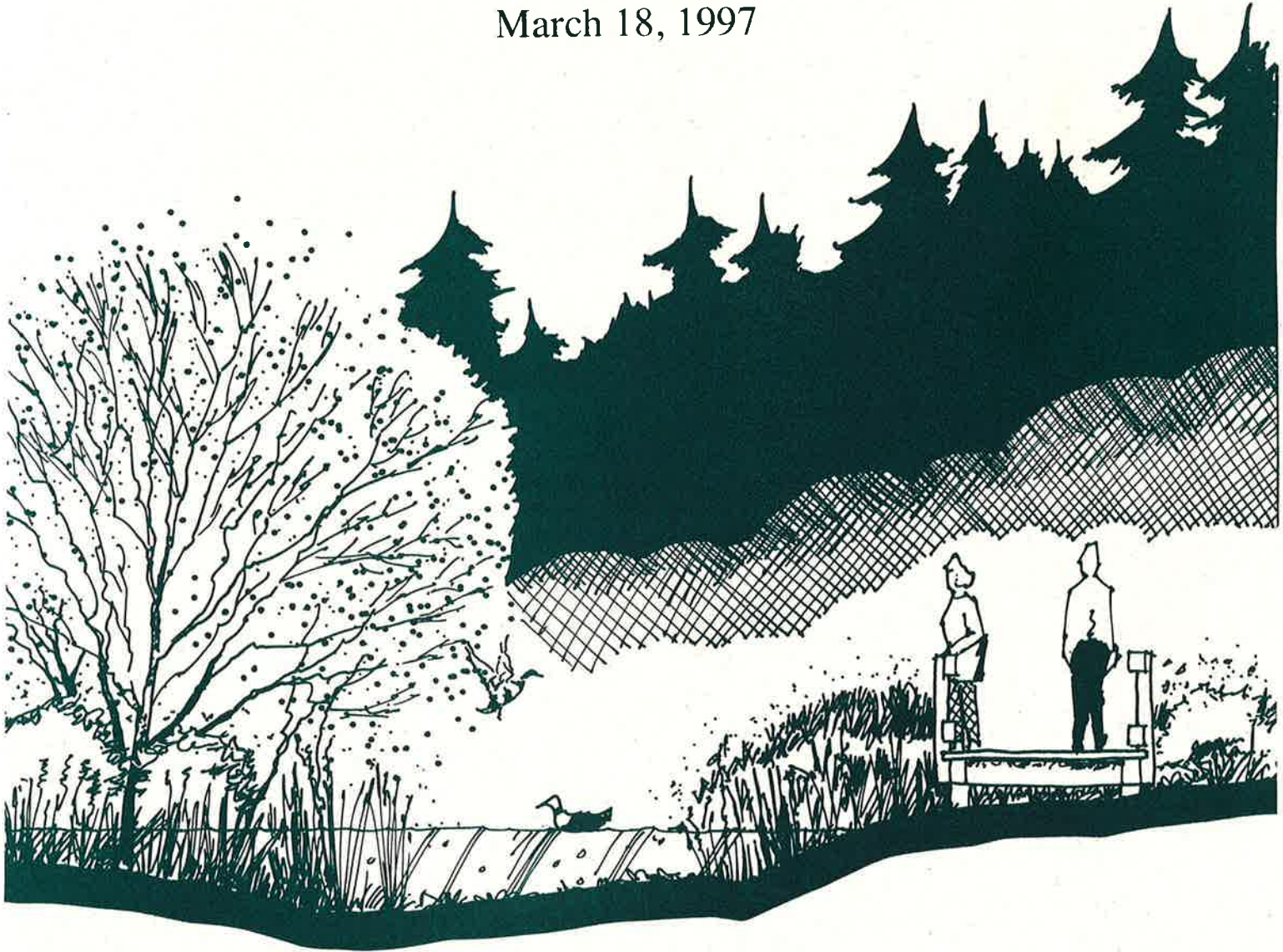


Grass Lake Refuge

Final Master Plan

March 18, 1997



City of Olympia Parks, Recreation and Cultural Services

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I. Introduction

A. The Vision

Grass Lake Refuge is a sanctuary for wildlife and people. It is approximately 165 acres of urban wetlands, woodlands and meadows. Animals can get away from people, traffic and noise. Visitors can close their eyes and listen to frogs and birds singing versus people talking. It is common to see a great blue heron land, a deer move along the forest edge and a newt or salamander silently walk across fallen leaves.

Grass Lake Refuge does not have spectacular mountain views, rushing rivers or pounding surf. The beauty is in the landscape diversity. Few urban wetlands have an equal diversity of plants and animals. Biological diversity and ecological complexities are what make the refuge extraordinary. The notable wetland complex varies in visual and biological character and includes open water, shallow water areas with the picturesque sedges and rushes that give the refuge its name, shrub covered wetlands and forested wetlands.

Surrounding upland forests filter stormwater and provide wildlife shelter. Much of the evergreen forest appears to be fairly young, perhaps 25-50 years old. The average tree heights range from 20-70 feet. Deciduous trees also vary in ages, dimensions and character. A cottonwood swamp has very large, old trees. The refuge has oaks and aspens which are not common in this geographic area. The seasons add more visual and species variety as birds migrate through the refuge and colors change. More than 200 plant species and ninety-eight bird species have been identified within the refuge.

Public access through the new refuge has been limited because of dense vegetation, extensive wetlands and lack of public knowledge about the area. Visitors today use the numerous primitive paths and roads and a primitive one lane sewer line access road which intersects Mud Bay Road. These are muddy much of the year and were not located to view specific features or to protect sensitive species. The December 26, 1996 ice storm broke up trees that now block many of the existing paths.

The Friends of Grass Lake were the first to visualize what Grass Lake could become. Their dream is now shared by others. Grass Lake Refuge will be managed to remain a sanctuary for wildlife and people. The city will manage the land to restore native vegetation to disturbed sites and to allow natural succession and growth to occur. Stormwater flows will be managed and monitored to protect refuge resources. As the westside of Olympia develops, Grass Lake Refuge will likely become the only large wildlife area. Consistent with public recommendations and state urban wildlife habitat guidelines, development will be limited to improved trails, boardwalks and environmental education and interpretation facilities. The interpretation facilities include an environmental learning shelter, five environmental learning stations

including two over water piers, two viewing blinds, and self-guided interpretive exhibits. A toilet and parking area will also be constructed. Two areas of the refuge will not have trails or other facilities and people will be encouraged to stay out of these areas so that they serve as wildlife reserves. Trails and boardwalks will lead to the diverse habitats. Trailheads will provide access from nearby schools and for the general public. Additional environmental education will take place in the refuge due to the improved facilities and convenient location to schools. Use of the refuge will be managed and monitored to protect wildlife. Because of the strong public interest in the refuge, many of the facilities will be built, interpreted and maintained by partnerships and volunteers.

B. General Location and Description (See Map 1 on Page I - 3)

The Location Map indicates the refuge's location. The approximately 165 acre refuge is located on Olympia's westside. Wetlands comprise about one-third of the refuge and the headwaters of Green Cove Creek. The majority of the refuge is upland forest of mixed age and character. Refer to Appendix A for the Legal Descriptions.

C. Refuge Acquisition

Grass Lake Refuge was acquired by the city in 1989. The city council displayed foresight in acquiring this diverse wetland. As the westside continues to urbanize, Grass Lake Refuge becomes an even more important natural area for wildlife and people.

A key to the acquisition was the strong public support from a citizen's advocacy group, The Friends of Grass Lake. The refuge was purchased by the City of Olympia for \$1.8 million. The matching grant from the Interagency Committee for Outdoor Recreation (IAC) specifies that, "Development of facilities will be limited to items such as fencing, interpretive/ observation trails, interpretive signs/kiosks, restrooms, parking, and creation or enhancement of habitat."

Because of the refuge's intended uses for habitat protection and environmental education, the major challenge of the master plan is how to balance protection and utilization.

D. Refuge Function and Values

It is impossible to list all functions and values of the refuge. Every spring chorus of Pacific treefrogs, every heron that lands in front of a visitor, the blood red of the coral root orchid, the mysterious shadows of three hundred year old black cottonwoods, graceful sedges and ice crystal filagree along marsh edges, the permanent smile on a bright orange newt - the art and poetics of Grass Lake are endless.

Refuge Functions and Values

The refuge's twenty upland habitats and eight wetlands habitats create a high level of biodiversity. Grass Lake's biodiversity increases its wildlife habitat and other ecological and educational values to the community.

Grass Lake Refuge is valuable for environmental education due to its proximity to Hanson Elementary School, Marshall Middle School, Capital High School and The Evergreen State College. Classes currently use the refuge and more use is likely after the master plan is implemented.

People need quiet places, places removed from home and office to unravel daily stresses. As Olympia continues to develop, there will be fewer wild places in the city for wildlife and for people. The value of Grass Lake as a refuge for wildlife and people will become even greater in the future.

Grass Lake Refuge is a unique and important component of the city park system that provides visual and educational variety for the community and helps to protect the region's diverse and important plant and wildlife habitats.

The refuge is a very popular place for birds and birdwatching. The diversity of habitats and relatively large size of the refuge result in a wide range of bird species. The refuge has a very high concentration of migratory and neotropical birds. The refuge is used for breeding, nesting and resting. Numerous species are dependent on aquatic insects and undisturbed wetlands for nesting.

The wetlands act as a sponge, clean dirty stormwater and provide stable flows to Green Cove Creek to help maintain salmon and other fish. Protection of the Grass Lake wetlands is a headwater to successful fisheries management in Green Cove Creek.

The Grass Lake wetlands are believed to be among the least disturbed wetlands in the county. They are important remnants of a once vast wetlands complex. Since less than half of the wetlands in the basin remain, Grass Lakes has value as part of our natural heritage.

Grass Lake can be a place where the adequacy of the city's critical ordinances and drainage standards are evaluated. Proposed is a monitoring program that will document changes in water flows and in plant and wildlife species. Feedback from this monitoring program should be used to help document needed changes in ordinances and also provide recommendations on how to protect and manage the city's other new open space acquisitions.

E. Master Plan Purpose, Audience and Objectives

Grass Lake Refuge has been sitting primarily idle since its acquisition in 1990. By developing a master plan, the community has developed goals for the refuge's development and management. The refuge has been studied so that its functions and values are better understood. Actions needed to protect the refuge have been identified.

The master plan is the map to the future - the hidden treasure map to the vision. It becomes a guidebook to seek future funding, build partnerships and solicit volunteer support.

A primary audience for the master plan are decision makers, city staff and park staff. They are the ones charged with implementing the master plan. More broadly speaking, the audience for the master plan is the public - users, volunteers and supporters. The master plan is similar to a contract between city government and the citizens.

The plan defines how the refuge is to be developed and managed. Through the public participation process, the public has defined their preferences and priorities. The plan documents how the city has interpreted these recommendations.

Primary Master Plan Objectives

- Create a usable tool for long-term development and management.
- Provide clear direction and priorities for refuge management and development.
- Include wide participation in developing recommendations so there is strong agreement and support by the community, the department and other experts in the field.
- Document the refuge's natural and cultural resources so that this information can be used to make development and management decisions and track changes over time.
- Serve as a reference to answer questions about the refuge.

- Estimate costs for development and management.
- Establish a program to monitor the refuge to see if development and management objectives are being met.
- Recommend how to implement or accomplish the plan.
- Perform as a quality plan and marketing tool to solicit grants and other funding.
- Identify volunteer and other implementation projects.

F. Master Plan Process

1. Identify Issues and Needs
2. Internal/External Issues Scoping
3. Consolidate and Organize Resource Information
4. Complete Resource Analyses
5. Propose and Review Development and Management Alternatives
6. Establish Implementation Requirements and Strategies

Three advisory groups helped on the plan. They were:

- The Technical Advisory Committee was composed of biologists, wetland experts and others who helped evaluate the park's ecological resources and made recommendations on how to protect them.
- The Environmental Education and Interpretation Focus Group was composed of K-12 teachers, professors and environmental educators from other agencies and organizations who are currently leading environmental education activities in Grass Lake Refuge or are interested in doing so in the future. They made recommendations on environmental education and interpretation facilities, signs and programs.
- The Park and Recreation Advisory Committee advises the department and city on parks and recreation matters. Their roles include assisting at the master plan workshops, reviewing the draft master plan and making recommendations to the city council on its adoption.

Public participation was a key component of the master plan process. Via two workshops, formal correspondence and informal communications, the public helped to identify the preferred uses for the refuge. The workshop workbook and the summary of public recommendations are in Appendices B and C.

The draft plan was completed on February 5, 1997. Copies were made available for public review. A hearing was held before the City Council on March 4, 1997. Revisions were made. The final master plan was approved by the City Council on March 18, 1997.

Photo - Community members participate in the master planning workshop.



II. Resource Inventories & Analyses

The resource maps for the master plan were produced by the Thurston GeoData Center using Arc-Info. The Coot Company prepared for the City the Wetland Inventory and Habitat Assessment Report. Based on recommendations by the advisory committees, the public and park staff, site plan and conceptual designs were produced by a landscape architecture firm, R.W. Droll.

A. Social Factors

1. Zoning and Land Use

a. Past and Present Land Use

The refuge includes two old home sites and two abandoned real estate developments. The latter resulted in the construction of Lake Louise and the installation of sewer and water lines. Logging and other activities altered vegetation and created the existing system of primitive roads and trails. (See **Map 4 on Page II - 9**) Based on analysis of 1950 aerial photography and current site observations, Grass Lake West and East have received minimal disturbance over the years.

b. Adjacent Land Use and Zoning

Most of the land adjacent to the refuge is forested. As seen in the photo map of the site, single family homes are dispersed on the north and west boundaries of the refuge. Large forested tracts exist between the developments. The properties on the south side of the refuge are undeveloped.

Zoning and existing land use maps were studied and compared to project how the surrounding land use is likely to change in the future. Most of the adjacent land is zoned for residential development. Three high density private development proposals adjacent to the refuge are in the City's planning review process. They include a commercial development on Cooper Point, a residential development between Mud Bay Road and the south side of the refuge and a residential development between 14th Avenue and the north side of Lake Louise.

Landscape character of the open space lands surrounding Grass Lake Refuge could greatly change over the next decade with the refuge remaining as the largest open space in the vicinity. Much of the forest on adjacent private lands will be replaced by buildings, parking and roads. Critical Area Ordinances will help to protect the adjacent wetlands.



GRASS LAKE REFUGE

Existing Trails

--- Refuge Boundary



City of Olympia



Map 4
Page II - 9

January 30, 1997



SCALE IN FEET

The changing adjacent land use will likely increase the number of visitors to the refuge. Also of concern are increases in stormwater which may negatively impact animal and plant communities. These factors are addressed in the design program and management sections of the plan.

2. Utilities (See Map 5 on Page II - 11)

Sanitary sewer, water, and electrical services are available adjacent to the proposed refuge facilities on 14th Avenue. These lines are displayed on the Utilities Map.

A LOTT sewer collector and service road cross from north to south on the east side of the refuge. The sewer master plan update will likely recommend this line be abandoned. At that time the easement should be restored to native vegetation and original contours which will improve stormwater flow. This line is at capacity so an additional line is needed. The sewer access road serves as a dike and blocks stormwater flows. Existing culverts are not adequate for peak flow. An area used during sewer construction has grown up in Scot's broom and other non-native planting. This area is described further in the Management Plan Section as Habitat Q.

An abandoned private sewer and water system exists on the southeast side of Lake Louise. There are approximately 6-8 above ground manholes, a well and pump, water storage tank, electrical distribution lines and poles, an electrical box and a pile of water pipes. The city does not have drawings for these facilities. Underground line locations are not known. The well depth is not known. Blackberry thickets cover most of the manholes.

3. Site Access and Transportation System

The Grass Lake Refuge is bordered by three collector roads — Cooper Point Road on the east side, Kaiser Road on the west side and 14th Avenue on the north side. Cooper Point Road has been upgraded to include curb, gutter and sidewalk. Kaiser Road and 14th Avenue have not been upgraded, do not have sidewalks and convey stormwater to open ditches.

Motorists from Olympia to the site are likely to travel Cooper Point Road to 14th Avenue. Refuge visitors from The Evergreen State College will likely travel Kaiser Road to 14th Avenue. Students from Hanson and Marshall Schools will probably walk the 65 Road sidewalks to the 14th Avenue trailhead. Students from Jefferson and Capital High School will probably walk down the sidewalk on Conger and cross Cooper Point Road.

Cooper Point Road carries a high volume of vehicular traffic. Cooper Point Road also has InterCity Transit stops for bus access to the refuge.

Fourteenth Avenue carries less traffic than Cooper Point Road. Sight distance on 14th Avenue from the home site closest to 65 Road is good.

Most motorists visiting the refuge currently park at the Kaiser Road entrance. This is the only parking currently provided. Visitors can park a single vehicle at the two old homesites on 14th Avenue but these are not signed and many people do not know this is public land. The Kaiser Road parking is close to Lake Louise, a major attraction.

It is anticipated that approximately half of the refuge visitors will be pedestrians or bicyclists.

4. Cultural Resources

There are no known pre-historic or historic resources in the refuge. City ordinances prohibit removal of any materials or artifacts.

5. Park & Recreation System

The closest other city park is Yauger Park which is less than one mile south of the refuge. Yauger is primarily a sports fields complex. There is also a playground, nature and running trails, horseshoes and gardening programs.

Grass Lake Refuge is an important component of the city's park and recreation. The city is currently acquiring additional open spaces in accordance with the standards contained in the Comprehensive Plan.

The Washington Department of Natural Resource's McLane Natural Trail and its associated wetlands in the Capital Forest are not far away.

