scope and content of the SEIS. The effects of the proposed action on other park users were addressed in detail in the July 2002 Final EIS.

Comment W5-2: Effects of noise on wildlife and residents

Response:

The SEIS addresses in detail the effects of sports field noise on wildlife, and the comment identifies no claimed deficiency in that information. With respect to the effects of noise on surrounding neighborhoods, the comment is beyond the specific scope and content of the SEIS. The community noise effects of the proposed action were addressed in detail in the July 2002 Final EIS.

Comment W5-3: Study of need for ballfields and alternative sites

Response:

The comment is beyond the specific scope and content of the SEIS. The July 2002 Final EIS identified the objectives for the proposal, which include expanding recreational opportunities, and explained why alternative sites for this proposal were not and did not need to be considered in detail. Detailed study of alternative sites was an issue in the appeal of the July 2002 Final EIS, and the EIS was held to be adequate in this regard.

Record W6, Molly Hashimoto

Comment W6-1: Comparable study of sounds and wildlife responses

Response:

Given the full set of circumstances, information and potential outcomes, DPR does not believe that it is necessary or appropriate to conduct a comparable, site-specific study of noise impacts on wildlife at Sand Point Magnuson Park before making a decision on the proposed action. While the SEIS notes the lack of comparability between the published research examples and the potential sound impacts from the sports fields, it nevertheless acknowledges that noise impacts from the proposed action could occur (based on the findings that are documented in the literature, and the sound levels that appear capable of disturbing some types of wildlife) and describes what those impacts might be. The SEIS also points out that the predicted sound levels with the proposed action are *very similar to* the sound levels that presently occur in the habitat areas of the park with use of the existing sports fields (although the existing sports fields were not the dominant noise sources in the on-site sound level measurements taken for the SEIS). Therefore, if such adverse effects on wildlife from sports field noise are likely with the project, they are already occurring at the project site and any additional site-specific research would be inconclusive and of little value.

The SEPA rules (WAC 197-11-080) provide specific guidance with respect to incomplete or unavailable information that is not consistent with the suggestion of this comment. If information on significant adverse impacts is not known, the rules direct that agencies shall obtain and include that information in their environmental documents *if* that information is essential to a reasoned choice among alternatives *and if* the costs of obtaining it are not exorbitant. In this instance, DPR firmly believes the information in question *is not essential* to a reasoned choice among alternatives, because the SEIS discloses that noise impacts to some types of wildlife species are possible both at present and in the future. Given the similarity of the existing and predicted future sound levels, the costs of an on-site study of the potential future noise impacts would be unreasonable and therefore exorbitant, as such a study would provide little or no value. The SEPA rules further provide that when there are gaps in relevant information or scientific uncertainty concerning significant impacts, agencies shall make clear that such information is lacking or that substantial uncertainty exists; the SEIS complies with this direction by explaining the uncertainty relative to the existing research.

Record W7, Sarak Kupor

Comment W7-1: Alternative site study

Response:

The comment is beyond the specific scope and content of the SEIS. The July 2002 Final EIS identified the objectives for the proposal, which relate to development of Sand Point Magnuson Park consistent with City Council direction, and explained why alternative sites for this proposal were not and did not need to be considered in detail. Detailed study of alternative sites was an issue in the appeal of the July 2002 Final EIS, and the EIS was held to be adequate in this regard.

Record W8, Baria Belza

Comment W8-1: Effects on the feeling of the park and wildlife habitat

Response:

With respect to the effects of the project on the feeling of the park, the comment is beyond the specific scope and content of the SEIS. The effects of the proposed action on the resources and uses of the park were addressed in detail in the July 2002 Final EIS. Effects of the project on wildlife are addressed in the SEIS and in the Final EIS. Because the comment does not identify a specific deficiency in the SEIS discussion of the effects on breeding habits, no further response is warranted in this document.

Comment W8-2: Effects of noise on residents

Response:

See the response to comment W5-2.

Comment W8-3: Noise from a few athletes affecting the community

Response:

See the response to comment W5-2.

Record W9, Al Skaar/Joyce Teshima

Comment W9-1: Alternative sites for fields and lights

Response:

See the response to comment W7-1.

Comment W9-2: Noise disruption for wildlife and humans

Response:

With respect to the noise effects of the project on human residents near the park, the comment is beyond the specific scope and content of the SEIS. The community noise impacts of the proposed action were addressed in detail in the July 2002 Final EIS. Noise effects of the project on wildlife are addressed in the SEIS. Because the comment does not identify a specific deficiency in the SEIS discussion of the effects on breeding habits, no further response is warranted in this document.

Comment W9-3: Compatibility of proposed development for the park

Response:

The comment addresses the merits of the proposal rather than the specific scope and substance of the SEIS, therefore no formal response is warranted in this document.

Record W10, Kim Gittere Abson/Michael Scupine

Comment W10-1: Protest wetland effects and lighting, oppose SEIS

Response:

The comment addresses the merits of the proposal rather than the specific scope and substance of the SEIS, therefore no formal response is warranted in this document.

Record W11, David Hashimoto

Comment W11-1: Timing of noise measurements

Response:

See the response to comment W3-3, which addresses essentially the same issue.

Comment W11-2: Future noise levels with project

Response:

The highest current usage of park sports facilities near the habitat areas occurs in a denser configuration than would likely occur in the future with the proposed project. Therefore, it is highly unlikely that the sound levels in the future during the maximum usage would be any or much higher than currently occurs. Given that the proposed future sports field configuration actually discourages such dense use as was measured during the ultimate frisbee tournament described in the FEIS, it is probable that the highest sound levels that could occur today are at least as high and possibly higher than those that might occur in the future. Again, this is because the proposed future configurations of the sports fields would disperse sports field activities over a larger area. Once dispersed, noise from activities nearest the receiving location would likely dominate the sound environment compared with noise from more distant athletic activities, and more distant activities would have very little affect on the overall sound levels close to other fields.

Because of the applicable physical properties, the "huge increase" in sports facilities would not cause a corresponding increase in the sound levels present in the wetland/habitat complex. The proposed development would represent an increase in the total acreage of athletic field surfaces of approximately 72% and an increase in the maximum number of fields (depending upon the configuration of the present field area) from 8 to 15. If all of the athletic fields could be placed on top of each other and were being used to the fullest extent, the additional athletic field activities might result in an increase in noise of approximately 2.4 to 2.7 dBA, which would be barely audible by most standards. However, given that the future configuration of athletic fields would be dispersed over a larger area than the current configuration, much of the additional athletic activity and associated noise would be further from receivers than the existing activities, and the projected increase in sound level is expected to be minimal.

Although the proposed artificial field surfaces would likely have a somewhat higher flow resistance than grassy fields and so result in slightly less noise reduction due to ground effects, the artificial surfaces would still reduce noise traveling over them. Because the sound level predictions discussed in the SEIS did *not* include any noise reductions due to ground effects, the predicted levels are likely overstated and can be considered conservative estimates of future project-related noise.

Regarding the potential for the paved asphalt surfaces to increase noise, many of the paved areas included as part of the proposed project already exist. The paved roadway and parking areas currently situated in the center of the interior park area nearest the wildlife habitat are proposed to be removed as part of the proposed action, and would be unaffected under the lesser capacity alternative. Any newly paved areas proposed as part of the project are located on the perimeter of the sports field areas. Therefore, sports field noise would not need to travel over these hard surfaces prior to reaching the wildlife habitat areas and these hard surfaces would not increase sports field noise in the interior wildlife habitat areas.

Comment W11-3: Adjustment of measured noise levels

Response:

The comment is correct in noting that some sound measurements were adjusted prior to use, but incorrect in implying this means noise sources were somehow ignored. The *source* noise measurements of specific athletic events were adjusted to ensure that the predictions of sports activity were based on accurate representations of these activity and not other sources like airplanes and traffic. The measurements of *existing sound levels* used to characterize the existing environment in the analysis reported in the FEIS and the SDEIS included all contributing sources, including traffic, airplanes, etc.

The cumulative levels of the sports field noise would vary depending on many factors including the location of activity relative to the wildlife habitat, and the level of sports field activity. Based on intentionally conservative (i.e., protective) modeling, the highest predicted hourly sound level in the wildlife habitat during the peak summer activity was 55 dBA. This worst-case level would be higher than the sound levels in the low 50s dBA measured during moderate or minimal athletic activity. Noise from sports fields use during such peak activity would, therefore, be expected to dominate the noise environment at nearby locations, and so could increase the resulting cumulative sound level to as high as 57 dBA. Such a sound level could impact wildlife in affected areas onsite. Most of the time, however, during periods of less activity and at locations that would be less affected by sports field noise, the relatively low predicted sports activity sound levels (in the mid 30s and mid 40s dBA) would not substantially affect the existing sound environment in the wildlife habitat areas. Thus, much of the time any cumulative impacts would be negligible.

As noted in numerous comments, there are *existing* sports field activities at Sand Point Magnuson Park. Some of these activities include rather intense use, such as the ultimate frisbee tournament described in the FEIS. Sound measurements during one such tournament documented existing sound levels in the mid 50s dBA at a location near the activity. During such events, the *existing* sound environment in nearby wildlife habitat areas is dominated by noise from the tournaments. As explained in the response to comment W11-2, the proposed project would likely reduce noise from such events within the wildlife habitat area because the proposed play field configuration would disperse active use areas compared with the much more dense usage that occurs with the existing configuration. Therefore, sound levels in the future even during maximum usage would likely not be any higher than currently occurs during maximum usage with the existing park configuration. Even so, as indicated in the Draft SEIS, the predicted sound levels in the mid 50s dBA would be expected to have some level of impact in the surrounding wildlife habitat areas, particularly since noise associated with sports field activities would be expected to occur for a greater duration than currently.

Human activity (other than traffic) surrounding the park currently has little to no effect on the sound levels in the interior wildlife habitat areas of the park. Also, as discussed in the response to comment W14-8, changes in traffic traveling on the perimeter roads or offsite due to the proposed project would have little to no impact on the sound levels in the interior wildlife areas. Nevertheless, the analysis has properly accounted for all noise sources associated with the proposed action.

Comment W11-4: Visual cues in conjunction with noise

Response:

The visual cues associated with noise generation that are addressed in the literature were physical objects in motion, such as approaching planes, helicopters or vehicles. The combination of a moving vehicle and the noise it produced could exacerbate animal behavioral responses in some of the model systems studied. However, the context in the research studies was very different from the situation anticipated at Sand Point Magnuson Park: noise-generating aircraft or vehicles moving towards wildlife capable of discerning both the noise and the vehicle, vs. noise from human activity on a playing field and the light associated with that activity. No data in the literature allowed any conclusions to be drawn in the latter case. Furthermore, the scope of the SEIS was to address the potential impacts of noise on wildlife; the inclusion of lighting issues was addressed in detail in the July 2002 Final EIS, and is beyond the scope of the SEIS analysis.

Comment W11-5: Characterization of construction impacts as temporary

Response:

The converse of temporary is permanent; the construction activity would certainly not be permanent, so the use of the term temporary is accurate. Construction phasing and construction noise impacts are addressed in detail in the July 2002 Final EIS. While the construction phases are spread over a period of approximately 10 years, this represents each phase as an independent construction mobilization of focused construction activity, not 10 years of continuous construction activity. The Final EIS took care to clearly describe construction noise as a phenomenon that would occur at various specific locations and for varying durations over a relatively long term, and disclosed that construction noise could disturb and possibly displace wildlife in nearby areas.

Record W12, Bonnie E. Miller

Comment W12-1: Applicability of noise measurements described in Draft SEIS

Response:

See response to comment W3-3. The lack of a major tournament activity during the measurements of existing conditions does not invalidate the usefulness or applicability of the sound level measurements. The measurements were used only to describe typical existing sound levels in the project vicinity, and were not used to characterize a highest use or worst-case situation. Although no major athletic events occurred during the measurements in the interior park locations, activities during the measurements included lacrosse practice during the Friday measurement, and numerous ultimate frisbee games during the Sunday measurement. The ultimate frisbee games were more dispersed during the Sunday measurement than the games in the tournament measured for the July 2002 FEIS. Therefore, these activities were generally further from the measurement location and contributed little to the overall measured sound level. Also, as noted in the response to comment W11-2, it is incorrect to assume that a large expansion of sports field capacity would necessarily produce a large increase in sound levels.

Comment W12-2: Noise from air horns, announcement systems and traffic

Response:

Proposed DPR policy will not allow the use of permanent amplified sound equipment and use of air horns., as was indicated in the July 2002 Final EIS and the Draft SEIS. Portable announcement systems could be used at special events, as is currently done in the park, requiring special permission from Park management, with required adherence to the existing Seattle Municipal Code (SMC 18.12.170). The interior roadways and parking lots would either be removed as part of the proposed action or virtually unaffected by the lesser capacity alternative. Therefore, the proposed action would either lead to less impact to the wildlife habitat from interior traffic and parking lot noise or would not affect it. The potential noise sources identified in the comment do not represent items that are missing from the analysis.

Comment W12-3: Ten-year construction noise

Response:

See the response to comment W11-5

Comment W12-4: Effects relative to the Migratory Bird [Treaty] Act

Response:

The Migratory Bird Treaty Act was passed in 1916 in an attempt to regulate the unrestricted hunting of birds. DPR is aware of no evidence that the Migratory Bird Treaty Act pertains to the case at Sand Point Magnuson Park, principally because the Act is intended to limit and regulate the active harvesting of migratory birds. The Act prohibits "take" of migratory birds, and defines "take" as follows: 'the word "take" shall be construed to mean pursue, hunt, shoot, capture, collect, kill, or attempt to pursue, hunt, shoot, capture, collect, or kill, unless the context otherwise requires.' (Title 16, Chapter 7, Subchapter III, Section 715n).

The federal Migratory Bird Act states that most birds and their parts (feathers, eggs, nests, etc.) are protected by federal law from being killed, taken, transported, possessed, bought, sold, imported or exported without a valid federal permit. As such, this piece of legislation would not cover any indirect or incidental removal of bird habitat due to development, nor would it cover any displacement of birds away from potential habitat as possible a result of human activity. While compliance with the Act does not appear to be an issue, DPR would follow the prescribed federal process if it became clear that compliance was required.

Comment W12-5: Removal of interior roadway

Response:

The July 2002 Final EIS described the logic for the project phasing plan (see Section 2.2.12 of the FEIS). The phasing plan calls for the removal of the interior parking lot in Phase 3 because the logical construction sequence does not include development of replacement parking capacity in earlier phases,

and because continued access would be needed to the renovated sports meadow and the existing tennis courts (until those facilities were replaced). Phase 1 activity would involve renovation of the sports meadow area, and would not involve development of new, artificial-turf fields. The area of the wetland/habitat complex to be developed in Phase 3 would provide a refuge from construction activity and noise in Phases 1 and 2.

Comment W12-6: Susceptibility of mammals to noise effects

Response:

The statement in the Draft SEIS that mammals in the vicinity of the proposed sports fields may be less susceptible to noise, and thus unlikely to be negatively impacted, is based on two tenets. The first is that the types of mammals likely to be found near the sports field construction site are small species associated with open habitat, such as deer mice, vole species, moles, etc. Such animals often show a fossorial or semi-fossorial behavior (burrowing/underground-dwelling for at least a portion of their activity cycle). Thus, these animals would be less exposed to airborne sound from construction or operation of the sports fields, although vibrations associated with heavy construction machinery might temporarily displace animals that are closer to the construction site. The second tenet upon which the above statement is based is a statement that Larkin (1996) has made. Larkin suggested that these types of wildlife species (i.e. those whose activities put them very close to the ground) hear less noise and less loud noise than wildlife listening from a vantage point at some height above the ground (e.g. a perched bird). Animals that spend a portion of their activity cycle underground are expected to experience an even greater attenuation of ambient airborne noise levels.

Comment W12-7: Noise-tolerant wildlife species

Response:

The comment does not appear to state a specific deficiency on the SEIS discussion of potential wildlife response and noise-tolerant species, and no further response is warranted.

Comment W12-8: Removal of center parking lot and roadway

Response:

See the response to comment W12-5.

Record W13, Mike Keran (DiscNW)

Comment W13-1: Support for proposed action

Response:

No response is necessary.

Comment W13-2: References to types of fields

Response:

The alternatives presented in the SEIS are the same as those described in detail in the July 2002 Final EIS. In the description of the proposed action (Section 2.2.2of the Final EIS), Fields 6, 12, 13 and 14 are referred to as "full-size soccer fields" because that is the programmed use defining the maximum size of the field and run-out areas. Full-sized ultimate Frisbee fields would fit well within these maximum field sizes. The FEIS description also specifically notes that the fields are sized to accommodate other sports, specifically including ultimate Frisbee and lacrosse.

The portion of the comment related to placement of light standards is a design issue that is beyond the specific scope and content of the SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS.

Comment W13-3: Support for lighting, willing to work to reduce impacts

Response:

DPR appreciates the statement of willingness to search for solutions to reduce lighting impacts. This issue is not within the scope of the SEIS, but was addressed in detail in the July 2002 Final EIS and will be considered in final deliberations on the proposed action.

Comment W13-4: Need for additional fields

Response:

The need for the proposed action and DPR's objectives for the proposal are addressed in detail in the July 2002 Final EIS.

Record W14, Yvonne M. Mattson

Comment W14-1: Timing and tiering of EISs

Response:

The central point of this comment appears to be that the 1996 EIS on the Reuse Plan should have included evaluation of the impacts of sports field noise on wildlife. That point is moot, given that the 1996 EIS and any related appeal actions have long since been completed, and it does not address the specific scope and content for the SEIS. Therefore, no further response is necessary.

Comment W14-2: Evaluation of environmental impacts in the decision process

Response:

DPR believes that the extensive effort and documentation of a single issue (potential impacts of sports field noise on wildlife) presented in the SEIS is ample evidence of "heightened care" in evaluating the

environmental impacts of a proposed action. Because the City has not yet made a final decision on the subject proposed action, the decision process is still open and the consideration of potential impacts of sports field noise on wildlife is occurring in a timely manner, i.e., prior to the decision. The portion of the comment addressing impact assessments of unidentified future projects is beyond the specific scope and substance of the SEIS, therefore no formal response is warranted in this document.

Comment W14-3: Consideration of noise equivalents

Response:

The comment notes that vibrations were not considered in the context of the proposed sports fields. Larkin (1996) notes that substrate vibration may behave quite differently from airborne pressure waves, but further states that airborne sound at frequencies audible to humans does not efficiently translate into vibrations of solid objects. Outdoor substrate-borne vibrations are generally due to direct mechanical coupling of phenomena such as explosions or artillery recoil with the ground. Construction-related activity is likely to generate local vibrations in the substrate, and might have negative impacts on certain species that might utilize habitat close to the construction site. However, vibrations associated with operations of the proposed sports fields are expected to be minimal.