According to the urban trails plan, the Grass Lake Nature Trail, part of the proposed Capital Area Trails System, is to cross the refuge from east to west and link with trails to Yauger Park, Green Cove Creek and Eld Inlet. The Grass Lake Nature Trail is to be a Class III pedestrian trail.

6. Needs Assessment

a. Existing Use

The refuge area has been actively used for many years for informal recreation — walking, swimming, fishing, motorcycling, hunting, birdwatching, canoeing, and horseback riding. No detailed use studies have been completed. Activities have been identified by observation, public workshops and informal communications. Refer to Appendix C for a summary.

Based on casual observations and the number of paths, walking seems to be very popular. Birdwatching is also very popular. Use of Grass Lake for swimming has been limited to the deeper pools which are not currently owned by the city. ~~The lake will not meet health regulations for swimming so it should~~ not be encouraged. Fishing, although it may be enjoyable, is not very successful due to the very limited supply of game fish habitat. Motorcycle riding, hunting and horseback riding are prohibited by city ordinances. Canoe use is limited due to the portage and short season.

Public concern has been expressed about rowdy parties and homeless people camping. Neither of these is legal. The design program and management sections address how to discourage misuse and allow for improved stewardship.

Environmental education activities are also held in the refuge. These include occasional classrooms, Stream Team and Audubon events.

b. Limitations to Use

The maze of rough, narrow and wet trails and the absence of signs marking city-owned property boundaries discourages some people from using the park. Building attractive facilities will bring people who previously did not know about the refuge or were fearful of getting too lost and too wet. Teachers who currently do not bring classes to the refuge said they would in the future if there are reasonable trails and environmental education materials, facilities or programs available.

c. Future Demand

Based on input from the environmental education and interpretation focus group, demand for the refuge is high for environmental education by Olympia K-12 classes and The Evergreen State College. The refuge is conveniently located and its habitat diversity adds to the attraction. A wide range of subjects

and species can be studied. The existing and future environmental education use is discussed in more detail in the environmental education and interpretation section of the plan.

Current visitors say they rarely see more than three other people in the refuge. It is anticipated that most weekday use will continue to be by students. If use is too excessive, visitors who seek complete solitude may not come to the refuge.

The general public and the master plan advisory committees expressed concern about the potential for excessive visitation in the future. Building a community-wide environmental education facility which had been proposed early in the planning process became unpopular due to the fear that it would generate more use than the refuge can accommodate without resource damage. These carrying capacity issues are discussed further under Design Program.

B. Physical Resources

1. Aesthetic Quality

a. Scenic Areas

During the master planning workshop, the public was asked to map the most scenic areas. Lake Louise is the greatest scenic attraction followed by the open water areas of Grass Lake West and East, the mature, mixed species forest areas and the section of old primitive road which has an arching canopy of mainly alders.

Houses are visible on the north side of Lake Louise, from the northeast corner of the refuge and from the Kaiser Road entrance. Most visitors to the refuge probably do not want to see buildings or hear city noise.

b. Noise

Traffic noise penetrates most of the refuge. The interior wetlands are the quietest areas.

c. Darkness

Night lighting is visible from the homes on Kaiser Road and on the north side of Lake Louise. Night lighting also penetrates the northern boundary of the refuge along 14th Avenue. Although the night sky has some urban light glow, stars are highly visible on clear nights. The interior areas of the refuge are the darkest.

2. Hydrology and Wetlands (See Maps 6 and 7 on Pages II - 16 and II - 17)

The Grass Lake wetlands complex forms the headwaters for Green Cove Creek and Basin. Since the wetlands were first mapped in the 1850's, Green Cove Basin has been altered by land use practices that have resulted in the loss of over 45% of the wetlands. This loss indicates the importance of protecting the Grass Lake wetlands, a remnant of the once vast wetlands.

The drainage basin of the Grass Lake wetlands is over 900 acres. Until the past decade there was little development in this area. The amount of impervious surface which increases stormwater runoff has increased dramatically. The Goldcreek subdivision, Hansen Elementary School, Marshall Middle School and Capitol High School are among the new developments in the Grass Lake drainage basin.

"The Wetland Inventory and Habitat Assessment for Grass Lake Park" indicates that the biological functions of the wetland system within City ownership are uncommonly high. Although wetlands were altered to create Lake Louise, substantial areas of the wetland system including Grass Lake West and Grass Lake East are apparently undisturbed by human impacts. As can be seen in the plan's photo maps, little development has occurred near these wetlands. The goals and subsequent recommendations for managing the Grass Lake Refuge are expected to ensure the preservation of the wetland's habitat functions and associated aesthetic amenities. Since stormwater runoff adversely affects the vegetation and animal communities of wetlands (Washington Department of Ecology, 1996), the potential responses of the wetland to current and future stormwater discharges are important planning and management considerations.

The only outlet for the Grass Lake wetland system is through the Kaiser Road culvert. The west arm of Lake Louise was deepened during culvert construction and maintenance. During low water periods, waterfowl use the deeper pool. Neighborhood children access this arm of the lake across private property to go swimming and wading during the summer.

GRASS LAKE REFUGE Green Cove Basin

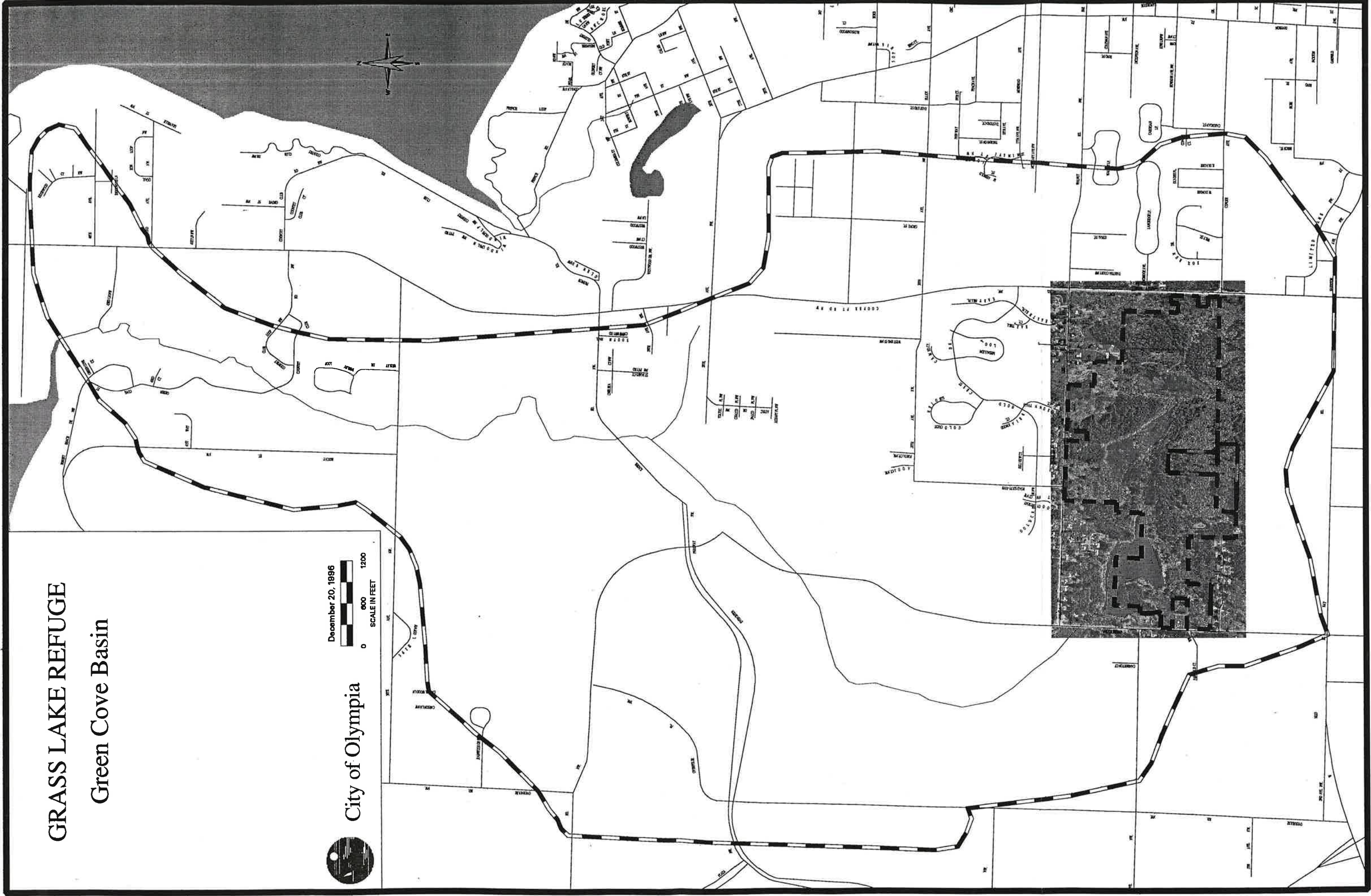


City of Olympia

December 20, 1996



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Wetland Key





- 1 = Lake Louise
- 2 = Connector Swale
- 3a = Grass Lake West
- 3b = Grass Lake East
- 4 = Remnant Drainage Route
- 5 = Ditched Grass Swale
- 6 = Cottonwood Swamp
- 7 = Wetland Stream
- 8 = Willow/Cottonwood Swamp

- A Single outlet via culvert to Green Cove Creek
- B Culvert from 65th
- C Ditch and swale from Cooper Pt. Rd.
- D Culvert with flows from Conger Rd. and Capital HS.
- E Direction of flow varies

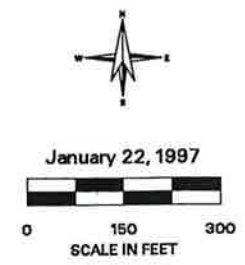
 Primary Existing Surface Water Flows

GRASS LAKE REFUGE

Wetlands

-  Open Water/Emergent
-  Emergent Only
-  Forested
-  Shrub

Map 7
Page II - 17



a. Grass Lake Wetland Habitat Functions

The plant community and wildlife characteristics of the Grass Lake wetlands as determined by the Coot Company are summarized as follows:

- Forested wetlands. Three forested wetland swales within the Grass Lake system connect larger wetland areas and provide a diverse habitat structure. One forested wetland, referred to as the Cottonwood Swamp, includes large, mature black cottonwood trees. The wetland's Category I rating reflects its uniqueness and exceptional habitat value.
- Structurally-diverse emergent wetlands. Grass Lake East and Grass Lake West are highly-productive Category II wetlands with good connection between permanently inundated aquatic bed communities, emergent wetlands, forested wetlands, and intact uplands. These wetlands have low species richness but high structural diversity and function. The wetlands are potential Washington Department of Natural Resources Natural Heritage wetlands.
- Lake Louise open water wetland. The shallow marsh/lake wetland encompassing open water and aquatic bed plants adds a valuable habitat component to the adjacent habitat areas.
- Forested buffers. Upland areas within the refuge offer high quality habitat and wetland buffers.
- The wetlands offer excellent habitat for a variety of priority water and upland birds, amphibians, and small mammals. Documented bird sighting and plant species within the refuge are provided in Appendices.

In general, the unique positioning and connection of these wetlands creates a high degree of landscape diversity and associated ecosystem function.

Potential Stormwater Impacts to the Grass Lake Wetlands

Stormwater flows to the Grass Lake wetland could result in the gradual deterioration of the biological functions and associated human-based values of the wetland. Research conducted in urbanized wetlands of the Puget Sound region indicate that both stormwater quantity and water quality impact wetland vegetation and animals.

The community faces a major challenge in this sub-basin of Green Cove Creek. The challenge is how to assess cumulative impacts of increasing quantities of runoff into the Grass Lake system, while continuing to review and approve on an

incremental basis projects that will increase flows into the refuge. If a program is not developed to confront this challenge, several factors associated with stormwater runoff could result in deteriorating wetland habitat within the Grass Lake system (Coot Company, 1996):

- Excessive inundation of forested wetlands. Unnatural water surface elevations and elevation fluctuations in the forested wetlands could result from stormwater discharges on the eastern and northern sides of the wetland (Cooper Point Road and 14th Avenue). Specific impacts could include decreased health and vigor of trees, especially seedlings, and herbaceous plants. Vegetative communities could shift to reduced species richness and associated habitat loss (Washington Department of Ecology).
- Reduced waterbird and amphibian breeding and juvenile rearing. Stormwater discharges and associated water level fluctuations between February and June can result in high egg and juvenile mortality.
- Impaired water quality. Deteriorating water and sediment quality can result from increased loading of typical stormwater contaminants such as suspended sediments, metals, petroleum hydrocarbons, and nutrients.

Managing stormwater discharges to wetlands should focus on maintaining a high-quality wetland ecosystem by avoiding structural, hydrologic, and water quality modifications to natural conditions. Efforts to preserve pre-development hydroperiod (seasonal pattern of inundation including water depth, frequency, duration, and seasonality) and water quality are critical to successful management.

b. Available Wetland Hydrology and Water Quality Information

Appreciable stormwater runoff is currently routed from developed areas east of Cooper Point Road and north of 14th Avenue to the northern and eastern cells of the Grass Lake wetland system. Current flows have been evaluated using a hydrologic computer model (HSPF) as a task of Thurston County's Green Cove Creek Drainage Basin Plan. The results of the analysis are summarized as follows:

- Stormwater is impounded in the wetlands east of the sewer access road (Wetlands #6, #7, and #8; refer to the Wetlands map) during the wet weather season. The culverts under the road limit outlet flows and increase drawdown times following storm events.
- Substantial flows enter wetlands #3a and #3b, Grass Lake West and Grass Lake East, from north of 14th Avenue. However, the computer model

suggests that flows moving westerly from these wetlands to Lake Louise are appreciably lower than the flows entering the wetlands from north of 14th Avenue and the sewer access road culverts. Therefore, wetlands #3a and #3b may be regularly storing and/or infiltrating appreciable quantities of runoff during storm events. If so, the benefits include improved downstream water quality, more slowly released flows to avoid channel erosion and maintenance of summer flows

- Full development of areas contributing to the Grass Lake wetland system may not result in appreciable increases in stormwater peak flows to the wetland. Peak water elevations may remain similar to current peaks. However, winter base flows to the wetland could increase with a resultant increase in the average base elevation in the wetlands.

During the winter of 1995/1996, water level monitoring of the Grass Lake wetland was conducted at several locations near Cooper Point and Mud Bay Roads. One of these sites, immediately east of the sewer access road separating wetland #6 and wetland #3b (refer to the Wetlands map), provides data helpful to evaluating stormwater conditions in at least that portion of the wetland system. Water levels immediately east of the sewer access road were monitored from November 14, 1995 to March 8, 1996. Monitoring frequency varied from daily to weekly with an emphasis placed in storm event monitoring. The data have been evaluated using Washington Department of Ecology (WDOE) wetland management parameters as follows:

- Average base stage. Measured water elevations at the beginning and end of two week periods were averaged to calculate average base stage.
- Water surface fluctuation (WSF). The average of measured peak elevations associated with storm events was calculated.
- Number of excursions. The frequency of peak elevations was noted. (Excursions are high water events or peak flows.)
- Duration of excursions. The approximate number of days required to recover from peak elevations was calculated.

Additionally, cursory water quality has been obtained from several stormwater discharges to the eastern portion of the wetland system. These data are potentially helpful rather than conclusive.

c. Evaluation of Available Information Using WDOE Recommended Guidelines

The Washington Department of Ecology (WDOE) in conjunction with the University of Washington and King County has developed preliminary guidelines for regulating stormwater discharges to urban wetlands. The guidelines were applied to the results of the Grass Lake hydrologic modeling and water level monitoring data.

The monitoring data are limited both with respect to duration of monitoring (November - March, 1995/1996) and location (one applicable site). With this in mind, the conclusions that can be reached from the data and guidelines are limited:

- Late winter and spring water levels were not monitored. Observations suggest that storm events occurring past March 1 may produce only modest increases in water level fluctuation. Late season storm events may not provide enough runoff to impact water levels in the extensive wetland system.
- Monitoring data collected immediately east of the sewer access road should adequately reflect hydrologic conditions in wetland #6 (forested wetland, Category I), but may not adequately represent water elevations west of the sewer access road (wetlands #3a and #3b, Category II). Comparing monitoring data from wetland #8 near Mud Bay Road to the sewer access road site indicates that while average base elevations may be relatively consistent throughout the wetland system, peak water elevations at various sites can vary in depth and duration.

An evaluation of WDOE wetland management guidelines relevant to the Grass Lake system follows:

Guideline #1: Limit post-development mean annual water surface fluctuation (WSF) to (1) an increase of 2 inches if the pre-development WSF is greater than or equal to 6 inches, or (2) a maximum of 8 inches if pre-development WSF is less than 6 inches.

Evaluation: Given available information, the mean annual WSF for the Grass Lake wetland is estimated to be roughly 5 to 6 inches. Assuming that current stormwater flows to the wetland have created more pronounced WSFs than with pre-development conditions, condition (1) may not apply. Condition (2) suggests that on an annual basis the wetlands could accommodate an additional 3.5 inches of WSF. Using condition (2), average winter WSF could increase from approximately 11 inches to 14 inches. The computer modeling

suggests that actual increases at full development should be less than 3.5 inches. The model does not project the new high water elevations or map the new areas that will be flooded. Impacts to adjacent land use were not evaluated.

Guideline #2: Limit post-development mean monthly WLF (for every month of the year) to: (1) an increase of 2 inches if pre-development WLF is greater than or equal to 6 inches, or (2) a maximum of 8 inches if pre-development WLF is less than 6 inches.

Evaluation: Mean monthly WLF was calculated by comparing average base stage for approximate one week periods to the peak stage within the same one week period. The weekly values were combined to determine monthly averages. Monthly WLFs are typically pronounced in the Grass Lakes system from the end of October to late winter.