Vertebrate species that are capable of perceiving and extracting information from vibrations include a number of burrowing mammals, such as the African bathyergid mole-rats and the various species of golden moles, also found on the African continent. Information associated with vibration detection ranges from predator detection and prey information to conspecific and interspecific signaling. Other vertebrates that utilize vibrational cues and information include various species of kangaroo rats, frogs, lizards, snakes, and large mammals such as elephants and bison, as well as many invertebrates. If vibratory disturbances related to project construction are anticipated, possible consequences include disruption of communication or sensory cues in any organisms that use vibrational modalities for extracting information from their environment. However, no evidence exists for use of substrate vibrations as informational cues in the fossorial mammals that might occur at Sand Point Magnuson Park (e.g. talpid moles, pocket gophers, etc.). Finally, while some evidence exists that anthropogenic substrate vibrations and infrasound may negatively impact elephants (creatures that can create and perceive vibrations over distances up to hundreds of kilometers), no data exists on the effects of anthropogenic vibrations on other wildlife species.

Comment W14-4: Consideration of impacts on individual species

Response:

The comment notes that individual species-specific analyses were not conducted for the vertebrate species that can potentially occur at Sand Point Magnuson Park. Such analyses are neither possible nor practical, as the extant literature does not include research on most of the species at Sand Point Magnuson Park, and primary research on this topic is beyond the scope of the proposed project. The Draft SEIS explicitly extended the caveat that individual species differ in their responses to noise. The Draft SEIS went on to explore some of the relevant literature addressing the effects of noise on wildlife, in order to extract what information was available.

Biologists use model organisms as systems to explore biological phenomena. Results can often be extrapolated to other organisms, depending upon the degree of shared underlying physiology, or how closely related the different species are evolutionarily. While the length of the middle ear cochlea varies among different mammal species, for instance, the basic mechanical and physiological aural apparatus is the same among the species. Thus, while sensitivity to different frequencies of sound might differ among species, the sound is transduced into nerve impulses in the same way. Therefore, some extrapolation of information from one model organism system to other species is possible.

The Draft SEIS examined the effects of various sounds on various model organisms, and attempted to classify organisms into broader functional groups (e.g. large mammals, small mammals birds, etc.) based on the underlying physiological similarities. Conclusions regarding possible negative impacts to breeding bird populations at Sand Point Magnuson Park, for instance, were made on the basis of noise effects on bird species from the Netherlands, and were predicated on the assumption that the birds from the Netherlands share a similar breeding biology and physiology with breeding birds at Sand Point Magnuson Park. The Draft SEIS acknowledged that the degree of variability in individual organisms' responses to noise is quite high, making accurate predictions regarding the effects of noise difficult. However, ignoring the model organism systems in the literature in favor of a species-specific analysis of the species occurring at Sand Point Magnuson Park would result in an almost complete lack of information, and decision-making processes concerning the proposed project would suffer from that paucity. The SEIS is consistent with the request in the comment that it "must include a discussion explaining why the effects that noise has on those species are so similar that it is appropriate to group those species together.

DPR also notes that providing a species-by-species assessment of potential impacts to over 200 individual species in the SEIS would be excessive, unreasonable, and counter to the SEPA direction that environmental documents "shall be concise, clear, and to the point" (WAC 197-11-400). The rules specifically state that "[T]he purpose of an EIS is best served by short documents containing summaries of, or reference to, technical data and by avoiding excessively detailed and overly technical information. The volume of an EIS does not bear on its adequacy. Larger documents may even hinder the decision making process."

Comment W14-5: Ability to address impact significance and mitigation needs

Response:

The argument presented in this comment is valid only if one pre-supposes the need to address the potential impact on each species listed as known or expected to occur in Sand Point Magnuson Park. As noted in the previous response to comment 14-4, it is not necessary to provide a detailed, species-by-species impact assessment for the over 200 applicable species, and the decision not to include that excessive and unproductive level of detail in the Draft SEIS does not render the entire SEIS inadequate.

The comment is also incorrect in maintaining that mitigation measures cannot be adequately addressed unless it is known whether noise impacts on wildlife would be significantly adverse. SEPA clearly contemplates there may be uncertainty about potential impacts (WAC 197-11-080), and does not require certainty in the impact analysis. The SEPA requirements with respect to mitigation measures are that environmental documents (1) clearly indicate those mitigation measures that could be implemented or might be required; and (2) indicate the intended environmental benefits of the measures and discuss their feasibility, if there is a concern about whether a measure is capable of being accomplished (WAC 197-11-

440(6)). The SEIS discussion of mitigation measures is consistent with the corresponding direction from the SEPA rules, and provides decision makers with sufficient information on which to evaluate potential impacts and mitigation. The SEIS clearly identifies the unavoidable uncertainty about the significance of potential impacts, based on the limited research that is directly applicable and the current existence of sound levels in the habitat areas that are similar to those predicted with the proposed project. The SEIS also clearly identifies mitigation measures (e.g., sound-dampening materials, buffers and berms, scheduling actions) that would reduce the intensity of the potential noise impacts in the habitat complex, and would thereby reduce the level of uncertainty inherent in the decision.

Comment W14-6: Specificity of research to local wildlife species

Response:

See responses to comments W6-1 and W14-5. DPR believes that the dimensions and likelihood of the potential impacts have been defined sufficiently, based on the existing research and the existing and predicted sound levels in the park, to allow a reasoned choice among alternatives. Conducting specific primary research on the species inhabiting the affected area would not be reasonable or necessary to the decision, and is not required under SEPA.

Comment W14-7: Assessment of impacts of sports field noise

Response:

The comment is inaccurate in claiming that the July 2002 Final EIS discussed the identical issues that are discussed in the SEIS. The hearing examiner specifically faulted the Final EIS for not sufficiently addressing the potential impacts of sports field noise on wildlife, which was the basis for ordering the preparation of the SEIS. Chapter 2 of the Draft SEIS provided over 15 pages of substantive content specifically focused on the potential impacts of sports field noise on wildlife, which DPR believes is fully compliant with the hearing examiner's order. The final sentence of the comment indicates that this comment is predicated on the assumption that the SEIS cannot be adequate unless it addresses the potential impacts for each of the over 200 individual species that may be present; as indicated in the response to comments 14-4 and 14-5, that assumption is invalid.

Comment W14-8: Differentiating among noise sources

Response:

The Draft SEIS indicated that the sources of sound that elicit wildlife responses are generally different from those expected at the proposed sports fields. Sounds from the studies conducted are generally loud (+90 dBA) noises associated with explosions, sonic booms, off-road vehicles, and aircraft flyovers. Research on off-road vehicle (ORV) noise, for instance, has dealt with hearing loss in lizards and kangaroo rats exposed to dune buggy noise at 95 dBA (Brattstrom, 1983), and has examined wildlife avoidance and stress associated with snowmobile use (e.g. Creel et al., 2002). Sports field noise and vehicular traffic noises represent different types and levels of noise. However, studies that did address roadway vehicular noise were noted in the Draft SEIS, and such studies provide sound equivalents that are relevant to the Sand Point Magnuson Park scenario—although the traffic volumes and vehicle speeds

(correlated with loudness) from the studies were far greater than volumes and vehicle speeds that would occur at Sand Point Magnuson Park.

Current research indicates that traffic noise associated with roadways bearing traffic loads ranging from 10,000 to 50,000 vehicles per day at speeds up to 120 km/hr can decrease breeding densities of birds in surrounding woodland and grassland habitat. The sound equivalent for Sand Point Magnuson Park would include vehicle noise in combination with noise generated from players and spectators on the athletic fields. As the Draft SEIS stated, noise from traffic and the sports fields could impact bird populations in the vicinity of the playing fields.

The comment inaccurately states that the proposed action would more than triple the parking lot size. As stated in Section 2.2 of the Final EIS, there would actually be a net loss of total parking spaces with the proposed action, not a tripling of spaces as suggested by the comment.

Simplified traffic noise modeling of roadways in the project vicinity indicates that traffic on Sand Point Way is and would remain the dominant contributor to onsite traffic noise levels at most of the interior wildlife habitat areas. This finding makes sense because traffic traveling at higher speeds on Sand Point Way produces substantially more noise than traffic traveling at low speeds on the park roads, and the traffic volumes traveling on Sand Point Way are substantially higher than the volumes on the park roadways with or without the proposed project. This finding is also completely consistent with the observations and sound level measurements taken in the interior portions of the wildlife habitat areas and described in the Draft SEIS. These wildlife areas would experience less than 0.4 dBA increase in roadway traffic noise from Sand Point Way due to the project, because the project would result in a very small percentage increase (i.e., ~ 8%) in traffic volumes traveling on this road, which is the primary traffic noise source for most of the site. Please note that it would require a doubling of traffic volumes (i.e., 200%) to increase the traffic noise by 3 dBA, and a 3-dBA increase is barely perceptible.

The only wildlife habitat areas with the potential to be dominated by onsite traffic noise instead of traffic noise from Sand Point Way are those areas within 300 feet of the onsite roadways. Onsite roadways within 300 feet of the wildlife habitat areas are primarily located east of the proposed sports fields, and would see little increase in traffic volumes due to the proposed project. The wildlife habitat areas within 300 feet of NE 65th Street would be virtually unaffected by the proposed project since the increase in traffic with the proposal would come primarily from the sports field users, and these users would not be continuing east on NE 65th Street past the wildlife habitat areas. Additionally, the existing roadway and parking lot in the interior of the wildlife habitat area would be removed with the proposed action, which would benefit interior wildlife habitat areas currently within 300 feet of this interior road.

Comment W14-9: Analogizing sounds and sound equivalents

Response:

The comment requests a comparison of noise and noise equivalents from other sports complexes with the anticipated levels of noise from the sports complex proposed at Sand Point Magnuson Park. No data concerning noise and noise equivalents from other sports fields, and the effects of that noise on wildlife, are available in the literature. As such, no analogies can be made with noises specifically generated by sports complexes, and an examination of more general noises associated with aircraft operation, explosions and sonic booms, and vehicle noises was conducted for and documented in the Draft SEIS.

More importantly, the request in the comment to use statistics on noise from sports facilities of similar size is unnecessary; the SEIS identifies predicted sound levels *with the proposed action* and compares those sound levels to sound levels identified in the literature as prompting a response in wildlife.

The comment is inaccurate in its claim that the Draft SEIS failed to make substantive correlations between sound levels and wildlife responses. The Draft SEIS identifies sound levels that presently occur in the habitat areas of Sand Point Magnuson Park, including the contribution from existing sports field uses; identifies predicted sound levels expected to occur with operation of the proposed sports fields; and relates those sound levels to research findings on wildlife responses to noise, specifically including the threshold sound levels that appear to exist for woodland bird species.

Comment W14-10: Potential response of birds to noise

Response:

The Draft SEIS noted that some species might be expected to exhibit a greater tolerance to noise; such species might be expected to be the more ubiquitous, urban-adapted birds such as American crows, European starlings, house sparrows, rock doves, American robins and the like. While these species, many of which are introduced and none of which are in any danger of population declines, are not necessarily desirable as dominant species within the avian community, they nonetheless are reasonable candidates for being noise-tolerant.

The tolerance to noise that every specific bird species at Sand Point Magnuson Park might exhibit is not known and would be exceedingly difficult to predict. A great deal of variability in animal response to noise has been noted in the literature. This variability occurs at the species level, at the population level, and even at the individual level. Responses to noise may differ depending upon the age of the organism, the time of year, the nutritional status of the animal, the experience with noise stimuli that the animal has had, and the type of noise itself. For example, subsonic aircraft noise was not found to induce behavioral responses in nearby nesting herring gulls; however, supersonic aircraft noise resulted in nest flushing and significantly greater probabilities of aggressive interactions with conspecifics and a decrease in reproductive success (Burger, 1981).

Experience and potential habituation to noise also increase response variability. In colonies of Brunnich's guillemot in which aircraft flyovers were infrequent, for example, individuals were frequently flushed off of their nests and suffered increased brood mortality as a result (Fjeld, *et al*., 1988). However, in colonies where overflights were manipulated and made more frequent, no guillemots lost eggs as a result of the overflights. Other examples of within-species variability associated with acoustic stimuli exist; for instance, Miller and Gunn (1980) found that three herds of musk oxen consistently demonstrated different levels of responsiveness to helicopter overflights. Such consistent differences within the same species could possibly be mediated by the social dynamics within each herd. Thus, the amount of variability at the individual and population level precludes a species-by-species prediction of noise tolerance for the birds at Sand Point Magnuson Park. Moreover, this excessive level of highly technical detail would likely be of little value to decision makers, would not be consistent with the guidance provided in the SEPA rules, and is not necessary to a reasoned choice among alternatives.

The degree to which bird species are affected by vehicular noise has been described as a threshold model (Reijnen, *et al*., 1995), in which breeding bird densities show no decrease up to a threshold sound level,

and then population densities begin to decrease once that level is exceeded. The threshold sound levels vary from species to species, and generally average 42-52 dBA for woodland bird species (Reijnen, *et al*., 1995). The Draft SEIS acknowledges that bird population density decreases are possible due to project-related activity. No data on threshold sound levels are available for almost any of the species found at Sand Point Magnuson Park, however, as noted in the Draft SEIS. Furthermore, it is unknown to what extent bird populations may have experienced density decreases due to current sound levels at the park, which commonly exceed 50 dBA in the existing habitat areas of the park. Thus, while it is possible to state that bird density decreases are a potential impact due to increases in noise levels, it is not possible to state precisely which species would be affected, nor the extent to which any population density decrease would occur. Those species that typically would use the habitats found at Sand Point Magnuson Park and have a threshold sound level in the typical 42-52 dBA range have already been affected by existing sound levels that meet or exceed the threshold range.

Comment W14-11: Potential response of mammals to noise

Response:

A list of mammalian species known to occur or potentially occurring at Sand Point Magnuson Park is provided in the July 2002 Final EIS. Of the mammals likely to occur in the project vicinity and away from the waters of Lake Washington, most are nocturnal, crepuscular, or fossorial. These mammalian species are likely to be active during periods when construction would not be taking place, or are active below ground. During periods of nighttime sports field operation, nocturnal mammalian species are anticipated to avoid the habitat near the sports fields, or to shift activity patterns to forage after sports field operations have ceased for the night. Diurnal species potentially utilizing habitat exposed to project-related noise (e.g. Eastern gray squirrels, rabbit spp) might be displaced from habitat in the immediate vicinity of construction and sports field activity.

Comment W14-12: Potential response of amphibians and reptiles to noise

Response:

Potential masking of acoustic signals relevant to amphibian reproduction depends not on absolute background levels of noise, but on the signal-to-noise ratio the animal experiences. In the case of chorusing frogs, the signal is a male's call, and the noise is background noise (the background chorusing, anthropogenic noise, etc.). The ratio can be expressed as a differential between the signal and noise; e.g. a +2 dB ratio means that the signal is 2 dB greater in intensity than the noise, whereas a –4 dB indicates that the signal is 4 dB less than the noise. Calling tree frogs can produce a surprisingly high level of sound; the hourglass tree frog (*Hyla ebraccata*) male produces a call with an intensity of 85.1 dB at 1 meter and 80.6 dB at 2 meters, for example (Wollerman, 1998). Female frogs from different tree frog species can detect signals (individual calling males) at ratios ranging from +0 dB (Gerhardt and Klump, 1988, uncorrected for species-specific frequency perception of the frogs' ears) for green tree frogs (*Hyla cinera*) through +3 dB for hourglass tree frogs (Wollerman, 1998) to +8 dB for green tree frogs (Ehret and Gerhardt, 1980; Wollerman, 1998; corrected for species-specific frequency perception of the frogs' ears). Anthropogenic background noise levels at Frog Pond are not anticipated to achieve levels close (i.e. in the 72-80 dB range) to those that would mask any signals that female Pacific chorus frogs might receive in a mating chorus, so no project-related negative effects associated with noise are anticipated.

Analysis on anthropogenic substrate vibrations on herpetofauna is not possible, as no literature currently exists for this phenomenon. Some literature is in place to indicate that seismic vibrations are used as informational cues by various reptiles and amphibians (e.g. most snakes, many salamanders, etc.), but no information on vibrational interference is available. See also the response to comment W14-3.

Comment W14-13: Evaluating adequacy of mitigation measures

Response:

This comment reiterates points made in comments W14-4, 14-5, 14-6 and 14-7; refer to the previous responses to those comments. As noted in the response to comment W14-5, the SEIS complies with the requirements of the SEPA rules with respect to discussion of mitigation measures. The mitigation measures discussed in the SEIS are feasible and practicable, and it is evident how they would reduce the frequency, duration and/or intensity of the potential noise impacts. SEPA does not require certainty as to the level of impacts, nor does it require identification with certainty of the level of benefits that would be accomplished through possible mitigation measures.

Record W15, Gail Chiarello

Comment W15-1: Effects on olive-sided flycatcher

Response:

The olive-sided flycatcher is a neo-tropical migrant that has been noted in Sand Point Magnuson Park in the past. Olive-sided flycatchers prefer mature coniferous forests in the mountains for breeding habitat, with natural openings in the canopy and the presence of wet areas nearby for abundant insect populations. There is no evidence that this species breeds in the habitat at Sand Point Magnuson Park near the proposed sports fields. Individuals of this species are, however, seen in the park. Foraging habitat and any potential breeding habitat is restricted to the wooded portions of the park (i.e. Promontory Point) away from the proposed playing fields. Noise associated with the construction and operation of the athletic fields is not anticipated to negatively impact this species.

Comment W15-2: Noise levels with future field use

Response:

The SEIS was produced to specifically assess the potential effects of sports field noise on wildlife. Sound levels of multiple games being played at the proposed fields were predicted, and the resulting sound levels were considered in assessing the potential impacts of the sports field noise on wildlife. The results of the analysis were included in the Draft SEIS. The comment addresses an example of a human reaction to existing sports field noise within Sand Point Magnuson Park, and therefore is not relevant to the issue of how sports field noise might affect wildlife. Community noise impacts and effects of the proposal on existing park uses were addressed in detail in the July 2002 Final EIS.

This comment does confirm the fact that noise from existing uses at Sand Point Magnuson Park can be heard within the habitat areas of the park, although it does not provide any information relating to possible wildlife response to that noise. The comment also reflects the incorrect assumption that the

existing sound levels would be "multiplied eleven times or more" because of the proposed development of 11 sports fields; the proposed development would represent an increase in the total acreage of athletic field surfaces of approximately 72% and an increase in the maximum number of fields (depending upon the configuration of the present field area) from 8 to 15. Assuming that all of the athletic fields were placed on top of each other and are being used to the fullest extent, the additional athletic field activities might result in an increase in noise of approximately 2.4 to 2.7 dBA, which would be barely audible by most standards. However, given that the future configuration of athletic fields would be dispersed over a larger area than the current configuration, much of the additional athletic activity and associated noise would be further from receivers than the existing activities, and the projected increase in sound level is expected to be minimal.

Record W16, Peggy J. Printz

Comment W16-1: Alternative location for fields

Response:

See the response to comment W7-1.

Record W17, Joan and Chuck Slenklewicz

Comment W17-1: Acceptability of lighting and traffic impacts

Response:

The comment is beyond the scope and content of the March 2003 Draft SEIS. Lighting and traffic impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record W18, Herbert Blau

Comment W18-1: Justification for lights

Response:

The comment is beyond the scope and content of the March 2003 Draft SEIS. Lighting and the full range of other environmental impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record W19, Kimberly Wells

Comment W19-1: Impacts of lights and noise on the neighborhood.