Mean monthly WLF for January and February, 1996 were between 3.6 and 9 inches with a mean of 5.6 inches. Assuming that pre-development WLF was less than 6 inches, the criteria suggests that WLF be limited to 8 inches. This criteria was exceeded in 1995/1996 during at least one extreme storm event in early February.

Guideline #3: Limit post-development frequency of stage excursions of 6 inches above or below pre-development stage to an annual average of 6 or less.

Evaluation: The monitoring data indicate that 6-inch excursions are relatively common during prolonged storm events from mid-October to late February. This criteria is probably exceeded by 2 to 5 events per year.

Guideline #4: Limit post-development duration of stage excursions of 6 inches above or below pre-development stage to no more than 72 hours per excursion.

Evaluation: Measurement taken east of the sewer access road indicated that drawdown times for major excursions is approximately 5 days, assuming no additional runoff inputs. However, the rate of drawdown is controlled by the undersized culverts under the sewer access road. Drawdown rates downstream of the road are unknown but could be shorter in duration.

Guideline #5: For amphibian breeding zones between February 1 and May 31, limit the magnitude of stage excursions to no more than 6 inches, and limit the total duration of the excursions to no more than 24 hours in any 30 day period.

Evaluation: Violations of these criteria can be expected in February of any given year. Violations may not occur past early March.

The guidelines also contain numerous qualitative guidelines for managing urban wetland for specific targeted species such as forested wetland and wetland obligate birds. In general, these guidelines emphasize the importance of structural diversity and buffering.

The water quality of stormwater flows to the wetland is also a management concern. Although numerous qualitative criteria exist for water quality management, the quantified WDOE guidelines focus on minimizing sediment loading to wetlands. With the possible exception of inadequate construction management, sediment deposition in the Grass Lakes wetland is not expected to be a prominent problem.

A considerable portion of stormwater discharging to the wetlands has been treated for contaminant removal at some level by stormwater ponds, swales, roadside ditches, and degraded swales within the refuge. In March 1995, stormwater was collected from eight outfalls to the wetland and analyzed for fecal coliform, turbidity, and total suspended solids. The cursory water quality investigation did not uncover any appreciable problems. In another study, sediments analyzed from the 14th Avenue/Road 65 ditch that carries stormwater to the wetlands indicated elevated levels of fecal coliform, metals, and total petroleum hydrocarbons.

3. Topography and Slopes

The Thurston GeoData GIS system was used to analyze slopes based on the elevation data determined from contour mapping from aerial photography. No site specific elevation surveys were done for this plan. **(See Maps 8 and 9 on Page II - 25 and II - 26)**

Slope analyses are very important for siting trails and other facilities and to analyze stormwater drainage and micro-climates.

The refuge ranges from approximately 132 feet to 197 feet in elevation. The lowest elevation is bottom of Lake Louise near the culvert outlet. The highest elevations are on the northern and southern boundaries of the refuge. The hillsides slope toward the wetland complex through the center of the refuge which forms the valley bottom. The Grass Lake wetland complex has been called a bathtub. All the adjacent lands slope toward the wetlands and there is a single outlet for the water at the culvert on the west side of Lake Louise.

The topography of the refuge is gentle. Over half of the refuge has slopes of less than 5%. Less than 5% of the refuge has slopes greater than 15%. These are small crests and knobs. Most of the flat or gently sloping areas are wetlands. The old home site on 14th Avenue near the 65 Road intersection, the peninsula in Lake Louise, and a plateau on the southern boundary are the most level upland areas. The old home site slopes to the south which provides greater sun access. Much of the south side of the refuge faces north. The topography and forest cover result in little winter sun.

Photo: Water lillies blooming on Lake Louise.





GRASS LAKE REFUGE

Topography



City of Olympia

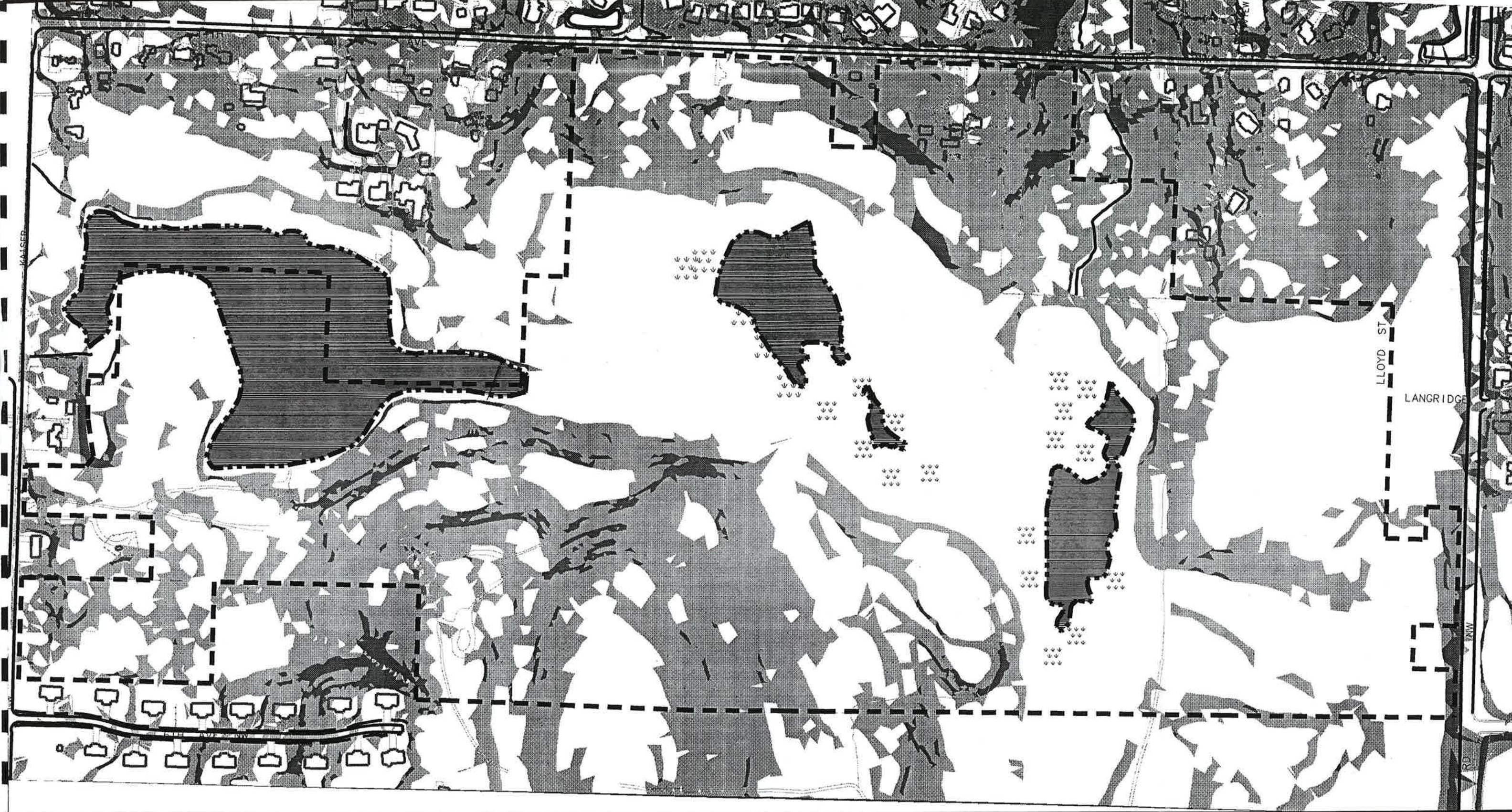


Map 8
Page II -25

January 22, 1997






0 150 300
SCALE IN FEET



GRASS LAKE REFUGE

Slopes

-  Slopes 0 - 5%
-  Slopes 5% - 15%
-  Slopes 15% +



January 22, 1997



Map 9
Page II -26



City of Olympia

Lake Louise was constructed by excavating peat and piling dirt around the edges in certain locations. Some of the shoreline areas are steep including along the slough. The south shore of Lake Louise is more gentle sloping than the north shore. During low water periods in late summer and early fall, the lake bottom is exposed from the south shore to north of the tip of the peninsula. During dry years only the deepest pool near the culvert has water in it.

4. Soils (See Map 10 on Page II - 29)

The source for the Grass Lake Refuge Soils Map was the Thurston GeoData GIS system. No additional site specific soils mapping was done for this plan.

The refuge has seven soil types. As shown on the soils map on page 26, the interior wetlands of the refuge are muck soils. This is consistent with an old wetlands system like Grass Lake. Most of the upland soils have high seasonal water tables from November to April. During the summer, these soils have low soil moisture. The following soils table includes additional information that should be used for siting and designing facilities and planning and maintaining vegetation restoration projects. Soil mapping and analysis should be done to aid successful design and implementation of these projects. **(See Soils Table on Page II - 30 and II - 31)**

Alderwood Gravelly Sandy Loam

The predominant soil is Alderwood gravelly sandy loam, which composes most of the uplands. Both old homesites are on this soil. This soil can be droughty which may be challenging to successful seeding and planting of disturbed sites. Fall seeding and planting are likely to be most successful. Invading brush can also impact native revegetation efforts so mowing may be necessary around young transplants.

Mukilteo Muck

Grass Lake West and East are primarily Mukilteo muck. Mukilteo muck forms from decaying sedges. This is very muddy soil that easily compacts.

Shalcar Variant Muck

Shalcar Variant muck is a poorly drained floodplain soil that stays wet frequently from November to May.

McKenna Gravelly Silt Loam

McKenna gravelly silt loam is a poorly drained soil found in depressions and drainages. A perched high water table usually occurs November to April.

Yelm Fine Sandy Loam

Yelm fine sandy loam is a moderately well-drained soil although it stays wet in winter. The revegetation challenges will be similar to those described for Alderwood gravelly sandy loam.

Giles Silt Loam

Giles silt loam is well-drained.

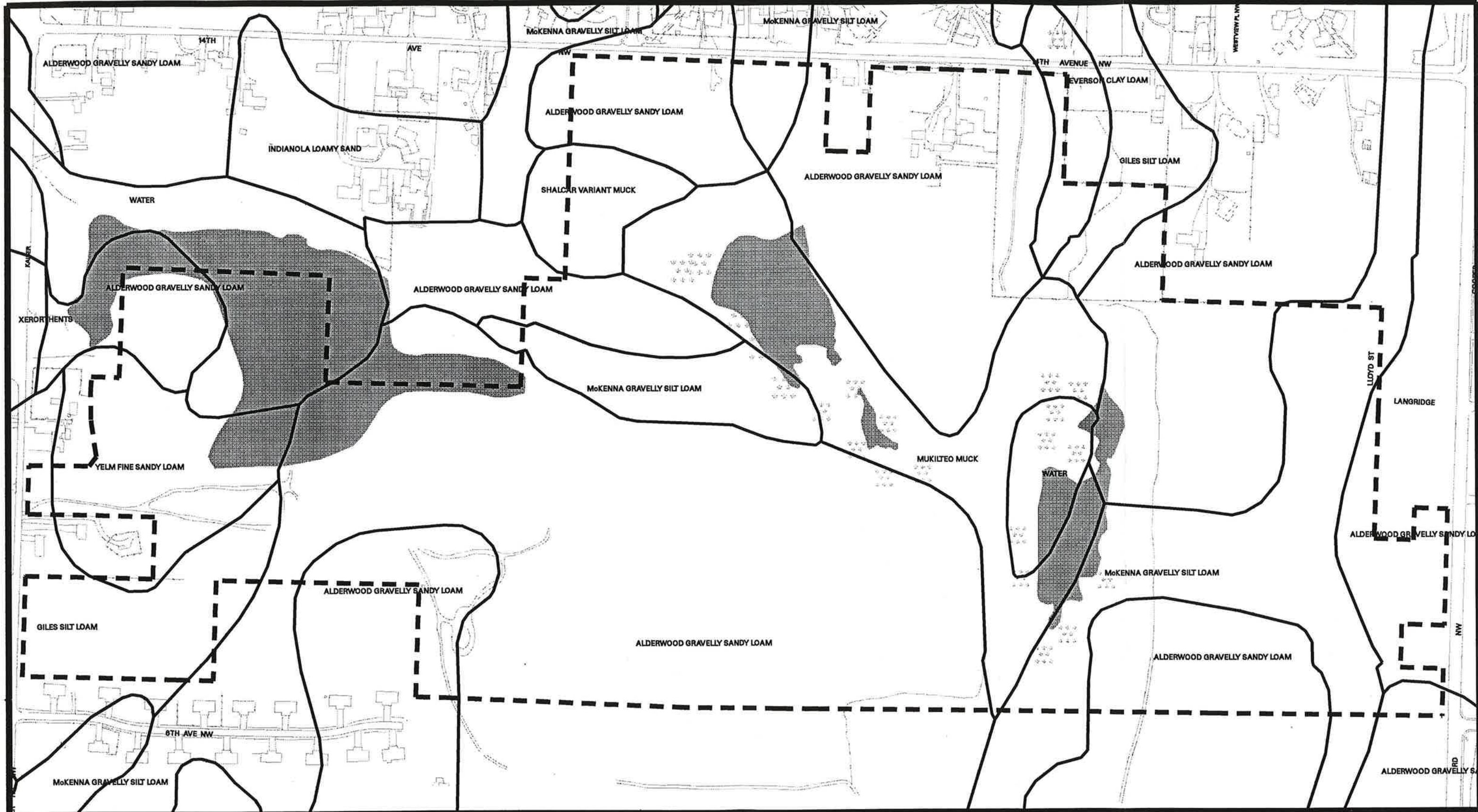
Everson Clay Loam

Everson clay loam is poorly drained.

5. Climate

Olympia receives approximately 51" of rain each year. December is the wettest month (8.7") and July is the driest month (1.8"). Snowfall is 3" annually. It rains approximately 147 days a year, is cloudy 230 days per year and is foggy 75 days a year. Winter winds are predominantly from the southwest and prevailing summer winds are from the North-Northeast.

The climate influences facility needs, design standards, facility locations, maintenance needs and scheduling and vegetation restoration. Facility locations and designs have to comply with these water issues. Because of dry summers, most vegetation plantings need to occur in fall or early spring.



GRASS LAKE REFUGE

Soils



City of Olympia

Map 10
Page II - 29

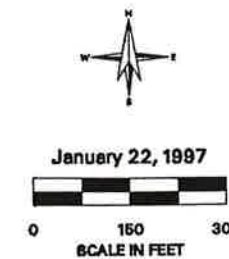


Table 1 - Soil Types and Characteristics

Soil Type	Soil Depth (in)	% of Clay	Permeability (in/hr)	Shrink-swell Potential	Erosion Factors K / T	Hydrologic Group	Flooding (frequency/duration/months)	High Water Table (depth in ft/type/months)
Alderwood gravelly sandy loam, 3-15 % slope	0-15 15-30 30	5-10 " ----	2.0-6.0 " -----	Low " ---	0.15/2 0.10/ -----	C	None	1.5-3.0 /Perched /Jan-Mar
Alderwood gravelly sandy loam, 0-3 % slope	0-15 15-30 30	5-10 " ----	2.0-6.0 " -----	Low " ---	0.15/2 0.10/ -----	C	None	1.5-3.0 /Perched /Jan-Mar
McKenna Gravelly silt loam, 0-5 % slope	0-9 9-13 13-36	10-25 20-35 "	0.6-2.0 .06-.2 "	Low Moderate "	0.24/3 0.20/ 0.15/	D	None	+1-0.5 /Perched /Nov-Apr
Giles silt loam, 3-15 % slope	0-10 10-48 48-60	--- --- ---	0.6-2.0 " "	Low " "	0.32/5 " 0.43/5	B	None	>6.0 /--- /---
Mukilteo muck	0-6 6-60	--- ---	0.6-2.0 " "	Low " "	0.00/5 "	D	None	+1-0 /Apparent /Oct-Apr
Yelm fine sandy loam, 3-15 % slope	0-8 8-46 46-60	--- --- 0-5	2.0-6.0 " 6.0-20	Low " "	0.32/5 " 0.10/5	C	None	1.5-3.0 /Apparent /Dec-Mar
Indianola loamy sand, 3-15 % slope	0-6 6-25 25-60	0-5 " "	2.0-6.0 6.0-20 >20	Low " "	0.15/5 " 0.05/5	A	None	>6.0 /--- /---
Yelm fine sandy loam, 0-3 % slope	0-8 8-46 46-60	--- --- 0-5	2.0-6.0 " 6.0-20	Low " "	0.32/5 " 0.10/5	C	None	1.5-3.0 /Apparent /Dec-Mar
Norma silt loam	0-8 8-30 30-60	10-15 5-10 3-10	0.6-2.0 2.0-6.0 "	Low " "	0.32/5 " 0.24/5	D	None	+1-1.0 /Apparent /Nov-Apr
Shalcar Variant muck	0-6 6-20 20-60	--- --- 40-60	0.6-2.0 " .06-0.2	Low " High	0.00/5 " 0.20/5	D	Occasional /Long/Nov-May	+1-0 /Apparent /Oct-May
Xerorthents, 0-5 % slope						C	Rare	>2.0 /Apparent /Nov-Mar

Table 2 - Development Potentials

Soil Type	Wildlife Habitat	Building Site Development	Recreational Development	Sanitary Facilities	Woodland Management/ Productivity
Alderwood gravelly sandy loam, 3-15 % slope	Fair	Fair	Fair	Poor	Good
Alderwood gravelly sandy loam, 0-3 % slope	Good	Fair	Fair	Poor	Good
McKenna gravelly silt loam, 0-5 % slope	Fair	Poor	Poor	Poor	Poor
Giles silt loam, 3-15 % slope	Good	Fair	Fair	Fair	Good
Mukilteo muck	Poor	Poor	Poor	Poor	Poor
Yelm fine sandy loam, 3-15 % slope	Good	Fair	Fair	Poor	Good
Indianola loamy sand, 3-15 % slope	Poor	Fair	Fair	Poor	Good
Yelm fine sandy loam, 0-3 % slope	Good	Fair	Fair	Poor	Good
Norma silt loam	Fair	Poor	Poor	Poor	Poor
Shalcar Variant muck	Poor	Poor	Poor	Poor	N/A
Xerorthents, 0-5 % slope	Fair	Poor	Fair	Poor	N/A

Table legend:
Development ratings-Good, Fair, Poor, Not Applicable (N/A)

6. Habitats (See Map 11 on Page II - 34)

As described in more detail in the management section of the master plan, the upland vegetation has been disturbed by past activities including timber harvest and utility construction. Most of the forest is fairly young. Under the proposed refuge management, no timber harvest will occur so these forests will continue to mature. The forest mosaic and structure will change but diversity will remain due to the mix of micro-climates, soils and water in the refuge.

Lake Louise was created out of a wetland of similar size and shape. It is shallow and dries up almost completely during dry summers. Water entering the refuge is low in sediments so the lake is not filling in from upstream sediments. Grass Lake West and Grass Lake East appear to be almost identical to their condition in 1950 aerial photographs. By maintaining adequate buffers around these wetlands and by preventing significant changes in water flows, these wetlands will be protected. Noticeable changes in their size and character are not anticipated.

An inventory of the refuge's wetland and upland habitats was completed for the master plan. Eight wetland habitats and twenty-two upland habitats were mapped. Detailed description of these habitats are included in the two volume report, "Wetland Inventory and Habitat Assessment for Grass Lake Park." The report serves as an appendix to the master plan but is not bound into this document due to its length. The inventories and recommendations were used to help develop the master plan.

Two local biologists, Michael Clegg and John Paul, have identified over 200 different plant species and 100 different bird species in the refuge. Their lists are appendices to the plan. This rich biodiversity adds to the wildlife habitat values and environmental education and interpretation opportunities.

Any morning on Grass Lake one can see a half dozen different birds (ducks, herons, etc.) and a deer or two in the shadows at the water's edge. Numerous people enjoy birdwatching in the refuge. Bird research is being conducted by students and faculty at The Evergreen State College. Their report documents the use of Grass Lake Refuge by migratory birds and the potential threat from too much human disturbance and reduction in habitat in the future.

Informal studies in the refuge include the Olympic mudminnow and butterflies. Grass Lake is also notable for amphibians such as rough newts, northwestern salamanders and Pacific tree frogs. The frog chorus is outstanding. Numerous amphibians are sensitive to sudden changes in water levels such as might be caused by increased stormwater from new impervious surfaces - buildings, roads, etc.

Many amphibians attach their eggs to aquatic plants. A sudden increase in water may wash them away or a sudden drop may leave them stranded to dry out.

The refuge's wetlands act as a sponge to help stabilize flows for salmon and other fish downstream in Green Cove Creek. In spring, the refuge holds a lot of water so downstream streambanks are not eroded by flash floods. During the dry summer, the wetlands release water to help maintain downstream pools for fish.

Although herons and hawks are frequently spotted in the refuge, no nest sites have been identified within the refuge. Likewise, the deer seen in the refuge range beyond the boundaries. Successful protection of these species will also depend on management outside the refuge.



Upland Habitats

- A = South side of Lake Louise
- B = Douglas Fir Forest Peninsula
- C = Kaiser Road Entrance
- D = Alder Forest
- E = Mature Mixed Conifer Forest
- F = Scot's Broom/Douglas Fir Forest
- G = Shrub/Douglas Fir Forest
- H = Even Aged Mature Douglas Fir Forest (West)
- I = Mature Douglas Fir Forest
- J = East Arm of Lake Louise/South Shore
- K = Mixed Mature Forest

GRASS LAKE REFUGE

Upland Habitat Areas

- L = Even Aged Mature Douglas Fir Forest (Northwest)
- M = Main Entrance
- N = Mixed Douglas-fir Forest (North)
- O = Yogurt Farm
- P = Even Aged Young Douglas fir
- Q = Scot's Broom Patch
- R = Mixed Mature Conifer Forest (Northeast)
- S = Even Aged Mature Douglas fir Forest (East)
- T = Deciduous Forest
- U = Douglas fir Forest
- V = Even-aged Mature Douglas fir Forest (Southeast)



City of Olympia



January 22, 1997



SCALE IN FEET

Map 11
Page II - 34

C. Managerial Direction

1. Applicable Plans and Policies

a. Olympia Comprehensive Plan

The Comprehensive Plan for Olympia and the Olympia Growth Area has a Parks and Open Space Chapter. This chapter establishes Goals and Policies that provide direction for the development of Grass Lake Refuge. These policies are listed below along with the master plan's response.

Pertinent Comprehensive Plan Policies	What the Plan Includes
Incorporate water and other scenic vistas into site planning of new parks and trail systems.	This has been done on the Lake Louise and Marsh Trails.
Develop trails which feature some of the areas unique open space settings including marshes and wooded areas.	The refuge's proposed trail system will do this.
Provide all citizens with clean, safe and accessible facilities.	The design program and the operations and maintenance plan provide for this goal.
Provide access to facilities and land for passive recreation, environmental education and nature walks.	These are major components of the master plan.
Provide an urban trails system that will interconnect parks and schools.	The refuge trail system will link to Yauger Park and nearby schools.
Enhance recreation opportunities for Olympia's physically, mentally and culturally diverse population groups.	The design program and the environmental education and interpretation plan address this goal.
Develop an outreach program with neighborhood associations and the business community in planning, design, construction, operation, and maintenance of Olympia's park system.	Neighborhood associations were invited to participate in planning workshops. The master plan's implementation section recommends partnerships.

Pertinent Comprehensive Plan Policies	What the Plan Includes
Acquire open space through other municipal or state programs such as stormwater management and wildlife/wetland protection. Utilize monies to acquire larger buffers of land around those areas suitable for wildlife if multiple purposes will be served (e.g. stormwater management).	Refer to acquisition and wetland management sections of the plan.
Apply for grants from public agencies and private foundations to acquire park land.	Refer to the implementation section of the plan.
Maintain adequate park maintenance and operation funding as new facilities are developed.	Refer to the cost estimates.
Involve volunteer efforts to assist with park and litter clean-up, and maintain a watchful eye on our parks and open spaces.	Refer to the implementation section of the plan.
Trails should be accessible to people with disabilities as much as the topography of the region will allow.	All trails in the refuge will be sited and designed to be accessible.
Develop trails in an environmentally sensitive manner.	Refer to criteria in the design program.
Provide trails that offer a range of experience.	The refuge's trail system winds through aesthetically diverse habitats.
Encourage volunteers to participate in the construction and maintenance of trails.	Refer to implementation section.
Seek public and private funding for trail development.	Refer to implementation section.
New park development or open space acquisition should consider trail design and construction.	Approximately 3 miles of trails are proposed.
Trail connections should be made whenever possible between neighborhoods, cul-de-sacs, and schools.	The refuge master plan proposes three spur trails to connect with residential developments on the south side and the refuge and another spur trail to improve access and safety for students and residents on the north side of the refuge.

Pertinent Comprehensive Plan Policies	What the Plan Includes
Design open space to protect wildlife habitat and the natural environment and to create public spaces.	The refuge will include two wildlife reserves.
Manage City-owned open space and parks as beneficial places for wildlife.	Wildlife habitat protection is one of the major purposes of the refuge.
Study the effects of urbanization on wildlife use of the City park land, specifically including wildlife use of parks for nesting, perching, food source and breeding.	The master plan recommends development and implementation of a monitoring program.
Through SEPA and other regulatory means, address impacts to wildlife on City-owned park lands from adjacent land developments.	This is very important for long-term protection of the refuge's wildlife.
Incorporate habitat considerations in the design and development of new parks and in approvals for private developments. Encourage use of plants that attract wildlife to City-owned park lands and open space.	Habitat protection and enhancement are primary objectives for refuge management.
Within those open space areas where preservation of wildlife habitat is a goal, allow for passive recreational uses (e.g. birdwatching, hiking) and educational purposes.	The refuge's proposed development and management are consistent with this goal.
<p>The Grass Lake Refuge is classified in the comprehensive plan as open space. The open space components of the comprehensive plan were amended on December 26, 1996 by Ordinance #5661. The new open space definition states:</p> <ul style="list-style-type: none"> Undeveloped public land that is permanently set aside to protect the special nature character of a particular location. Trail development to allow passive recreation such as nature observation and hiking is permitted except in cases where wildlife conservation is the primary function. 	Two areas of the refuge are to be managed as wildlife reserves with no developed trails or facilities.

b. Urban Trails Plan

The Urban Trail Plan proposes a regional system of trails to be known as the Capital Area Trails System. The plan proposes the Grass Lake Nature Trail. The trail is to be a Class III/Nature Trail. The trail is to be for environmental education and interpretation. It will link with Capital Area Trails including the Grass Lake-Yauger Trail, Trail 0-3, and with the Green Cove Trail, Trail 0-1.

c. IAC Policies

As a co-landowner, the Washington Interagency Committee for Outdoor Recreation establishes requirements for Urban Wildlife Habitats:

Provides habitat for wildlife species, food fish, shellfish, or freshwater or marine fish.

May serve as a corridor for wildlife movement in existing populated areas.

May include and encourage public use for wildlife interpretation and observation.

Development of facilities will be limited to items such as fencing, interpretive/observation trails, interpretive signs/kiosks, restrooms, parking, and creation or enhancement of habitat.

Projects involving renovation of an existing facility are ineligible.

The bold text used above indicates that facilities are to be limited to those appropriate to the purposes of urban wildlife habitat. Active recreation or sports facilities such as soccer fields or running trails are not allowable.

d. Critical Area Regulations

Olympia has critical area regulations to protect wetlands. According to the wetlands inventory, most of the wetlands in Grass Lake Refuge are Class II wetlands which require a 200' wide buffer from high intensity land use and a 100' buffer from low intensity land use. Carefully sited and designed trails and boardwalks may be allowed and approved within the buffers. The Cottonwood Swamp is a Class I wetland. Class I wetlands require a 300 foot wide buffer from high intensity land use and 200 feet from low intensity land use. The proposed environmental learning station will require conditional use permits.

e. Shoreline Master Program for the Thurston Region

The Grass Lake complex falls under the administration of the Shoreline Management Act as a shoreline of the state. Future development will require a shoreline conditional use permit. The proposed development and management of the Grass Lake Refuge complies with the policies of the Shoreline Master Program. Refer to Chapter 14, Recreation, *Shoreline Master Program for the Thurston Region 1990*.

2. Development Regulations, Standards and Permits

Refer to the master plan's design program for a listing of design standards to be followed. Numerous federal, state and local regulations are applicable to the refuge. Many of these regulations require permits. Prior to development, the following permits will have to be obtained.

Permits	Agency
<u>Land Use or Zoning Permits:</u>	
Shoreline Substantial Development Permit	City of Olympia
404 Permit	Army Corps of Engineers
<u>Environmental Permits:</u>	
SEPA	City of Olympia/WDOE
Hydraulic Project Approval (HPA)	Washington Fish & Wildlife
<u>Construction Permits:</u>	
Building Permit	City of Olympia
Clearing and Grading Permit	City of Olympia
Olympia Land Use Approval	City of Olympia
Administrative Review for Development in Class I Wetland	City of Olympia
Engineering Permit	City of Olympia

Permits	Agency
General Facility Charge (Water & Sewer Permit)	City of Olympia
Forest Practices Permit	Washington Department of Natural Resources

3. City Park Regulations

The following city codes apply to the Grass Lake Refuge. Rather than posting all of the regulations at each entrance, only the most relevant and important regulations will be signed. Based on recommendations from the Olympia Police Department and park services staff, the following regulations will be emphasized on trailhead signs.

The following uses or activities are prohibited:

- Horses
- Fishing
- Camping
- Boating
- Hunting
- Picking and digging plants
- Vehicles or Motorcycles
- Feeding or disturbing animals
- Bicycles except Police
- Running or Jogging
- Swimming or wading
- Dogs except for on leashes on the Grass Lake Nature Trail only

Please stay on trails, boardwalks and piers.

Please pack out all litter. Pack it in/pack it out.

Refuge hours: Closed dusk to dawn. Evening use by permit.

Environmental learning shelter reservations and evening use permits system: Schedule through Olympia Department of Parks, Recreation and Cultural Services. The Olympia Center, 222 N. Columbia, (360) 753-8380.

From Olympia Municipal Code, Chapter 12.60

PARK REGULATIONS

12.60.010 - Advertising signs and posters-Structures of any kind

It is unlawful to use, place, or erect any signboard, sign, billboard, bulletin board, post, pole or device of any kind for commercial advertising in any park; or to attach any notice, bill poster, sign, wire or cord to any tree, shrub, railing, post or structure within any park in a manner which dents, mars, defaces, breaks, punctures or injures such plant or structure in any way or, without the written consent of the parks and recreation director of the city, to place or erect in any park a structure of any kind. (Ord. 3957 §11(A), 1976).

12.60.020 - Destroying structures or plantings unlawful

It is unlawful to remove, destroy, mutilate or deface any structure, monument, statue, vase, fountain, wall, fence, railing, vehicle, bench, shrub, tree, fern, plant, flower, lighting system or sprinkling system or other property lawfully in any park. It is further unlawful to operate a motor vehicle in a manner which causes damage to any playfield, recreation area, or other grounds within a park. (Ord. 3957 §11(B), 1976).

12.60.030 - Permitting animals to run at large unlawful

12.60.030 Permitting animals to run at large unlawful. It is unlawful to allow or permit any animal to run at large, without a restraining device, in any park, to enter any lake, pond, fountain or stream therein. (Ord. 3957 §11(C), 1976).

12.60.040 - Molesting or feeding animals unlawful

It is unlawful in any manner to purposely tease, annoy, disturb, molest, catch, injure or kill or to throw any stone or article of any kind at or strike with any stick or weapon any animal, bird, fowl or fish within a park, or to feed any fowl, fish or animal within any park. (Ord. 3957 §11(E), 1976).

12.60.050 - Fireworks or weapons unlawful without permit

It is unlawful to shoot, fire or explode any firearm, fireworks, firecracker, torpedo or explosive of any kind or to carry any firearm or shoot or fire any air gun, bow and arrow, b.b. gun or use any slingshot in any park without a written permit obtained from the director of parks and recreation. (Ord. 3957 §11(D), 1976).

12.60.060 - Soliciting or peddling unlawful

It is unlawful to take up collections, or to act as or apply the vocation of solicitor or peddler within a park or facility under the control of the director of parks and recreation: provided, that it shall not be a violation of this section for a nonprofit or charitable organization or group to conduct a fund-raising event in a park or facility under the control of the director of parks and recreation with the approval of the director of parks and recreation and upon the payment of a reasonable fee for the use thereof. Such fund-raising events shall solicit donations only. The ability of park patrons to visit park facilities or to use the nonreserved portions of the facility shall not be denied or conditioned upon the payment of a donation. (Ord. 4678 §1, 1986; Ord. 3957 §11(F), 1976).

12.60.070 - Circus, carnival or exhibition must have permit

It is unlawful to hold, operate or conduct a circus, carnival, or traveling exhibition in any park without a written permit from the director of parks and recreation. (Ord. 3957 §11(G), 1976).

12.60.080 - Sales unlawful without permit or concession contract

It is unlawful to sell food, refreshments or merchandise within a park from a fixed stand, table or booth without a permit or a concession contract with the director of parks and recreation. This section shall not apply to festival events as defined in Sections 13.32.010 and 13.32.020. (Ord 4519 §2, 1984; Ord. 3957 §11(H), 1976).

12.60.090 - Religious or political meetings

It is unlawful to organize and hold any religious or political meetings or other assembly within a park without first obtaining a written permit from the director of parks and recreation. Such permit shall be issued upon application but may be conditioned as to the time and place of holding such meeting or assembly so as not to unreasonably interfere with other lawful activities within the park. Such conditions may be appealed to the city commission if the applicant feels such condition to be unreasonable. (Ord. 3957 §11(I), 1976).

12.60.100 - Bicycles-Horses-Motor vehicles-Unlawful activities

It is unlawful to ride or drive any bicycle or tricycle over or through any park except along and upon the park drives, parkways, park boulevards or designated bicycle lanes; or to drive or ride any motorcycle or other motor vehicle, horse or pony through any park except along and upon the park drives, parkways, park boulevards or to ride or drive at a speed in excess of fifteen miles per hour; or to stand or park any vehicle except in areas designated by the director of parks and recreation. (Ord. 3957 §11(J), 1976).

12.60.110 - Camping or parking unlawful except where designated

It is unlawful to camp or stay overnight in any vehicle within any park or within any public parking lot adjacent to a park except at places set aside for such purposes by the director of parks and recreation or so designated by signs. (Ord. 5205 §1, 1991; Ord. 4631 §1, 1985; Ord. 3957 §11(K), 1976).

12.60.120 - Ball games and other sports

It is unlawful to practice or play golf, baseball, cricket, lacrosse, polo, archery, hockey, tennis, badminton or other games of like character or to hurl or propel any airborne or other missiles, except at places set apart for such purposes by the director of parks and recreation and so designated by signs. (Ord. 3957 §11(L), 1976).