Response:

The comment is beyond the scope and content of the March 2003 Draft SEIS. Lighting and community noise impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record W20, Alan Singer

Comment W20-1: Oppose expansion of athletic facilities in Magnuson Park

Response:

The comment is beyond the scope and substance of the SEIS, therefore no formal response is warranted in this document. The decision makers who will undertake the final action on the proposed project may consider this input when evaluating the proposal, however.

Record W21, Pad Gallagher

Comment W21-1: Inclusion of sound measurements for Marsh Island

Response:

The sound level measurement data taken at Marsh Island were included to illustrate the existing sound levels at another Lake Washington shoreline location that is widely considered to be a valuable bird habitat. The text of the Final SEIS has been modified to clarify this point. As shown in Table 2-3 of the Draft SEIS, the measured sound levels on Marsh Island were much higher than the sound levels of sports field noise predicted to reach the nearest wildlife habitat in Sand Point Magnuson Park. Some of the comments on the Draft SEIS would leave the reader to believe that Sand Point Magnuson Park would become a biological desert, or would only be used by undesirable bird species such as crows and pigeons, if the proposed action were implemented. The existence of valued bird habitat in a high-noise environment such as Marsh Island indicates that future sports field noise in Sand Point Magnuson Park would not invalidate use of the park as valuable bird habitat (just as the noise from existing park activities has not precluded use of the park by birds and other wildlife).

Comment W21-2: Consistency of predicted noise levels

Response:

The L_{max} sound levels presented in Table 2-3 of the Draft SEIS are the same as presented in Table 3.6-4 of the FEIS. The L_{max} sound levels presented are representative of the sound levels 100 feet from the source. The sound levels of the athletic activities would decrease by approximately 6 dBA for every doubling of the distance from the particular source, not including attenuation from intervening terrain, atmospheric effects, ground effects, or reductions or increases due to meteorological effects. The predicted L_{max} sound levels of 61 to 73 dBA represent the sound levels at the interior park locations *after* calculating the distance attenuation due to the varying distances between the source and receptor locations. For the baseball and softball games, the majority of the noise is emitted near home plate. For soccer games and other similar athletic activities, the sounds could be emitted nearer the edge of the fields. The predicted maximum sound levels are based on the distances from locations 50 and 200 feet east of the walking trail to the nearest noise source location. The 61-to-73 dBA levels represent the range of predicted maximum sound levels at various locations 50 feet east of the walking trail. Similar distance attenuation calculations were conducted when predicting the hourly L_{25} sound levels. For the predicted L_{25} sound levels, noise from all of the various athletic activities anticipated to occur at each sports field was included in the overall predicted level.

Record W22, Michael Fenton

Comment W22-1: Further study of noise effects on wildlife

Response:

See the responses to comments W6-1 and W14-6.

Comment W22-2: Identity of final decision maker

Response:

The Draft SEIS fact sheet identifies the Superintendent of the Department of Parks and Recreation as the responsible official under SEPA, and indicates that approval of the final action is needed from the Seattle City Council.

Record W23, Gail Chiarello

Comment W23-1: Noise level capability of human voice

Response:

The sound level measurements of the various sports activities specifically captured the shouts and yells of both players and spectators. This was often the most pervasive source of noise associated with the sporting activity, although the maximum sound levels were generally caused by impact noises (i.e., balls hitting the backboards, balls hitting bats) and not human voices. Therefore, the sound level predictions of sports field noise affecting the adjacent wildlife areas inherently considered the sound of the human voices, including shouts and cheers.

The comment requests that the SEIS address the concern about the sound potential of human voices relative to fire engine or ambulance sirens, and indicated that the writer would subsequently provide documentation of the claimed sound levels. DPR has not received such documentation and is not independently aware of documentation that human voices are capable of emitting equivalent sound power levels as an ambulance or fire engine siren, and the comment provides no evidence of this. It is probable that the article referred to in the comment was discussing received sound pressure levels. For example, a baby screaming into one's ear can be incredibly loud (~110 dBA) and may be louder than a siren operating at a distance of 50-100 feet. However, a siren operating 1 foot from one's ear would likely be much louder than a human voice is capable of emitting at the equivalent distance. Given that the newspaper article to which the comment refers is approximately 25-30 years old, and was not provided to DPR for review, it is difficult to know exactly what was written in the article regarding the relative sound levels of a siren versus a human voice. Regardless, the analysis included in the Draft SEIS included the sound levels of human voices (i.e., cheers and shouts) in its measurements of sports activities and, therefore, did analyze the potential for raised human voices to cause potential impacts to nearby wildlife.

3.2 RESPONSES TO TESTIMONY COMMENTS

Record T1, Phillip Wagenaar

Comment T1-1: Authority to install lights

Response:

The Department of Parks and Recreation has the authority to install lights at sports facilities that the department operates, subject to applicable laws and regulations. The July 2002 Final EIS describes the decision process that will apply to evaluation of the proposal.

Comment T1-2: Acceptance of the decision

Response:

The comment is beyond the scope and substance of the Draft SEIS, therefore no formal response is warranted in this document.

Record T2, Vance Thompson

Comment T2-1: Changes in bird density, funding for wetland restoration

Response:

See the response to comment W3-2.

Record T3, Donald Hesch

Comment T3-1: Sand Point Pheasant

Response:

The comment appears to be consistent with the July 2002 Final EIS, which notes that ring-necked pheasants (the Sand Point Pheasant the comment mentions) remain uncommon and were not observed by Seattle Audubon Society birders during monthly surveys in 2000. To the extent that local pheasant and California quail populations have declined, those declines preceded the proposed project and are not an effect of the project. The Draft SEIS noted that some potential exists for displacement of birds due to noise, associated either with construction or with operation of the athletic fields. As further noted in the July 2002 Final EIS, some reduction in ground-dwelling and ground-breeding birds is likely to occur as a result of a decrease in the area of meadow and savannah habitat. Ring-necked pheasant and California quail are both ground-breeding birds and might well incur population decreases as a result of the loss of suitable habitat. The pheasant and quail present locally are both non-native species that were introduced as game birds in Washington State.

Record T4, Bodel Bak Jones

Comment T4-1: Study of traffic impacts

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Traffic impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T4-2: Lights in use until 11 p.m.

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T5, Larry Rogovoy

Comment T5-1: Impact of lighting on the community

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T5-2: Impact of traffic on the community

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Traffic impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T5-3: Impact of lighting on the transient housing residents

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T5-4: Access to use of new playfields

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Recreation impacts and future use of the facilities to be developed under the proposal were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T6, Peter Dahl

Comment T6-1: Distinguishing among different types of noise

Response:

See the response to comment W3-1.

Comment T6-2: Impacts on breeding songbirds

Response:

The Draft and Final SEIS adequately disclose sound levels and potential impacts on breeding bird populations in Sand Point Magnuson Park under both existing and expected future conditions.

Comment T6-3: Changes in bird density/funding for wetlands/effectiveness of future wetland habitat

Response:

See response to comment W3-2. As noted in both the July 2002 Final EIS and the Draft SEIS, the avian species assemblage at Sand Point Magnuson Park would likely change as a result of the proposed project. Adding and improving function of wetland habitat in the park would likely result in an increase in overall species diversity as additional bird species moved into the park, and in greater overall bird numbers as increased wetland area and function potentially provided greater invertebrate densities for forage. Removal of the interior road associated with the tennis courts and the nearby parking lot would decrease ambient noise levels in the eastern portion of park, reducing the potential for human disturbances and improving the current acoustic environment and habitat value for noise-sensitive birds in those areas. Some shifts in bird species community composition are also likely to occur; the Final EIS notes that certain species of ground-dwelling/ground-nesting birds would decrease in overall numbers and might be permanently displaced, but as a result of habitat loss rather than increases in noise levels.

Comment T6-4: Predominant sources and levels of existing noise

Response:

See the response to comment W3-3.

Comment T6-5: Noise levels and impacts in wetland areas

Response:

The suggested presence of a "quiescent noise environment" in the wetland indicated in this comment is not entirely consistent with evidence from direct sound level measurements for the subject area. On Friday afternoon, March 14, 2003 sound levels measured at interior locations in the park were 52 dBA near the walking trail and 50 dBA further into the interior wetland area. On Sunday afternoon March 16, 2003, measured levels were 51 dBA near the walking trail and 50 dBA further into the interior wetland area. MFG took these measurements using factory-certified and field calibrated Type I sound level

equipment. Measured sound levels included traffic noise as a dominant background source along with noise from a moderate level of athletic activities at the park. These measurements indicate that *existing* sound levels are within the range that could impact the breeding populations of some species of birds. Although the measured sound levels would not be considered unduly loud according to most noise impact criteria, they do not reflect a soundscape removed from urban noise sources, such as suggested in the comment.

Regardless of the measured sound levels of the existing conditions, the Draft SEIS used predicted sound levels from sports field noise in the interior wildlife habitat areas to assess the potential for noise impacts from sports field activity on the adjacent wildlife areas. The Draft SEIS also indicated that the hours of expected use and the general level of usage would increase with the proposed project. The SEIS, therefore, explicitly recognized and documented the anticipated sound levels from these activities and, to the extent possible, their potential impacts.

Record T7, Marge Sampson

Comment T7-1: Noise preferences/tolerance of wildlife

Response:

Applicable information on the noise tolerance of wildlife and the potential responses of wildlife to sports field noise are addressed in the SEIS. The portion of the comment addressing wetland impacts and lighting is beyond the specific scope and substance of the SEIS, and no further response is warranted in this document.

Record T8, Peggy Printz

Comment T8-1: Retention of existing wetlands

Response:

This comment essentially addresses the objectives for the proposed action and the definition of the alternatives, which are not within the scope of the Draft SEIS. The July 2002 Final EIS described in detail the objectives for the proposed action and the long-term planning process that led inclusion of the wetland/habitat complex component of the proposal.