12.60.130 - Refuse deposit

It is unlawful to throw any refuse, litter, broken glass, crockery, nails, shrubbery, trimmings, junk or advertising matter in any park or to deposit any such material therein, except in designated receptacles: provided, however, that it is further unlawful to deposit in such designated litter receptacles or elsewhere within a park any refuse, litter or other trash collected at the home, business, or other dwelling of any person and intentionally brought to the park solely for the purpose of disposing of such refuse, litter or trash. (Ord. 3957 §11(M), 1976).

12.60.140 - Testing motor vehicles unlawful

It is unlawful to operate any vehicle or motorcycle for the purpose of testing it, or ascertaining its fitness for service, along or upon any park drive, parkway, boulevard, or designated bicycle lanes. (Ord. 3957 §11(N), 1976).

12.60.150 - Endurance or speed tests unlawful

It is unlawful to engage in, conduct or hold any trials or competitions for speed, endurance or hill climbing involving any vehicle, boat, aircraft or animal in any park. (Ord. 3957 §11(O), 1976).

12.60.160 - Building fires permitted only in designated areas

It is unlawful to build any fires in any park except in areas designated by the director of parks and recreation and so designated by signs. (Ord. 3957 §11(P), 1976).

12.60.170 - Disorderly conduct described

A person is guilty of disorderly conduct in a park if without lawful authority he knowingly:

- A. Is involved in conduct and/or uses abusive language which causes clear and imminent danger of assault, riot or other public disorders which endanger the safety of others;
- B. Intentionally disrupts any lawful assembly or meeting of persons without lawful authority;
- C. Obstructs pedestrian or vehicular traffic in a manner which seriously disrupts the flow of such traffic or which endangers persons or property;
- D. Is involved in conduct which unreasonably disturbs the public peace; provided, that this subsection shall not apply to conduct consisting solely of verbal expression;
- E. Consumes any intoxicating liquor. (Ord. 3973 §2, 1976; Ord. 3957 §11(Q), 1976).

12.60.180 - Remaining after closing time unlawful

It is unlawful to remain in any park after the posted closing time. (Ord. 3957 §11(R), 1976).

12.60.190 - Aiders and abettors are guilty in same degree as perpetrator

Anyone who aids and abets the violation by another person of this chapter or who procures or hires that person to violate any provision of this chapter is guilty in the same degree as the perpetrator of such offense. (Ord. 3957 §11(S), 1976).

12.60.270 - Urban Trails Plan-Incorporated by reference

Chapter III of the Urban Trails Plan, three copies of which are on file with the office of the city clerk, is incorporated by reference as though fully set forth herein and made a policy of the city. (Ord. 5365 §1(part), 1993).

12.60.280 - Plan amendments, additions and deletions

- A. On page 24 of the draft Urban Trails Plan, paragraph B. EQUESTRIAN USE is amended to read as follows:

Lacey, Tumwater, Thurston County, and Olympia should jointly develop an equestrian trail network in the future. Until then, horse use on trails is not permitted. When the surrounding jurisdictions jointly develop an equestrian network, the following trails should be considered for equestrian use: TC-2, TC-3, T-1A, O-4, TC-1, O-16, O-17, O-27, T-9 and O-11. Trail design standards shall be amended to accommodate a separate two foot wide gravel or bark trail for equestrian use. The equestrian trail shall be separated from the pedestrian/bicycle trail to the maximum extent feasible within the trail corridor.

- B. Trails O-13 and O-15 (east side of Capitol Lake) and trail O-19 are deleted from the plan.

C. The following is added to page 31 of the plan, III.B.2.:

Sign Program, Warning and Regulatory Signs: Standard City signs prohibiting unleashed pets shall be established throughout the trail system.

D. The following is added to Page 24, III.A. Goal 21 of the plan:

Trail connections should be made, whenever possible, between existing neighborhoods, cul-de-sacs and schools.

E. The following is added to page 15 of the plan:

Standards: Acquisition of trail corridors would reduce open space deficits in the Parks Plan and the Comprehensive Plan as amended in the future.

F. Paragraph 3 on page 1 of the plan is amended to read as follows:

The purpose of the plan is to guide but not limit future trail development within the urban growth boundary in a manner that is unified and cohesive. (Ord. 5365 §1(part), 1993).

12.60.290 - Trail addition

Trail 0-27, East-West Olympia link is added to the trail route text and trail route map in the plan. (Ord. 5365 §1(part), 1993).

4. Safety/Risk Management

The water features in the refuge are the most popular attractions. Piers and boardwalks will be designed, built and maintained to provide stable surfaces.

As part of new trail or facility construction, hazard tree assessments will be done along the trails and adjacent to the facilities. Leaning trees and hanging limbs will be removed. Because of the wet soils and shallow rooted trees, falling trees may be a common occurrence.

As part of the master planning process, park staff met with representatives of Olympia's Fire and Police Departments. Trails need to be designed to provide emergency access in case someone is injured. The proposed 6 foot width and barrier-free surfaces will allow all terrain vehicle access and side-by-side carries. All refuge structures will be near 14th Avenue where water is available. Trails will be signed and "you are here" maps provided to reduce the likelihood of people becoming lost. Trail mileage markers will be provided at quarter mile intervals to help locate injured visitors or other emergency incidents. Trailheads will include important park regulations to encourage compliance and ease of enforcement. A 911 emergency phone is proposed for the 14th Avenue main entrance area.

Currently the refuge is not routinely visited by police. The police have aided the park department in removing illegal campsites. Police on bicycles may ride the trails. Most police visits will be in response to complaints or requests for assistance.

III. Design Program

A. Carrying Capacity

A key question to answer for making master plan recommendations is “How much use can the refuge accommodate while resource values and functions are preserved?” To answer this, we analyzed human carrying capacity.

Human carrying capacity is composed of two components - social carrying capacity and physical carrying capacity. They address how much human use of the refuge is desirable or suitable.

1. Social Carrying Capacity

Social carrying capacity is determined primarily by user preferences. How many other people do visitors want to see or hear? How many people can or should use trails, parking and other facilities at one time?

a. **People At One Time - PAOT**

An urban wildlife refuge is rather unique in terms of social carrying capacity. Studies indicate that people find it more acceptable to see more people on urban trails than on wilderness trails yet an urban wildlife refuge is a combination of both. Because a primary purpose of the refuge is wildlife observation, concerns have been raised about having too many people in the refuge at one time. The refuge is to be a sanctuary for wildlife and people.

The People At One Time (PAOT) can be managed by limiting facilities, scheduling organized group use and dispersing use. The main entrance facilities have been designed to accommodate approximately 50 PAOT. This design capacity should accommodate weekday use by a class, estimated at 45 to include students, teachers and supervisory volunteers, and five other visitors. Most casual visitors will probably spend about an hour and a half at the refuge. Based on this use pattern, on summer days, 500 visitors per day could be accommodated by the vehicular parking lot. Reducing the size of the parking lot may not reduce the number of visitors because of on street parking availability on the 65 Road. Parking on the 65 Road requires pedestrians to cross 14th and may disturb neighbors. Because some environmental education programs may occur after dark, parking within the refuge is more desirable.

b. Bicycles

Visitors may arrive on bicycles. To reduce use conflicts and to protect the habitats, bicycles cannot be ridden within the refuge. In the age of mountain bikes, the temptation to ride off trail is too great. The trails are also kept to six feet or less in width which will not safely accommodate bicycles. Since the primary purpose of the refuge is wildlife observation, bicycles are not the appropriate travel mode.

c. Trails

Two trails, the Lake Louise Trail and the Marsh Trail, depart from the main entrance trailhead. The trail system creates four loops. The loops will also result in dividing use and will provide the feeling of fewer people in the refuge versus on non-looping trails where users must go to and from on the same trail section doubling visitor encounters. The refuge will have approximately 3 miles of trail. Use is anticipated to be pretty evenly dispersed on the trails.

To successfully have visitors stay on the developed trail system, trails have to get visitors to where they want to go. Water is a major magnet. The proposed trails, boardwalks, piers and observation blinds serve the need to provide good visual access to the water. For environmental education purposes, the environmental learning stations and boardwalk/bridges provide physical access to the water. The trails also provide access to the other habitats and scenic features.

For people who want to get away from the bustle at the environmental learning stations and main trails, approximately five contemplation sites - semi-secluded seating - will be scattered through the refuge at attractive locales. These will also serve visitors who cannot travel the trails without resting.

d. Environmental Learning Stations and Shelter

The environmental learning stations will likely be the greatest attractions and where people stay the longest within the refuge. The exception is the environmental learning shelter at the trailhead which will serve the largest groups for one hour or more or for a multiple day workshop.

The environmental learning stations will be sized to accommodate 8-10 people at one time. Small groups participating in organized activities may use these facilities for 30 minutes or more. Casual visitors will probably not stay at the stations more than 10-15 minutes unless they are birdwatchers. Most organized

group use will occur during weekdays when casual use is lower. This should help to prevent overuse and conflicts between users.

e. Visitor Information and Interpretation Signs

The visitor information and interpretative signs and materials will also serve social carrying capacity by containing messages about the purpose of the refuge, limiting group size and being quiet to reduce wildlife disturbance and to protect wildlife observation opportunities.

2. Physical Carrying Capacity

The physical carrying capacity of the refuge is primarily determined by the desired levels of resource protection and facility development. To help address physical carrying capacity, the city hired The Coot Company to analyze this and make recommendations. The technical advisory committee reviewed these recommendations and provided additional input. The public master planning workshop focused on this issue of how to balance resource protection and utilization. As previously described in additional detail, the refuge was purchased to protect wildlife habitat and to provide wildlife education and observation. From a strictly wildlife habitat standpoint, no human use would be best but that would not accommodate the other primary objective for wildlife education and observation. Too much human use will greatly reduce the wildlife habitat values.

a. Trails for Resource Protection

Studies indicate that approximately 85% of visitors will stay on trails when asked to, providing the trails access the primary places they want to visit and have adequate width and surfaces. As described above, the trail system links the major refuge features and attractions with the desired refuge entrances. Therefore, it is anticipated that most visitors will stay on the developed trails. In a natural area like the refuge the behaviors that lead people off the trail include birdwatching and photography. The visitor information and interpretation signs and materials will encourage these users to also stay on the trails. The six foot wide trails will comfortably accommodate two people walking side by side and will allow people to pass without stepping off the trail. Trails will be designed to be above the high water lines and will be designed to drain well. This should eliminate people creating wider trails or new trails to avoid wet areas on the trails. Boardwalks and bridges will be built to protect wetlands. Design and construction techniques will be used to limit impacts from facilities.

b. Wildlife Reserves

A recent study of the Boulder, Colorado trails indicate that the impacts to wildlife extend a greater distance than previously documented. Wildlife use may be reduced for 300 feet or more along each side of the trail. As proposed in the "The Wetlands Inventory and Habitat Assessment for Grass Lake Park" report and modified by the technical advisory committee, to provide undisturbed habitat, the refuge will be developed and managed to include two wildlife reserves where no trails will be provided and human use will be discouraged by signs and education. The Lake Louise Wildlife Reserve is small in size but will buffer high value habitat. The Grass Lake East Wildlife Reserve is larger and includes all of the Grass Lake East wetlands and other high value habitats.

c. Wetlands

According to The Coot Company the most sensitive areas to trampling are the wetlands during low water when surface water recedes or disappears. The environmental learning stations and trails will still provide visual access to the water. As described above, the visitor information and interpretive signs and materials will strongly encourage people to stay on the developed trails. The monitoring program will recognize if trampling is starting to occur and will develop solutions to stop or reduce the activity.

d. Breeding and Nesting Season

Human disturbance is of concern during the spring when wildlife are breeding and nesting. If monitoring establishes the need, some trail sections will need to be temporarily closed.

e. Stormwater

Although stormwater is not frequently thought of as a physical carrying capacity issue, it is a critical factor at the Grass Lake Refuge.

Recommendations for stormwater mitigation and monitoring are made in the wetlands management section of this plan.

f. Monitoring

A great limitation of physical carrying capacity science is that frequently the maximum is not known until it is exceeded. That is why a regular monitoring program is important for successful resource protection.

B. Design Standards and Process

Refuge development will comply with all applicable city, county, state and federal regulations. Refuge facilities will be sited, designed and maintained to comply with the city's ordinances and codes including the sign code, city-wide design guidelines, tree protection and replacement, landscaping and screening and critical areas.

Infrastructure will be designed to comply with the city's development guidelines and public works standards. Refuge facility projects will go through the city's site plan review process. Shoreline management permits will also be required. Structures such as the shelter, toilet and boardwalks will meet the Uniform Building Code. All facilities, interpretation and programs shall comply with the Americans with Disabilities Act's Accessibility Guidelines (ADAAG) and the commitment to universal design as established in *Universal Access to Outdoor Recreation: A Design Guide*.

Restrooms will not include electric hand driers and doors that can be locked from the inside. This prevents visitors locking themselves into the restrooms, spending the night and using the electric driers for heat. Photovoltaic systems may be used at the restroom and shelter.

When new facilities are designed, representatives of the park services division need to be part of the design team. They have highly valuable expertise especially in trail design and maintenance, restrooms, shelters and plant selection. Community members with disabilities should also be involved in the design process so that facilities meet the objective of universal access. Consultation with soil scientists, wetland ecologists and other specialists will be essential for adequately addressing the complexities of designing facilities in an urban wetland area. For design and construction, site specific soil investigations will be done.

Trails should be sited so that the many beautiful and interesting species may be seen while avoiding sensitive nest and plant sites. When trails are designed and constructed additional field work should be done to accurately locate sensitive sites and key features. Some of this information will be supplied by the monitoring reports. Trails will meander to help maintain visual interest and path-like character.

Trails will be developed where possible on existing primitive trails. Location adjustments will be made to maintain moderate slopes, protect sensitive species, improve visual access to features, stay above high water line and avoid areas where surface flow or ponding are potential problems.

In most locations, trails will be six feet wide. Trails may be narrowed to 36" width to protect significant species, to reduce cut and fill slopes or to avoid other factors or features. All trails will be barrier-free with vertical slopes of 5% or less preferred. Vertical slopes may ramp up to 8% with landings at the top and bottom of the steeper

sections. Cross-slopes and surfaces will also meet the guidelines for accessible trails. Cross slopes on trails will not exceed 3%.

The current recommendation is for compacted, crushed aggregate surfacing. The crushed aggregate should be a dark color to help trails blend in with the refuge's dark soils. Utilization of binders and geotextiles will help to maintain level trail surfaces. Trails will not be raised to avoid damming natural flow patterns.

Boardwalks and pedestrian bridges will be used to cross wetlands, swales and ravines. They will be sited and designed to allow free movement of water and waterfowl. Piers and boardwalks will be designed, built and maintained to provide stable surfaces. Piers and boardwalks may have hand railings for public safety and to encourage people to stay on the developed trails.

Vegetation clearance for construction should not be allowed to be greater than one foot wider than the trail on each side. Where cut or fill slopes are necessary, vegetation clearing for construction should not exceed more than one foot beyond the edge of the cut or fill. Vertical clearance should be 80". Pruning as part of trail maintenance should not extend beyond the trail edges. The lush vegetation in the refuge is vital to the aesthetic and habitat values.

Existing trails that are not scheduled for development are to be obliterated according to specifications in the management section of the master plan. Doggie pooper scooper stations will be provided on the Grass Lake Nature Trail.

The Marsh Trail Wetland Crossing and the other proposed wetland crossings will require special design, construction and management to protect these high value and sensitive habitats. Techniques that will be utilized include:

- Railings on both sides of the boardwalks or pedestrian bridges.
- Elevated boardwalks or pedestrian bridges to discourage users from casually jumping off. The elevated structures will allow free flow of water and waterfowl under the structures. Elevations for the structures will be determined during design phases and based on resource protection, public safety, aesthetics, water elevations and other factors.
- Existing trees and other brushy vegetation adjacent to the boardwalks will be protected during construction. As can be seen on Map 7, Wetlands, on page 15, the Marsh Trail Wetland Crossing is through a forested wetland. The branches next to the boardwalk railings add another deterrent for staying on the boardwalk crossing. The branches will also help to screen people from wildlife.

- Trailhead signs and environmental education programs and materials will emphasize the importance of staying on the trails and boardwalks.
- Small signs will be incorporated into the design of the boardwalks to remind people to stay on the trails.
- Trails may be closed at certain times of the year to protect animal breeding and nesting activities.
- Actively monitor the wetland crossings by visual observation and photo monitoring techniques. If problems begin to arise because visitors disregard the request to stay on the trails, additional measures to protect the wetlands will be implemented by the Department.

C. Architectural Character

The architectural character should be appropriate for the Pacific Northwest location and help to communicate the values and purposes of the refuge. Facilities should blend in with the lines, colors, textures and scale of the landscape. Materials should be long lasting, appropriate to the climate and low maintenance. Public safety will be a primary consideration in selection of construction materials and in facility design.

D. Design Program For Refuge Facilities

14th Avenue Main Refuge Entrance (See Map 12 on Page III - 58)

Paved Driveway

Parking Lot

- All weather pervious surface
 - 24 stalls
 - 2 van spaces (1 disabled)
 - 1 disabled passenger vehicle space
 - 21 passenger vehicle spaces
 - Gate

Fire Hydrant

Bicycle Racks (12 bike capacity)

Environmental Learning Shelter

- Approx. 48' x 32'
- 6 8' picnic tables with one end open
- 1 8' table
- storage closet and cabinet
- display shelves
- exhibit boards
- electrical lights and outlets
- skylights

Toilet - Flush or Solar

- 2 units both sides - 1 accessible each side
- single sink each side
- no electric hand driers
- doors cannot be locked from inside

Entrance Sign - per system standards

Orientation Signing - 6 panel display with roof

- Refer to environmental education and interpretation section of the plan

Trash Facilities at Main Entrance - Pack it in / Pack it out

Trailheads (Lake Louise and Marsh Trails)

Trail Counters (3)

Landscaping/revegetation

- All landscaping and revegetation will use plants native to the refuge and the specific habitat.

Trail System

The trail system as displayed on page 48 will include six main trails and four spur trails totaling about three miles in length.

Grass Lake Nature Trail - Approximately one mile in length. Will connect pedestrian entrances on Cooper Point Road and Kaiser Road. Part of region's Capital Trails System. Will require boardwalks or pedestrian bridges at wetlands and ravines. Crosses some highly disturbed land so careful siting and landscaping should be done to improve aesthetic qualities.

Lake Louise Trail - Approximately one-half mile in length. Will share trailhead with the Marsh Trail at the main refuge entrance on 14th Avenue. Will link

environmental learning shelter with environmental learning stations on Lake Louise. Will include boardwalk or pedestrian bridge sections across western edge of Grass Lake West and the terminus of the eastern arm of Lake Louise.

Marsh Trail - Approximately one-half mile in length. Will share trailhead with the Lake Louise Trail at the main refuge entrance on 14th Avenue. Will link environmental learning shelter with environmental learning stations on Grass Lake West. Will include a boardwalk or pedestrian bridge section across the wetland connecting Grass Lake West and Grass Lake East. Will provide access to environmental learning shelter for students from Capital High School.

Wetland Connector Trail - Approximately one-third mile in length. Will connect Lake Louise Trail and Marsh Trail to form an interior loop trail. Will facilitate access between environmental learning stations, disperse use to reduce user conflicts and provide access through diverse upland forest.

Forest Trail - Approximately one-fourth mile in length. Will avoid sensitive shoreline area along Lake Louise and potentially reduce number of visitors passing observation blind on Lake Louise. Will provide connection between Kaiser Road pedestrian entrance and the interior trail loop. Will create a southern trail loop to help reduce use on wetlands trail loop. Will provides environmental education access to diverse upland forest.

Cottonwood Swamp Trail - Approximately 200' in length. Probably will be all boardwalk. Will provides access to environmental learning station and monitoring sites for flow, vegetation and amphibians.

Southside Spur Trails - Approximately 200' in length. Will provide access to private developments on the south side of the refuge.

65 Road Pedestrian Entrance Trail - Approximately 350' in length. Will provide safe pedestrian access to main refuge entrance on 14th Avenue so that students do not have to walk on 14th Avenue which is ditched and has no sidewalk and very limited shoulder. Will require pedestrian bridge across stormwater swale. Will provide access to environmental learning shelter and Lake Louise and Marsh trailheads.

Environmental Learning Stations

Refer to the environmental education and interpretation section of the master plan for more detail on interpretive signs, materials and programs. Each environmental learning station shall accommodate eight to ten people at one time. Refer to the master plan and drawings on page 48-51.

Lake Louise

- Pier
- Observation Blind

Grass Lake West

- Pier
- Observation Blind

Cottonwood Swamp Boardwalk

Monitoring Stations

- Water Flow and Quality Gauges

Interpretive and Contemplation Sites

Signs, Exhibits or Markers

Seating

Pedestrian Entrances

Kaiser Road

- Fence and Bollards To Direct Pedestrian and Vehicular Traffic
- Entrance Sign
- 3 Panel Roofed Sign Display - Refer to Environmental Education and Interpretation sections of the master plan
- Bike Rack (6 bike capacity)
- Trail Counter
- Parking Lot (5 spaces)
 - 1 Service/Emergency Parking Space
 - 1 Disabled Parking Space
 - 3 Parking Spaces
- Gate

14th Avenue

- Connecting Trail from 65 Road to Main Refuge Entrance

Cooper Point Road

- Entrance Sign
- 3 Panel Roofed Sign Display - Refer to Environmental Education and Interpretation sections of the master plan
- Earthen Pedestrian Ramp from Road to Trail
- Bike Rack
- Trail Counter

South Side Spurs

- Approximately three sites to be determined through development review for proposals. Refer to conceptual site plans.
- Fencing/bollards to direct pedestrian access and prohibit vehicular access
- Park Entrance Sign
- 3 Panel Roofed Sign Display - Refer to Environmental Education and Interpretation sections of the master plan
- Bike Rack
- Trail Counter

Emergency/Service Entrances

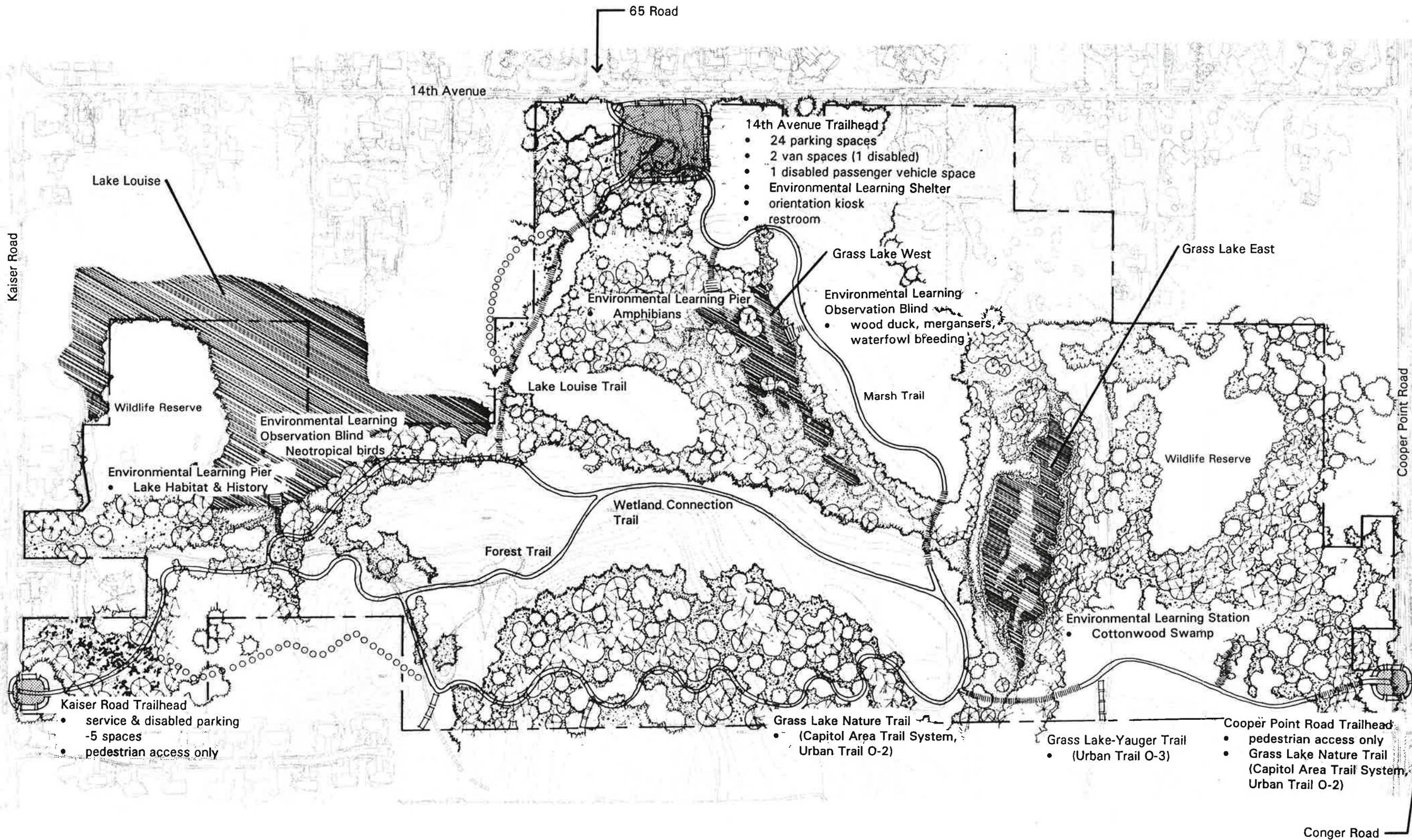
- Kaiser Road Well Access
- 14th Avenue - Temporary Until Sewer Line Removed and Area Restored
 - Gate
 - Fencing
 - Emergency/Service Parking Only Sign w/direction to main entrance



City of Olympia
Parks, Recreation
and Cultural Services

Legend

- Trails
- Boardwalks
- Environmental Learning Station
- Alternative Trail Route
- Spur Trail



Grass Lake Refuge

Master Plan



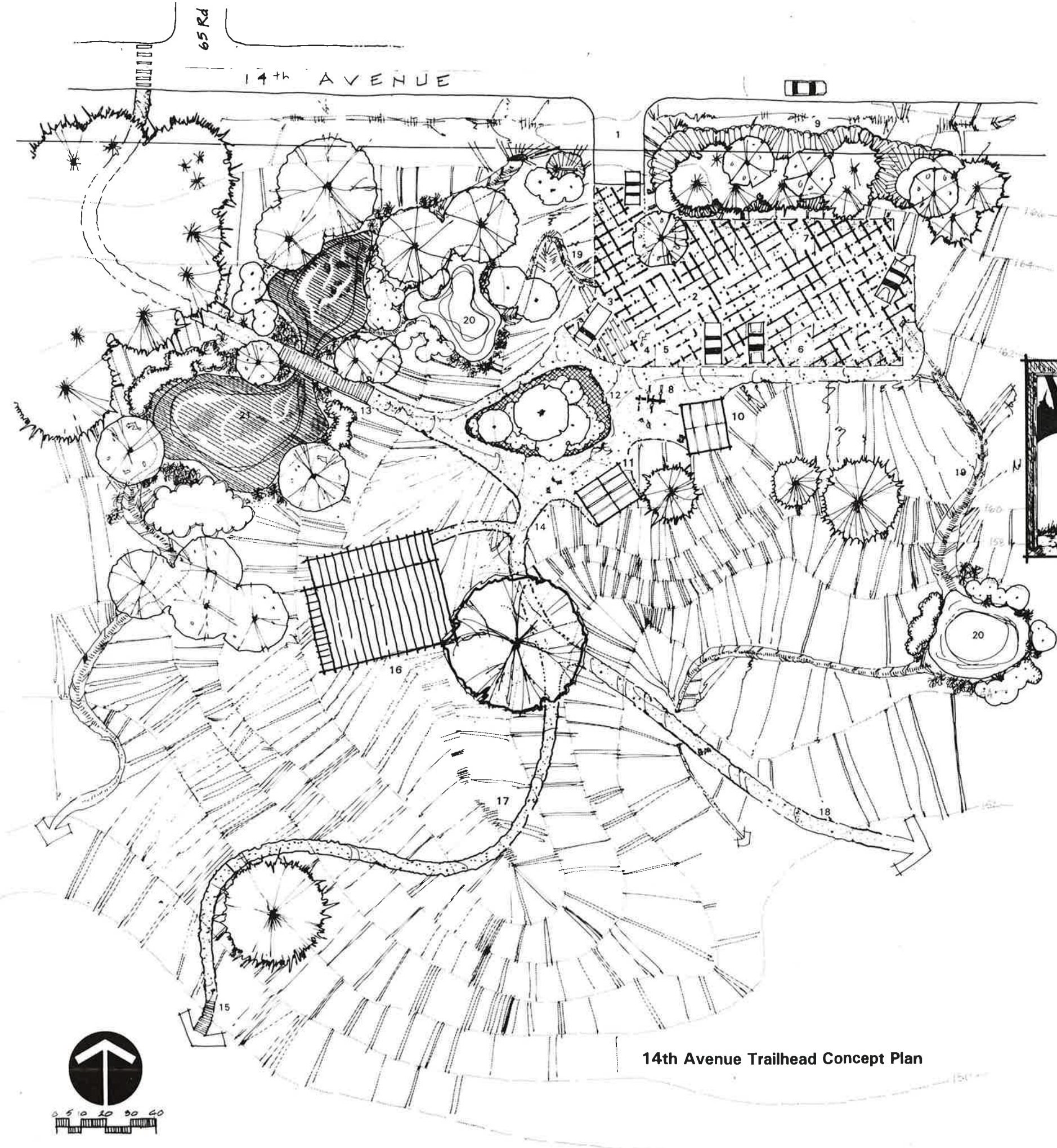
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City of Olympia
Parks, Recreation
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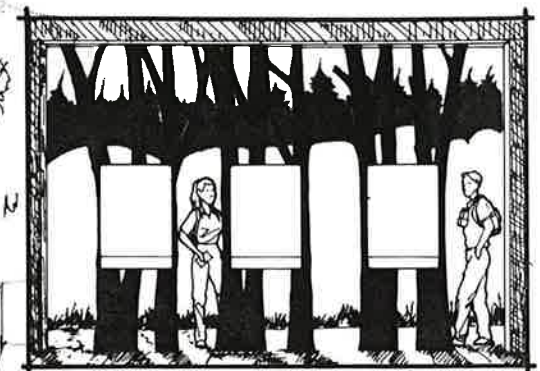


14th Avenue Trailhead Concept Plan

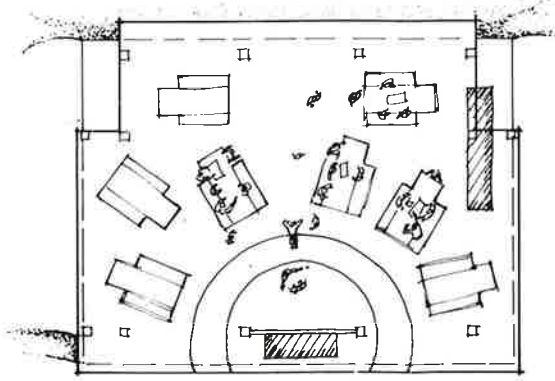


Legend

- 1 20' paved entrance
- 2 24 space parking with turf block paving
- 3 van parking-handicapped
- 4 handicapped space
- 5 van parking-educational
- 6 11 standard stalls
- 7 11 compact stalls
- 8 bike rack
- 9 buffer enhancement
- 10 restroom
- 11 orientation kiosk
- 12 native vegetation display garden
- 13 6' wide foot bridge
- 14 6' trail
- 15 6' boardwalk
- 16 Environmental Learning Shelter
- 17 Lake Louise Trail
- 18 Marsh Trail
- 19 stormwater treatment swale
- 20 stormwater retention basin
- 21 recontoured, native vegetation enhanced drainage swale



Orientation Kiosk Plan
1/8"=10'-0"



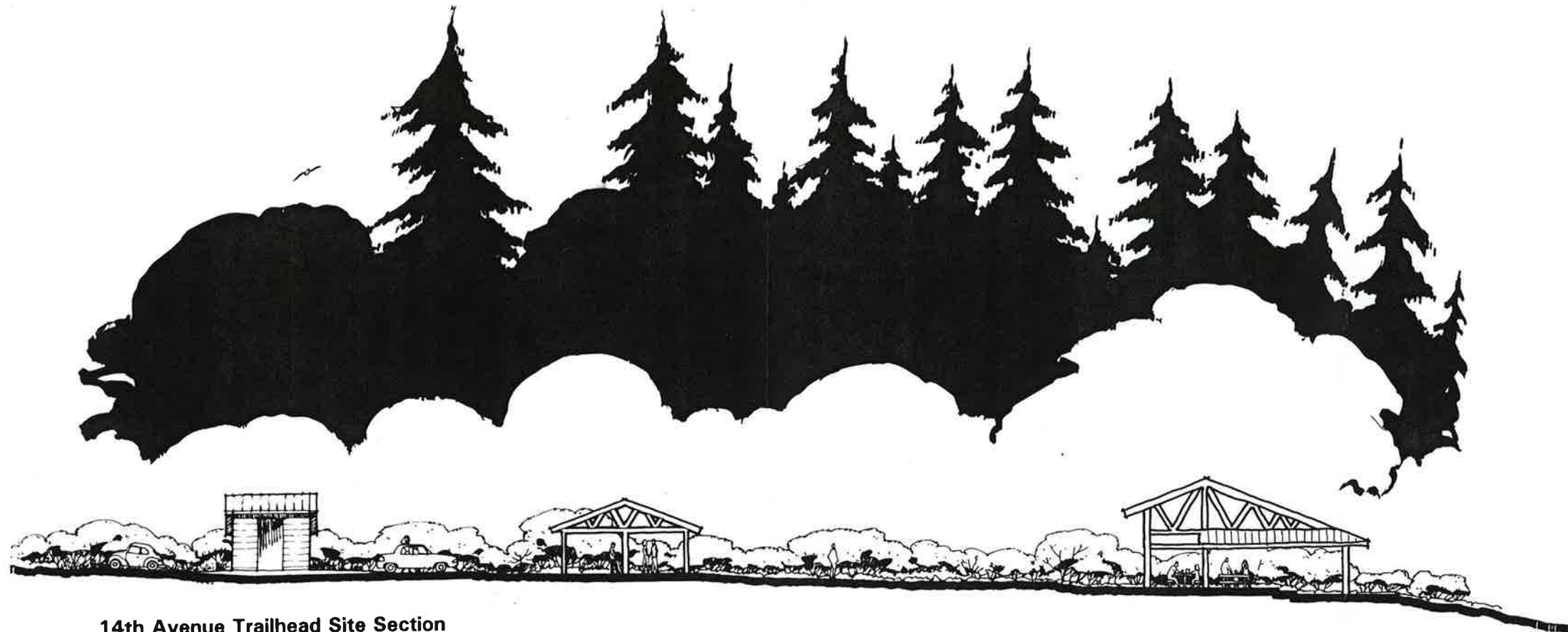
Environmental Learning Shelter Plan
1/8"=10'-0"