Record T9, David White

Comment T9-1: Effects of lighting and artificial turf on birds

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting and habitat conversion impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T9-2: Funding and economic rationale for wetland development

Response:

By way of background, the July 2002 Final EIS provided summary information of expected funding for the proposed action. With respect to the scope of the Final EIS or the SEIS, however, funding and economic evaluation are not elements of the environment that require review under SEPA, and no formal response is warranted in this document.

Comment T9-3: Changes to EIS plan

Response:

The plan for the proposed action evaluated in the July 2002 Final EIS and the SEIS reflects the balancing of objectives for Sand Point Magnuson Park that have been identified by the Seattle City Council through various resolutions. As noted in Section 3.1.2 of the Draft SEIS, the City Council may decide to approve the project as proposed, make changes to the proposed project, or reject the proposal and direct DPR to develop a different proposal.

Record T10, Victoria Simmons

Comment T10-1: City decision process

Response:

See the response to comment T9-3.

Comment T10-2: Effects of sports field lights

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T10-3: Distribution of sound up the hill

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Community noise impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T10-4: Status of bird populations and project effects

Response:

The comment is inaccurate in claiming that the SEIS states that the project is not going to make a difference. To the contrary, the Draft SEIS acknowledged that predicted noise levels with the proposed

action would at times be within the range of sound levels that had been shown to affect the density of breeding bird populations, and disclosed that impacts to breeding birds would be possible.

The comment also states that bird populations at Sand Point Magnuson Park have been declining, and that "all we're getting is pigeons and crows because they're the only ones who can survive in this kind of environment." If and to the extent that is true, the possible impacts identified for the proposed action would not occur, or would not likely be considered significant.

Comment T10-5: Acceptability of lighting until 11 p.m.

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T10-6: Concentration of sports field facilities

Response:

The July 2002 Final EIS and the SEIS describe the objectives for the proposed action, which include expanding recreational opportunities. As discussed in Sections 2.1.1 and 2.5.4 of the Final EIS, development of new or expanded sports field facilities is occurring at many locations in Seattle under the Joint Athletic Facilities Development Plan; sports field development is not proposed exclusively or even primarily for Sand Point Magnuson Park.

Record T11, Carol Stewart

Comment T11-1: Appropriate locations for noise and light pollution

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Community noise and lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T12, Maggie Kitch

Comment T12-1: Wildlife needs

Response:

The July 2002 Final EIS and the SEIS address the needs of wildlife and potential impacts of the proposed action on wildlife, consistent with SEPA direction identifying wildlife as an element of the environment to be considered in assessing the impacts of proposed actions. With respect to the reference to turf and lights, the comment is beyond the scope and substance of the SEIS and no formal response is warranted in this document.

Record T13, Arden Forey

Comment T13-1: Adequacy of the planning process

Response:

The July 2002 Final EIS and the SEIS describe the objectives for the proposed action and the lengthy history of the planning process that led to the development of the specific proposal for Sand Point Magnuson Park. The Final EIS clearly documents that various plans incorporating the elements included in the proposed action have been introduced to the citizens of Seattle dating from the 1970s, and that the Seattle City Council has identified objectives for the proposal through a series of ordinances adopted over a period of years through open public processes. The Final EIS and the SEIS also both document the extensive public process that DPR conducted for the proposal, with widespread community notification, public scoping, workshops and multiple opportunities for public comment on the proposed plan. With respect to disclosure of data, DPR believes that the voluminous planning and technical data presented in the Final EIS and the SEIS demonstrate a thorough evaluation of the proposal and adequately meet the needs for documentation of the environmental review process.

Record T14, Lynn Ferguson (MESA)

Comment T14-1: Balance of the current plan

Response:

See the response to comment W2-1.

Comment T14-2: Effects on sensitive bird species

Response:

The expected effects of sports field noise on bird species are addressed in the SEIS. The July 2002 Final EIS includes analysis of effects on birds from the full range of potential project impact mechanisms. See also the responses to comments W2-2 and W14-4.

Comment T-14-3: Effects on mammals

Response:

See the response to comment W2-3.

Comment T14-4: Choice for future uses of the park

Response:

The comment is beyond the scope and substance of the SEIS, therefore no formal response is warranted in this document. The decision makers who will undertake the final action on the proposed project may consider this input when evaluating the proposal, however.

Record T15, Eric Versuh

Comment T15-1: Sequence of project development/when to develop wetland area

Response:

The July 2002 Final EIS describes in detail the phasing plan for the proposed action and the relationships between the integrated sports field, wetland/habitat and drainage components of the plan. The phasing or sequence of construction activities is beyond the specific scope of the SEIS, and no further response is warranted in this document.

Comment T15-2: Funding for the project

Response:

The current funding status for the proposed action was indicated in the project phasing discussion of the July 2002 Final EIS. Financial issues are beyond the scope of the SEIS, as they are not within an element of the environment subject to review under SEPA, and no further response is warranted in this document.

Record T16, Jeanette Williams (Sand Point Community Liaison Committee)

Comment T16-1: Monitoring of noise levels

Response:

The July 2002 Final EIS describes applicable monitoring activities, including monitoring of noise levels. This item has been specifically added to the possible mitigation measures identified in the SEIS.

Comment T16-2: Use of buffer strips around sports fields

Response:

The July 2002 Final EIS describes vegetated buffers between the sports fields and the wetland/habitat complex as part of the project design. Upland forest and shrub planting is proposed along the eastern edge of the sports field complex, between sports fields and the wetland/habitat area. Noise buffering using vegetation and earthen berms is also discussed in the SEIS as possible mitigation. As noted in the SEIS, however, such vegetation would have limited ability to provide substantial amounts of noise reduction, and the primary benefit of such plantings might be to provide a visual buffer between the habitat areas and the noise sources.

Record T17, Sara Cooper

Comment T17-1: Alternative site study

Response:

See the response to comment W7-1.

Record T18, Ellen Juhl

Comment T18-1: Effects of lights shining 24 hours a day

Response:

The comment is beyond the scope and substance of the Draft SEIS. The proposed action, including operational characteristics, is described in detail in the July 2002 Final EIS. The proposed operation does not include use of the lights for 24 hours per day.

Record T19, Michael Callahan

Comment T19-1: Schools needing lighted fields and artificial turf

Response:

DPR developed the proposed action in response to objectives defined by the Seattle City Council for Sand Point Magnuson Park. While DPR does not have the authority to develop sports facilities on school properties, and such action would not satisfy the objectives for the proposal, DPR is participating with the Seattle School District in the development and implementation of the Joint Athletic Facilities Development Plan. As described in the Final EIS, the JAFDP includes plans for sports field development at many locations throughout the city, several of which would involve lighted fields with artificial turf.

Record T20, Diana Kincaid

Comment T20-1: Effect on the natural setting of the park

Response:

The comment is beyond the specific scope and substance of the SEIS. The effects of the proposed action on the resources and uses of the park were addressed in detail in the July 2002 Final EIS.

Comment T20-2: Impact of lighting on neighborhood

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Community lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T21, Robert Hunt

Comment T21-1: Legacy, needs of future generations

Response:

The comment is beyond the specific scope and substance of the SEIS, therefore no formal response is warranted in this document. The decision makers who will undertake the final action on the proposed project may consider this input when evaluating the proposal, however.

Record T22, Dennis Martynowych

Comment T22-1: Restoration of native habitat, phasing in lighting

Response:

The comment is beyond the specific scope and substance of the SEIS. Project phasing was addressed in detail in the July 2002 Final EIS on the proposed action, and is not an issue for the SEIS. The decision makers who will undertake the final action on the proposed project may consider this input when evaluating the proposal, however.

Record T23, Doug Ancona (Friends of Sand Point Magnuson Park)

Comment T23-1: Wildlife species unique to Sand Point Magnuson Park

Response:

The July 2002 Final EIS provides a comprehensive discussion of the expected or potential effects of the proposed project on birds and other wildlife species. The SEIS supplements that documentation with additional specific assessment of the effects of sports field noise on wildlife. To summarize, some displacement of various wildlife species is possible as a result of the construction noise and noise from sports field operations associated with the proposed project, and the Draft SEIS acknowledged that breeding bird densities might decrease in the vicinity of the construction site and the sports fields. Displaced species, particularly more mobile ones, might relocate to other suitable habitat. Total displacement of species occurring at Sand Point Magnuson Park due to noise is not expected, nor is subsequent extirpation of those species from the Puget Sound area.

The comment is inaccurate in the claim that "there are several hundred species of wildlife, and birds particularly, in this park that don't exist anywhere else in the city of Seattle," and fails to provide any evidence to substantiate the claim. The Final EIS identifies 33 mammal species and 16 amphibian and reptile species expected to use the project site and surrounding habitats, as well as 156 bird species that have been observed at the park (205 species total). The vast majority of those species are common elsewhere in Seattle and the Puget Sound area, and it is highly unlikely that more than a few, if any, of these species exist only within Sand Point Magnuson Park and nowhere else in Seattle.

Comment T23-2: Need for and cost of lighted fields

Response:

The comment is beyond the specific scope and substance of the SEIS, as the costs of a proposal are not subject to review under SEPA; therefore, no formal response is warranted in this document.

Record T24, Pad Gallagher

Comment T24-1: Consistency of predicted noise levels

Response:

See the response to comment W21-2.

Comment T24-2: Inclusion of sound levels for Marsh Island

Response:

See the response to comment W21-1.

Record T25, Mark Roller

Comment T25-1: Effects of lighting on views

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Community lighting and visual impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T25-2: Traffic effects of project

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Traffic impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T26, Linda Massey

Comment T26-1: Funding for the project

Response:

By way of background, the July 2002 Final EIS provided summary information of expected funding for the proposed action. With respect to the scope of the Final EIS or the SEIS, however, funding and economic evaluation are not elements of the environment that require review under SEPA.