**Grass Lake
Refuge
14th Avenue
Trailhead**

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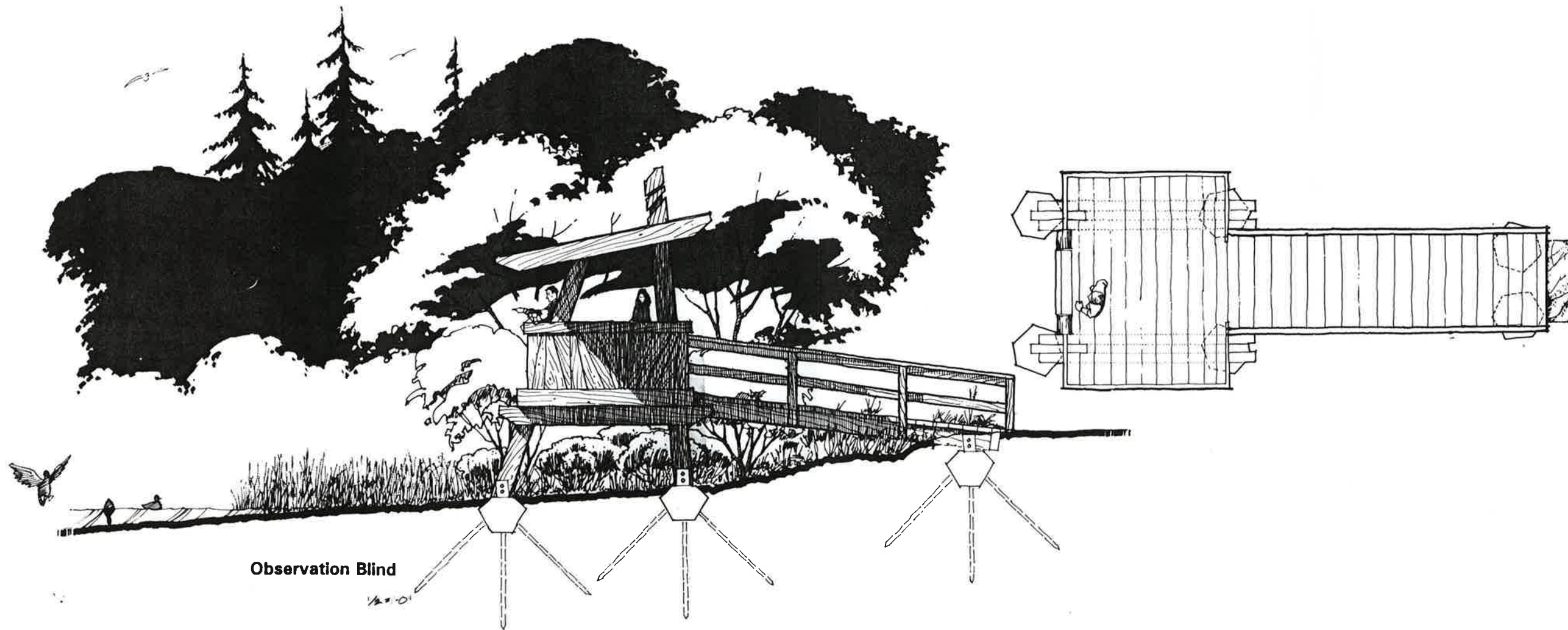


City of Olympia
Parks, Recreation
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14th Avenue Trailhead Site Section

1/2"=1'-0"



Observation Blind

1/2"=1'-0"

Grass Lake
Refuge
Sections

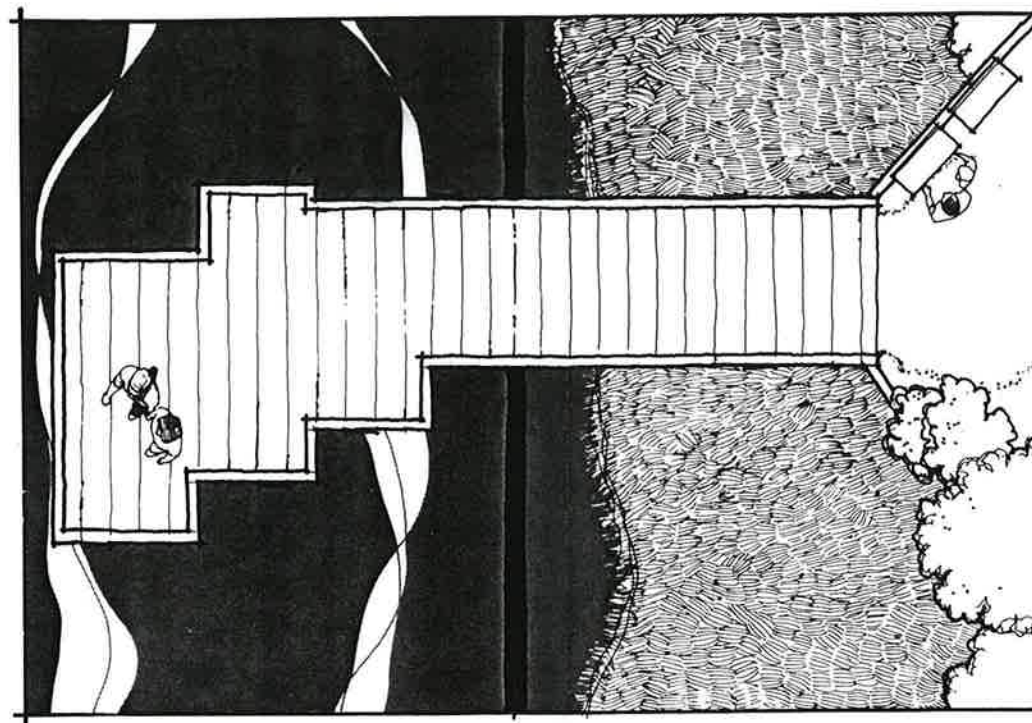
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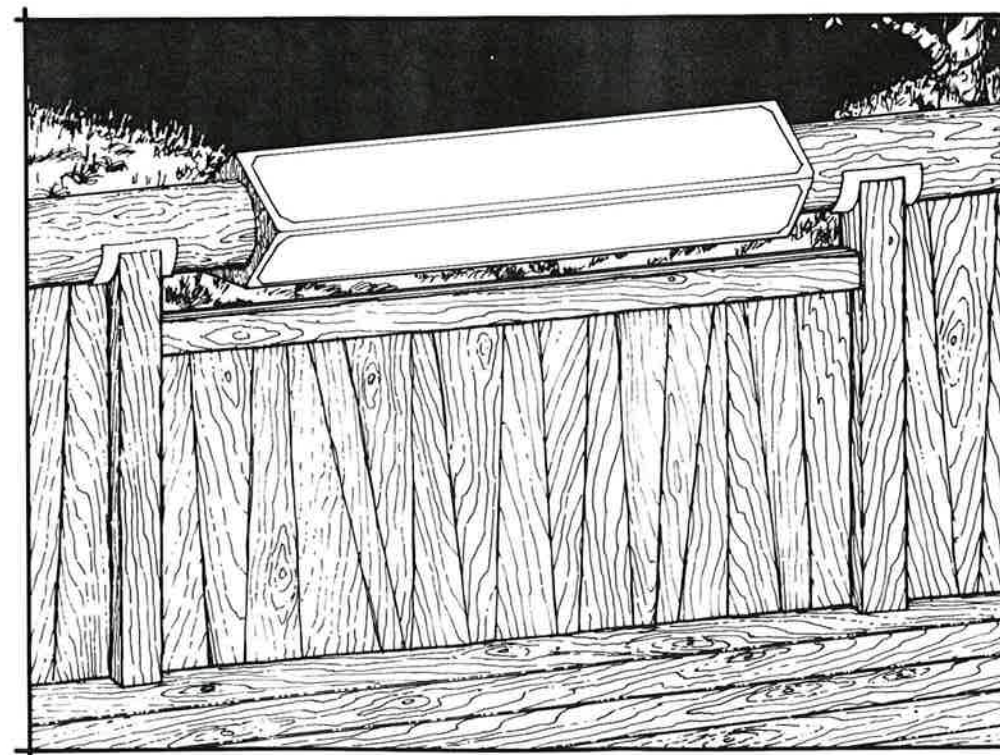
Boardwalk



Environmental Learning Pier Plan



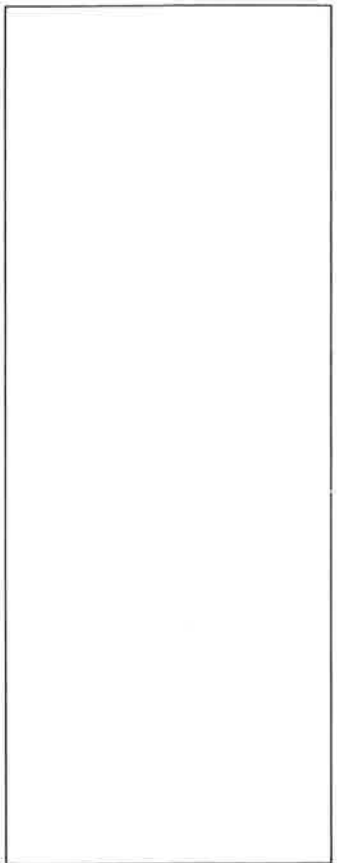
Trail Signage



Interpretive Rail



Interpretive Pole



Grass Lake
Refuge
Sketches

IV. Environmental Education and Interpretation Plan

A. Process Summary

One of the primary purposes of the refuge is to provide environmental education and interpretation. A major component of the master planning process was to address the environmental education and interpretation needs and opportunities. To accomplish this, an environmental education and interpretation focus group was formed. The group was composed of K-12 teachers, faculty and students from The Evergreen State College and environmental educators from other agencies and programs. A series of meetings were held. Input and recommendations were also received by written reports and other submissions.

The Grass Lake Group agreed the primary focus for environmental education and interpretation at the Grass Lake refuge should be wetlands.

The specific interpretive themes were not developed. Additional environmental education and interpretive planning is needed. Three references that should be used are:

U.S. Department of the Interior, *Interpretation for Disabled Visitors in the National Park System*

Hunter, Carol, *Everyone's Nature: Designing Interpretation to Include All*, 1994, Falcon Press

Ham, Sam H., *Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets*, 1992, North American Press

B. Environmental Education and Interpretation Objectives

- Provide environmental education and interpretation opportunities including programs, exhibits, materials and facilities that serve the Olympia community including adults, people with disabilities, families, teachers and pre-school and school age children.
- Emphasize the special and unique qualities, character, species and natural communities that compose the Grass Lake wetlands complex.
- Utilize environmental education and interpretation to improve individual and community stewardship for the refuge.

- Focus environmental education and interpretation facilities, exhibits, materials and programs on increasing public enjoyment and appreciation for nature and for wetlands.
- Site and design environmental education and interpretation facilities to facilitate wildlife observation and to limit environmental impacts including human disturbance to the wetlands and wildlife.
- Help people learn how to be better wildlife observers.
- Increase understanding of urban wetlands, their values, why they are at risk and how they can be protected.
- Compare Grass Lake Refuge with Yauger Park so that different management, functions and values are understood.
- Provide environmental education and interpretation in levels for different ages, interests and capabilities. For examples, introduce basic concepts on signs and exhibits.
- Provide more specialized information and ideas in brochures and other materials and during tours and programs.
- Surprise visitors and maintain their interest by using innovative exhibits, materials, programs and facilities.
- Manage the refuge for reliability so that educators and visitors can expect well-maintained trails and quality programs.
- Establish a monitoring and evaluation program to determine effectiveness and success of environmental education and interpretation so that needed improvements can be made.
- Interpret research and monitoring activities in the refuge.
- Encourage that research and monitoring findings be incorporated into environmental education and interpretation materials, exhibits and programs.
- Develop partnerships to accomplish environmental and interpretation recommendations.

- Establish a program for volunteer naturalists to lead formal and informal on-site interpretation. Involve students and neighbors in planning and offering programs.
- Continue to refine environmental education and interpretation needs, plans and proposals through implementation phases.
- Maintain outreach with the focus group to help implement recommendations.

C. Regional and Community Opportunities and Needs Analysis

Rather than solely focusing on Grass Lake, the Environmental Education and Interpretation Focus Group discussed what the refuge should provide from a regional and community wide perspective. This meets the goal not to duplicate needs being met elsewhere.

“The Wetlands Inventory and Habitat Assessment for Grass Lake Park” helped to define the special character, quality and assets of the refuge so that it could be compared with other publicly owned wetlands. Many of the regional environmental education and interpretation facilities focus on saltwater. Watershed Park focuses on Moxlie Creek. The two most similar areas are the McLane Nature Trail in the Capitol State Forest and the Lake Lois Habitat Preserve in Lacey. Both of these are highly popular areas. Use of the McLane Nature Trail, which is only about a 10 minute drive from Grass Lake, is very high. The interpretive signs cover a variety of topics including the history of the forest and site. Lake Lois was developed for picnicking and other recreation in addition to the interpretive trail. Due to the size, character and location, Lake Lois does not duplicate Grass Lake.

Numerous stormwater detention facilities in the community are used for environmental education and interpretation. The Hanson Elementary School and Marshall Middle School share a common detention basin on the 65 Road just a block from Grass Lake. Students have been involved in its management and have built a trail and planted native plants. It is used by several classes. Since the water detained later enters Grass Lake there is an obvious tie in environmental learning experiences. However, constructed detention basins and wetlands do not duplicate the rich wetland diversity of Grass Lake. Both have important messages but they are not the same.

D. Existing Environmental Education and Interpretation Programs At Grass Lake

The group was asked to identify existing environmental education and interpretation programs at Grass Lake. Classes from Marshal Middle School,

Capital High School and The Evergreen State College regularly use the refuge. The middle school and high school classes have focused primarily on plants and water quality. A wider range of studies have been undertaken by The Evergreen State College - hydrogeology and bird observations being two prime activities. Stream Team leaders have facilitated public school programs.

Although a few K-12 teachers are now using Grass Lake, the refuge offers far greater potential. Among the reasons teachers expressed for not currently using Grass Lake are fear of getting lost, fear of homeless people, no knowledge of area or what it has to offer, not knowing how to integrate it into the curriculum and not having teaching materials specific to the refuge.

Olympia's and Thurston County's Stream Team programs currently use the refuge but also not to its full potential.

E. Existing Environmental Education and Interpretation Materials

The group discussed existing environmental education materials that are used or could be used at Grass Lake. They include materials developed by the Stream Teams, Washington Department of Fish and Wildlife and the Washington Department of Ecology.

F. Site Specific Needs and Opportunities

Grass Lake is currently underutilized by the nearby schools for education activities. To facilitate environmental education, trails need to be improved. The refuge has a maze of trails and paths that can be very confusing and frustrating. Many dead-end. Many are very wet and muddy and sometimes flooded during the school year. Having the refuge more developed so that it feels more like a public facility or park is appealing to educators who are scared by the perceived safety risks of encounters with homeless people in remote locations and getting lost.

Grass Lake has had limited marketing to teachers. It is listed in community guides but no programs or materials specific to Grass Lake have been developed. Teachers need to be made aware of the refuge's assets and opportunities and how these can be integrated into their curriculums. Currently, the department does not have staff working on environmental education and interpretation programs and materials. Olympia's Water Resources Program provides environmental education and interpretation programs and materials focused on wetlands and stormwater management. The Olympia Parks, Recreation and Cultural Services Department and the Water Resources Program have combined efforts on such projects as the East Bay Park and Budd Inlet interpretation. For the department to serve environmental education and interpretation needs at Grass Lake, additional staff

time would be required. As proposed in the management plan section of the master plan, a refuge steward position would provide staff not currently available to implement these goals.

Teachers requested that a trail into the refuge be provided at the 65 Road and at Conger. They recommended fixed teaching stations so that "There is less trampling with the sampling." Because of class size, (approximately 45 including students, teacher and volunteers), a staging area is needed for the large group. From here they can divide into smaller groups or teams so they disturb the refuge less. This recommendation was combined with the need for shelter from the rain and a place to hold environmental camps, workshops and programs and evolved into the environmental learning shelter recommended in the master plan. Members of the group made recommendations for the amenities needed in the shelter as outlined in the design program.

The group also recommended the observation blinds. The forested shorelines and wetlands make bird and wildlife observations very difficult and also lead to shoreline trampling. Slightly raised observation blinds will provide better viewing and reduce disturbance.

Evergreen faculty requested permission to install a weather station, hydrologic monitoring stations and vegetation transects through the wetlands. They will contribute to the water monitoring program discussed in the management plan. They would also like to continue their bird monitoring project.

Some of the boldest and most innovative ideas were presented by Capital High School students who envisioned Grass Lake being used for art and writing classes as well as the more traditionally thought of environmental science activities. They also recommended evening programs in the refuge when there is not much being offered for teens to do. This idea was supported by the recommendation to utilize the environmental learning stations for nocturnal mammal observations.

Stream Team leadership expressed the desire for a facility to hold Stream Team events, workshops and day camps. Currently, they can do short-term events such as one day workshops or half day educational tours. An organized Stream Team could serve the restoration and monitoring programs recommended in the master plan.

Some members feel the people served the least currently by Grass Lake are adult visitors and the non-student public. In addition to a few Stream Team programs, the only known exceptions are the bird and butterfly programs offered by the local Black Lake Audubon Society.

G. The Department's Role

The Department's role should be to provide facilities that facilitate environmental activities so that classes and programs do not fear getting lost or injured. The facilities should make using the refuge more convenient by having shelter from the rain and restrooms. The department should install environmental education and interpretation exhibits and offer environmental education and interpretive programs to serve the general public. The department should develop partnerships and solicit grants to help develop teaching and interpretive materials. Recommendations were made for a refuge steward who could organize and supervise volunteer naturalists to lead tours and programs and volunteer stewards to help with restoration, maintenance and monitoring. The department needs to explore ways to fund this position.