Record T27, Larry Kutz

Comment T27-1: Hours of lighting operation

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Community lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action. Please note, however, that alternative hours of operation were discussed as possible mitigation measures in both the July 2002 Final EIS and the SEIS.

Record T28, Mary Liu

Comment T28-1: Effects of sports facilities on open space, traffic and crime

Response:

The comment is beyond the scope and substance of the March 2003 Draft SEIS. Issues relating to recreation/open space, traffic and crime impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T29, Richard Deyo

Comment T29-1: Use of undeveloped waterfront park space

Response:

The comment addresses the merits of the proposal rather than the specific scope and substance of the SEIS, therefore no formal response is warranted in this document. It should be noted, however, that the proposed action would not displace any of the existing open space or developed areas along the lake Washington shoreline of Sand Point Magnuson Park.

Comment T29-2: Noise carrying up the hill to the community

Response:

The comment (except for the general reference to noise and light affecting wildlife) is beyond the specific scope and substance of the March 2003 Draft SEIS. Lighting and community noise impacts were addressed in detail in the July 2002 Final EIS on the proposed action. The reference to noise affecting wildlife does not identify any specific deficiency in the Draft SEIS, therefore no formal response is warranted in this document.

Comment T29-3: Need for ballfields at this location

Response:

See the response to comment W5-3.

Record T30, Lisa Decker

Comment T30-1: Effect of proposal on the park and the neighborhood

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Issues relating to the full range of impacts on the park and the surrounding neighborhood were addressed in detail in the July 2002 Final EIS on the proposed action, as was the history of the planning process for Sand Point Magnuson Park.

Comment T30-2: Inclusion of artificial turf, large parking areas and field lights in the proposal

Response:

See the response to comment W1-1.

Comment T30-3: Search for appropriate, alternate locations

Response:

See the response to comment W7-1.

Comment T30-4: Effect of noise on birds and wildlife

Response:

The comment does not address the specific content of the March 2003 Draft SEIS, or explain in what way the speaker believes the Draft SEIS fails to account for the effects on birds and wildlife. The Draft SEIS provides a full disclosure of identifiable effects of sports field noise on birds and other wildlife. The July 2002 Final EIS provides extensive documentation of impacts on wildlife from various other potential impact sources associated with the proposed action.

Record T31, Janice Bragg

Comment T31-1: Inclusion and applicability of sound levels for Marsh Island

Response:

See response to comment W21-1 concerning the general relevance of the information on conditions at Marsh Island. With respect to the specific bird species that might be affected, the importance of vocalization and acoustic signaling for reproduction in songbirds noted in the comment is certainly true. Reproductive success for males of many passerine species depends on song complexity and song repertoire during the mating season and, as the comment notes, acoustic signaling in birds can result in the conveyance of information important for predator avoidance, flocking, and maintaining pair bonds.

High levels of ambient noise, in addition to potentially generating stress or other biologically negative effects, might interfere with perception of acoustic cues such as bird song.

The Draft SEIS acknowledged that construction-related noise might displace some species, and that noise-tolerant species might become more common in areas near the proposed athletic fields. The ability for birds to perceive the songs of conspecifics decreases with distance, background noise and so-called excess attenuation (the amount of noise decrease that is *not* due to attenuation because of distance; Laboratory of Comparative Psychoacoustics, 2003). Unsurprisingly, the distance at which a bird can distinguish a conspecific's call decreases as background noise increases, and acoustic masking occurs. For instance, song sparrows cannot distinguish a conspecific's call beyond the range of a typical song sparrow territory at background noise levels from 70 to 80 dB, depending on the level of excess attenuation in the environment (Wright, et al., 2000). Noise levels associated with the operation of the playing fields are not expected to reach these levels in the wildlife areas. In addition, many bird species are capable of altering the characteristics, timing, or spatial delivery of their songs to avoid masking by ambient noise (Engstrand, 2003; Ficken, *et al*., 1974; Larsen, *et al*., 1994), and can distinguish individual calls amidst a great deal of ambient background noise (Hulse, *et al.*, 1997). In addition, many of the bird species that occur at Sand Point Magnuson Park do not breed there, so concerns about reduced reproductive success for these species due to noise may not be a critical issue. Furthermore, mitigation measures such as limiting activity at the sports fields during the breeding season and/or during early morning hours were identified as possible means to minimize noise impacts to territorial bird singing and other bird calling important to reproductive success.

Comment T31-2: Noise is noise; disclosure of significant noise impact

Response:

See the response to comment W3-1. Different types of noise do not necessarily elicit similar responses, even if the types of noise have equivalent A-weighted sound levels. Human responses differ with differing types of noise, and research has shown that wildlife response also differs. For instance, the sudden, unpredictable onset of an acoustic stimulus elicits flight or other startle responses more than the gradual onset of sound, or the onset of a predictable noise (Larkin, 1996)—even given an equivalent A-weighted level among the sound types. Sounds that are inherently complex, such as those produced by helicopters, can generate harmonics or so-called "blade slap" sounds that may extend into frequencies that are more audible to wildlife (Larkin, 1996), vs. a pure tone of the same sound level. Thus, all noise types cannot be considered equivalent, and care must be taken in extrapolating animal responses to one type of sound to another type of sound at the same dB level. The Draft SEIS extended this caveat, but nevertheless assumed a conservative approach and acknowledged that noise generated from sports field activity could have an impact on Sand Point Magnuson Park wildlife, based on studies and research employing very different types of noise.

Comment T31-3: Reference to response of sandhill cranes to noise

Response:

The Draft SEIS clearly explained that there was limited literature available concerning the effects of noise on wildlife, and that the research that had been done generally addressed different types of noise sources or species that would not be of issue at Sand Point Magnuson Park. Reporting on this finding is a logical

step in documenting the extent and applicability of existing research findings that may be relevant. The subject research results for sandhill cranes are also relevant because they document a case in which a bird species did not react adversely to nearby noise. Inclusion of this information is consistent with the direction of the SEPA rules that an EIS shall provide an impartial discussion of impacts (WAC 197-11-400), which in this case would involve identifying cases in which noise did not disturb wildlife as well as cases in which noise created an adverse response.

Comment T31-4: Effects of noise on the barn owl

Response:

Noise and light associated with the athletic fields would almost certainly cause barn owls to forage elsewhere. Foraging habitat associated with the athletic fields would likely be less functional for barn owls in any event, as the artificial surfaces and use of the fields for sports activities would preclude use of the fields as habitat by small mammals. In all likelihood, the loss of the area in and around the proposed athletic fields as foraging habitat for barn owls would not be due to noise, but to physical habitat removal. Assuming that the area is currently used by barn owls for foraging, such habitat loss represents an unavoidable adverse impact to that species. The significance of that effect for that species would depend upon the extent and quality of the remaining foraging habitat within the range of the individual(s) using Sand Point Magnuson Park. Wildlife impacts associated with construction activities and habitat conversion were addressed in detail in the July 2002 Final EIS and are not within the scope of the SEIS.

Comment T31-5: Funding for wetland restoration

Response:

See the response to comment W3-2.

Record T32, Bruce Firestone

Comment T32-1: Adequate disclosure of noise and other impacts

Response:

The comment appears to indicate the speaker's belief that the environmental impact statement is adequate in disclosing environmental impacts; therefore, no formal response is warranted in this document.

Comment T32-2: Consideration of adverse impacts and community input

Response:

The comment is a request for decision makers and DPR to consider the impacts of the proposal, and to view the public hearing as an effort of well-meaning people to give input to DPR. The request is consistent with the purposes of the environmental review process and DPR's objectives for the public hearing; therefore, no formal response is warranted in this document.

Record T33, Bob Dorres

Comment T33-1: Lighting and noise impacts on the neighborhood

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Community noise and lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T34, James Ward

Comment T34-1: Attention to sound and light pollution

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Community noise and lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action. Noise impacts on wildlife are addressed in the SEIS.

Record T35, Marilyn Nichols

Comment T35-1: Opposition to proposed transitions in the park

Response:

The comment states opposition to the proposed action based on several factors, but does not identify specific aspects of the Draft SEIS that are thought to be deficiencies. Therefore, no formal response is warranted in this document.

Record T36, Tom Hinckley

Comment T36-1: Light pollution effect on human experience

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Lighting impacts were addressed in detail in the July 2002 Final EIS on the proposed action.

Comment T36-2: Compatibility of restored meadow area and brightly lit environment

Response:

The comment is beyond the specific scope and substance of the March 2003 Draft SEIS. Lighting impacts, including potential impacts on the wetland/habitat complex, were addressed in detail in the July 2002 Final EIS on the proposed action.

Record T37, Eileen Bryant

Comment T37-1: Preferred uses of the park

Response:

The comment states opposition to the proposed action based on preferred use of the park, but does not identify specific aspects of the Draft SEIS that are thought to be deficiencies. Therefore, no formal response is warranted in this document.

Record T38, David Gordon

Comment T38-1: City decision process, concern for neighborhood opinions

Response:

The plan for the proposed action evaluated in the July 2002 Final EIS and the SEIS reflects the balancing of objectives for Sand Point Magnuson Park that have been identified by the Seattle City Council in various resolutions adopted following open, public processes. The Final EIS and the SEIS also both document the extensive public process that DPR conducted for the proposal, with widespread community notification, public scoping, workshops and multiple opportunities for public comment on the proposed plan. As noted in Section 3.1.2 of the Draft SEIS, the City Council may decide to approve the project as proposed, make changes to the proposed project, or reject the proposal and direct DPR to develop a different proposal.

Chapter 4

Consultation and Coordination

4. CONSULTATION AND COORDINATION

This chapter includes information on public involvement activities and coordination with agencies and other organizations that has occurred to date in conjunction with the preparation of the Sand Point Magnuson Park Drainage System, Wetland/Habitat Complex and Sports Fields/Courts Project Supplemental EIS.

4.1 PUBLIC INVOLVEMENT

Public involvement is the process by which interested and affected individuals, organizations, agencies, Indian tribes and governmental entities are consulted and included in the decision-making process. Through this process, members of the local community and other parties potentially affected by a proposed action have been given an opportunity to voice concerns, identify issues, suggest approaches to EIS analyses, and otherwise express their opinions. DPR provided extensive formal opportunities for public involvement in the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project environmental review process. For the original EIS process completed in July 2002, these included scoping, multiple community meetings related to the project and other planned activities at Magnuson Park, and review of the Draft EIS. Public involvement for the Supplemental EIS will pertain to public review of the Draft SEIS.

4.1.1 SEIS Scoping

The Department of Parks and Recreation conducted an extensive public process to determine the scope of the original EIS for the Sand Point Magnuson Park Drainage, Wetland/Habitat Complex and Sports Fields/Courts Project. The purpose of EIS scoping is to identify issues that should be addressed in the EIS and to narrow the focus of the proposed EIS to an analysis of "probable significant environmental impacts and reasonable alternatives." The Department's Determination of Significance (decision that an EIS is required) and a supporting EIS Scoping Document identified the issues and alternatives to be addressed in the project EIS.

The scope for the Supplemental EIS was determined by the hearing examiner's February 26, 2003 decision on the adequacy appeal of the original EIS. The hearing examiner specifically required DPR to prepare a Supplemental EIS on the impacts of sports field noise on wildlife, and upheld the DPR's adequacy determination with respect to other environmental issues. The SEPA rules provide that scoping for a supplemental EIS is optional (WAC 197-11-620). Based on the hearing examiner's direction, DPR concluded that public scoping for the SEIS would not be necessary and would likely be confusing, and therefore elected not to sponsor a public scoping process for the SEIS.

4.1.2 Review of the Draft Supplemental EIS

Public and agency review of the Draft Supplemental EIS began officially on March 21, 2003, based on the time the Department of Parks and Recreation filed the Draft SEIS with the Washington Department of Ecology. At the same time, notices that the SEIS was available for review were published in the SEPA Register and in local newspapers of general circulation. The SEPA rules provide for a minimum period of 30 days for public review of a Draft EIS.

The Parks Department allowed a 30-day period extending from March 21 through April 21, 2003 for review of the Draft SEIS. Any comments on the Draft SEIS submitted to the Parks Department by letter, telephone or electronic mail during this period were reviewed and considered in the preparation of the Final Supplemental EIS. The Parks Department also held a public meeting on April 7, 2003, near the middle of the Draft SEIS review period, to provide opportunity for public comment on the Draft SEIS.

Approximately 60 people attended the April 7 public hearing. Thirty-eight of those in attendance provided comments on the Draft SEIS in the form of verbal testimony. By the end of the comment period the Parks Department also received 23 written or electronic mail messages concerning the Draft EIS from agency, organization and individual sources. Many of the sources who provided written input also offered verbal testimony at the public hearing.

At the conclusion of the Draft SEIS review period, the Parks Department reviewed the written comments received, as well as the verbal comments received at the public meeting, and incorporated that information in the preparation of a Final Supplemental EIS. The Final SEIS addresses the comments on the Draft SEIS in two ways. Specific responses to issues raised by the Draft SEIS comments are provided in the Final SEIS. In addition, any changes to the substance of the Draft SEIS necessitated by those responses are incorporated into the Final SEIS text and graphics, primarily in Chapter 2 of the document.

Distribution of the Final SEIS by the Parks Department will represent the conclusion of the environmental review process for this project. Under the provisions of SEPA, no action can be taken on the proposal for a minimum of 7 days following issuance of the Final SEIS.

Upon completion of this environmental review, the Parks Department will ask the City Council to take the appropriate actions to give its approval of the project. At that time the Council may

1. approve the project as proposed and analyzed in the SEIS, or
2. make changes to the proposed project based on the results of the environmental analysis included in the SEIS or other public input, or
3. reject the proposed project and direct the Department to begin a process to develop a completely different project proposal.

4.2 AGENCY/ORGANIZATION CONSULTATION

Over the past several years the Seattle Department of Parks and Recreation has been actively engaged in gathering public and agency input on the development of Sand Point Magnuson Park. The Department has established a Sand Point Community Communication Committee with the sole purpose of providing direct dialogue among the Department, the community and park users. This committee meets monthly and provides a key method for gathering input on the proposed project as well as other projects in the park. In addition, the Department has established a project advisory team specifically for this project. It is composed of experts in wetland and habitat systems, sports field designers, and community representatives. This advisory team meets monthly and provides input specifically related to this project. The Department also hosts occasional public forums that provide additional opportunity for public and agency comment, including an annual design forum on a Saturday in March. Finally, the Department publishes a quarterly newsletter to provide information to the broader community.

Chapter 5
References

5. REFERENCES

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Chapter 6
Distribution List

6. DISTRIBUTION LIST

Federal Agencies

National Archives and Records Administration-Pacific Alaska Region
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
National Park Service, Pacific West Region
National Park Service, Columbia Cascades Cluster Group
US Advisory Council on Historic Preservation
US Army Corps of Engineers, Seattle District
US Bureau of Indian Affairs, Portland Area Office
US Department of Defense, Office of Economic Adjustment
US Department of Education – Region 10
US Department of Housing and Urban Development, Office of Community Planning and Development
US Environmental Protection Agency – Region 10
US Fish and Wildlife Service, Western Washington Field Office
US Geological Survey-Western Fisheries Research Center
US Navy, Engineering Field Activity Northwest

Indian Tribes

Duwamish Tribal Office
Muckleshoot Indian Tribe
Suquamish Tribe
United Indians of All Tribes

State Agencies

Department of Ecology, Environmental Review Section
Department of Ecology, SEPA Coordination
Department of Fish and Wildlife, North Puget Sound – Region 4
Department of Fish and Wildlife, SEPA Coordinator, Habitat Management Division
Department of Health
Department of Natural Resources, SEPA Center
Department of Social and Health Services
Department of Transportation, Planning Division
Governor's Office of Indian Affairs
Office of Community Development- Office of Archaeology and Historic Preservation
Office of Community Development-GMA Division
State Parks and Recreation Commission
State Parks and Recreation Commission, Resource Development Division

Regional Agencies

Puget Sound Clean Air Agency
Puget Sound Regional Council
Puget Sound Water Quality Action Team
Sound Transit

Local Government Agencies

King County Department of Development and Environmental Services, SEPA Coordinator
King County Department of Natural Resources, Water & Land Resources Division
King County Department of Natural Resources, Parks and Recreation Division
Cultural Development Authority of King County
King County Department of Transportation, Metro Transit Division, SEPA Responsible Official
City of Kirkland Parks and Community Services
City of Kirkland Planning and Community Development
City of Seattle City Council
City of Seattle Department of Design, Construction and Land Use
City of Seattle Department of Design, Construction and Land Use, Land Use Information Service
City of Seattle Department of Design, Construction and Land Use, Planning Commission
City of Seattle Department of Design, Construction and Land Use, Seattle Design Commission
City of Seattle Department of Finance, Risk Manager
City of Seattle Department of Human Services
City of Seattle Department of Neighborhoods, University District Service Center
City of Seattle Department of Neighborhoods, NE Sector Manager
City of Seattle Department of Parks and Recreation
City of Seattle Department of Parks and Recreation, Planning Section
City of Seattle Fire Department
City of Seattle Land Use Information Service
City of Seattle Law Department
City of Seattle Office of Housing
City of Seattle Office of the Mayor
City of Seattle Office of Sustainability and Environment
City of Seattle Police Department
Seattle City Light, Environmental Affairs Division
Seattle Housing Authority
Seattle Public Utilities, Environmental Management Division
Seattle Public Schools, Facilities Development and Construction
City of Seattle Department of Transportation (SDOT)
Port of Seattle, Environmental Management

Libraries
Seattle Public Library, Temporary Central Library
Seattle Public Library, Documents Department
Seattle Public Library, Lake City Branch
Seattle Public Library, Montlake Branch
Seattle Public Library, North East Branch
Seattle Public Library, University Branch
University of Washington Architecture and Urban Planning Library
University of Washington, Suzzallo and Allen Libraries

Newspapers
Seattle Daily Journal of Commerce
The Seattle Press
Seattle Post Intelligencer
The Seattle Times
UW Daily
The Seattle Sun

Organizations
Allied Arts of Seattle
Children's Hospital and Regional Medical Center
East Lake Washington Audubon Society
Friends of Athletic Fields
Friends of Youth
Friends of Sand Point Magnuson Park
Hawthorne Hills Community Council
Interagency Committee for Outdoor Recreation
Laurelhurst Community Club
League of Women Voters of Seattle
Low Income Housing Institute
Magnuson Environmental Stewardship Alliance
Northeast District Council
North Seattle Community College, Strategic Planning Coordinator
Northwest Boardsailing Association
Northwest Ultimate Association
Park Point Condominium Association
Ravenna-Bryant Community Association
Sand Point Arts and Cultural Exchange
Sand Point Community Housing Association
Sand Point Community Liaison Committee
Sand Point Boating Center
Sandpointer Condominiums
Seattle Audubon Society

Seattle Conservation Corps
Seattle Indian Center
Seattle Sports Advisory Council
Seventy - O - One Condominium Association
Thornton Creek Project
University of Washington, Office of Regional Affairs
University of Washington, Office of Regional Affairs
University of Washington, Capital & Space Planning Office
University of Washington, Government Documents
University of Washington, Transportation Planning
View Ridge Community Council
Washington Water Trails Association
Wedgwood Community Council
Windermere North Condominiums
Youth Care