To help maintain the natural character of the refuge, interpretive signs or exhibits should be located at the trailheads and the trail intersections at the environmental learning stations rather than scattered throughout the refuge. The master plan map indicates recommended interpretive topics for these locations. Additional direction is provided in the following habitat-specific management recommendations section.

V. Management Plan - (See Map 13 on Page V - 69)

A. Refuge-Wide Management Objectives

- Encourage visitor use that is consistent with providing and protecting wildlife observation opportunities.
- Orient visitors at trailhead signs to city regulations prohibiting motorized vehicles, horses and camping and park specific regulations and guidelines prohibiting swimming, fishing, hunting, boating and bicycling.
- Restrict dogs to Grass Lake Nature Trail and require them to be controlled on a leash and cleaned up after.
- Plan and design landscape restoration and enhancement projects to improve highly disturbed habitats.
- Salvage native plants during construction of new trails or other facilities. Transplant these to restoration sites within the refuge.
- Restrict new plantings to transplants from the refuge or from Thurston County's Native Plant Salvage Project or western Washington nursery-grown, native stock.
- Manage the refuge to maintain biodiversity and limit negative human impacts including wildlife disturbance, vegetation trampling and increased stormwater flows.
- Utilize volunteers to help develop and manage the refuge. Special efforts should be made to involve students from nearby schools and adjacent neighbors.
- Apply city ordinances to adjacent, future private development to help protect the refuge from noise, night lighting, stormwater and negative visual impacts.



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Legend

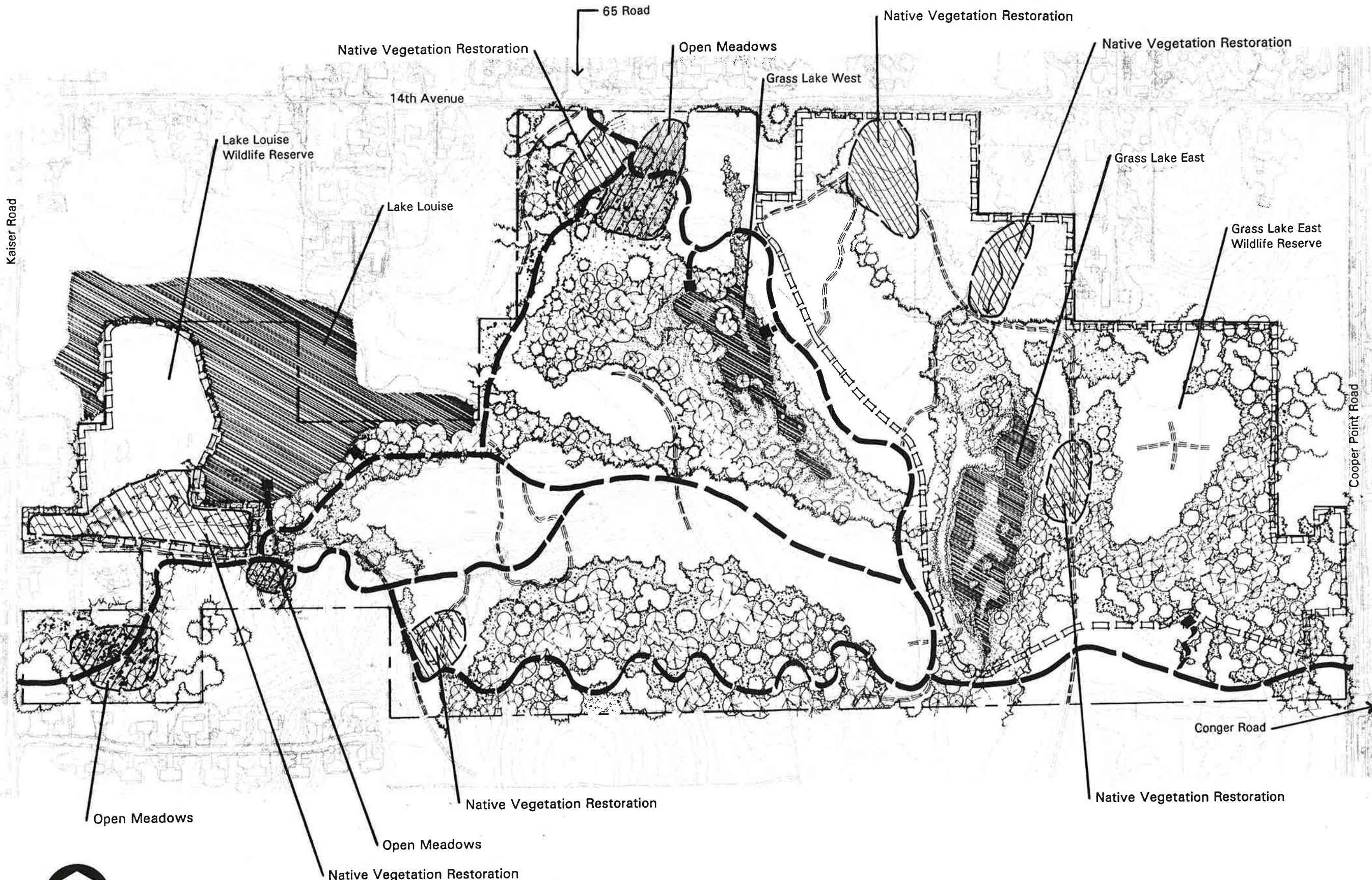
- Proposed Trail System - approximately 3 miles
- Existing Trail to be closed and revegetated - approximately 2 miles
- Wildlife Reserve
- Native Vegetation Restoration
- Open Meadows
- Stormwater/drainage channel enhancement

Grass Lake Refuge Management Plan

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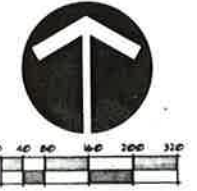
Landscape Architect, P.S.



Kaiser Road

Cooper Point Road

Conger Road



B. Refuge Steward

The Grass Lake Refuge is a unique addition to Olympia's park system. Because of the mission of providing environmental education and interpretation, protecting a large wetlands complex and restoring disturbed landscapes, the management will require additional expertise and new responsibilities and programs.

The master plan's environmental education and interpretation plan calls for the department or others to offer environmental education and interpretation leadership, programs and materials. This will help to maximize enjoyment of the refuge while increasing refuge protection. Currently, the department does not employ environmental educators or interpreters or offer such programs or materials. The city does offer through the Stream Team program wetland education activities and materials.

Successful implementation of the master plan will require many volunteer projects. Olympia is a very special community because of the number of volunteers and the strong interest in helping in parks and on trails. Because of limited available staff time, some volunteer projects have not had adequate supervision. Offers of help by volunteers are sometimes turned down because park staff does not have time to help organize and supervise the projects.

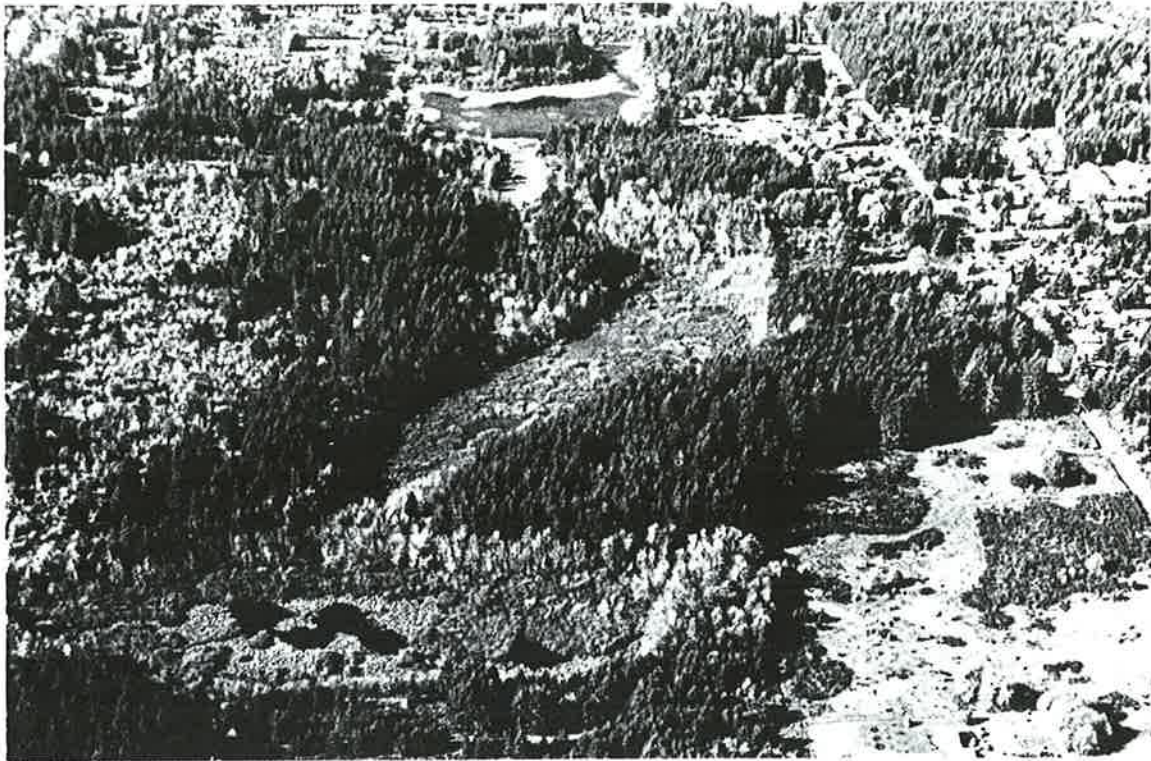
The city has an excellent park services division that will serve the operation and maintenance needs of the refuge. Implementing the Grass Lake Refuge Master Plan will be a coordinated effort between the park planning and park services divisions within the Department.

To successfully implement the master plan, the refuge should have a full-time steward. The refuge steward would help to solicit, organize and supervise volunteers. This would help to assure that volunteers can be successfully used for trail construction, trail maintenance, landscape restoration, monitoring and environmental education and interpretation. The refuge steward would need expertise in trail construction, landscape restoration, environmental education and interpretation and working with and supervising volunteers. Grass Lake now has uses that violate city ordinances and negatively impact refuge values and safety. These uses include motorcycle riding, hunting, digging and removing plants and camping. By having regular park personnel presence in the refuge, these uses can be more easily eliminated.

After facility construction and landscape restoration projects are completed, the steward's responsibilities may change and become primarily environmental education and interpretation and refuge supervision. The refuge may no longer require a full-time steward. The position's responsibilities may be spread to all of

the department's open space parks. Since additional open spaces are being acquired, the need for an open space steward and environmental educator and interpreter is becoming greater.

Photo: The Grass Lake Refuge wetland complex as seen from east to west in summer when water levels are low. Grass Lake East is in the lower left. Grass Lake West is in the center. Lake Louise is in the upper middle. 14th Avenue is in the upper right. The area known as the old yogurt farm is in the lower right.



C. Wetlands Management Objectives

Each of the wetlands and management areas is characterized in detail in the Coot Company's Report, "Wetland Inventory and Habitat Assessment for Grass Lake Park."

Wetland Management Recommendations

The WDOE wetland management guidelines recommend maximum habitat protection for forested wetlands, Natural Heritage Program wetlands, and/or wetlands that provide habitat for rare, threatened, or endangered species. The Grass Lake wetland system provides both forested wetlands and wetlands that are potentially appropriate for Natural Heritage designation. Additionally, the wetlands offer valuable habitat that currently supports sensitive bird species. Managing the wetlands for long-term preservation is important.

The need to protect the wetland and habitat values of Grass Lake are contained in numerous policy documents adopted by the City of Olympia. The comprehensive plan and the drainage manual are clear about protecting habitat, especially city owned park land. There are both short term and long term strategies to protect Grass Lake.

Long Term:

Given the Department of Ecology's management criteria and the results of various monitoring and modeling efforts, current and potential stormwater discharges to the wetland seem to be within the realm of reason. Given our cursory information, stormwater flows roughly approximate several recommended guidelines and probably exceed several other guidelines. With these results in mind, the following tasks may be appropriate as building blocks for effective long-term management of the wetland system:

- Begin a water level monitoring program in wetlands #6, #3a, #3b, and Lake Louise. The program would provide important water level fluctuation data relevant to our goal of protecting the wetland's plant and animal communities. Additionally, the data would clarify stormwater flow patterns throughout the wetland system and thereby identify potential water level management options.

Specific questions to be addressed by the monitoring program could include the following: How do stormwater flows from the sewer access road and 14th Avenue move through wetlands #3a and #3b to wetland #2 and Lake Louise? Given the appreciable elevation decrease between wetlands #3a and #3b and the lake, what holds the water in the wetlands? Are wetlands #3a and #3b ever backwatered by impounded Lake Louise water? Would releasing more water from Lake Louise during base flow conditions reduce water level fluctuation in the wetlands? Could

the outlet structure for the lake be redesigned for increased baseflow capacity without impacting downstream properties and Green Cove Creek? Are spring fluctuations dramatic enough to jeopardize the survival of animal and plant juveniles?

- Monitor vegetation species and habitat in wetlands #3a, #3b, and #6. The monitoring would help identify potential long-term trends and possible problems with plant communities. Specific questions to be addressed by the monitoring could include: Are the plant communities stable? Are the forested wetlands sustainable? Are invasive species present and thriving? How can we accomplish the monitoring?
- Evaluate the potential for retrofitting existing stormwater ponds or constructing new facilities in the contributing area for increased storage and/or treatment.
- Encourage continued partnerships with Stream Teams to help educate people about pollutants and what they can do to improve and protect water quality.

Short Term:

- Utilize Olympia's Erosion Control and Drainage Design Manual and Critical Areas Ordinance to regulate new development adjacent to the wetlands and/or discharging stormwater to the wetland.
- Require projects which direct flows to Grass Lake to strictly delineate and analyze the downstream effects on Grass Lake. This may include field surveying, wetland and wetland buffer delineation, hydrological evaluation and modeling.

D. Habitat-Specific Recommendations (Refer to Maps 7 and 10 on Page II - 17 and II - 29)

Wetland No. 1 Lake Louise, Category II

Management Recommendations

No attempt will be made to restore previous wetland conditions or to excavate to deepen or maintain the lake.

Protect important shoreline bird habitat by closing and revegetating shoreline trails.

Provide shoreline access via one pier and one observation blind as shown on site plan map. The environmental learning pier on Lake Louise is sited on a gentle slope that has been used to launch canoes. This shallow area of the lake dries up

in late summer. The pier and developed trails should help prevent people from trampling the gently sloping shoreline and dry lake.

Acquire shoreline buffers or easements on north shore to protect habitat and aesthetic values.

Prohibit swimming, boating, fishing and wading to protect habitat.

Sign and work with police to enforce ordinance prohibiting motorcycles in parks.

Conduct restoration and monitoring program to remove canary reed grass and other non-native plants.

Develop and perform a surface water monitoring program to measure:

Water depths and flows

Water quality

Fish survey (species and numbers)

Environmental Education and Interpretation

Lake Louise environmental learning stations — the importance of the shoreline willows and shrubs for neotropical birds.

Wetland No. 2 Connector Swale, Category II

Provide boardwalk crossing, close and revegetate other paths to prevent widespread trampling.

Wetland No. 3a - Grass Lake West, Category II

Design Recommendations

The Lake Louise and Marsh trails will have three major boardwalk sections. The first will be through the northwest corner of the wetland. This boardwalk section may not be necessary if additional property is acquired on this corner of the refuge so this trail section can be routed through upland forest. A short boardwalk section would still be needed to cross the swale as shown on the site plan. A second section of boardwalk or pedestrian bridge is needed to cross the upper edge of Grass Lake West. The third section of boardwalk trail is needed to cross the connection between Grass Lake West and Grass Lake East.

Construct two environmental learning stations, a pier and an observation blind. The pier will provide an access through a narrow strip of forested wetland and

terminates at the edge of the forest wetland. It will be a short distance from the main park entrance and will focus visitor use to one location to avoid random trampling through the forested wetland to observe the open water, amphibians or to take water samples. Because the northern edge of this wetland is near the proposed park entrance, visitation will be high. Shorelines on Grass Lake West are moderately steep with some abrupt changes for short distances in the location where the floating environmental learning pier is proposed. The facility will be sited and designed to ramp at 5 percent vertical slope or less to improve accessibility and safety.

Management Recommendations

Site as much of the trails outside of the wetland as possible to limit disturbance to wetland species. The Marsh, Lake Louise and Wetland Connector Trail will create a loop trail around Grass Lake West.

Practice design and construction standards for trails to protect the wetland functions and values. Locate new trails on or close to existing trails unless area is too wet or too steep. This will reduce additional disturbance to wildlife. Now during low water, visitors crisscross the wetland creating adverse impacts. The loop trail will concentrate most use on the trail so that widespread trampling does not occur.

Close temporarily the environmental learning stations if birds nest or mammals den adjacent to the stations and human disturbance might cause unsuccessful breeding. One method to temporarily close the stations during the critical period is to tie a rope across the beginning of the station and hang a temporary sign that explains the closure.

Do not remove snags unless they are hanging over trails and facilities. Snags provide important wildlife habitat. The removal of dangerous limbs will be done only to provide safe clearance for visitors as per trail construction and maintenance standards. Wood duck nest boxes may be installed on trees.

Environmental Education and Interpretation Recommendations

Provide trails and observation facilities that will focus use and avoid random trampling and disturbance. Construct an elevated wildlife blind to provide a more bird's eye view of the wetland so that the relationship between water levels and vegetation communities and other factors can be observed. Provide opportunities for small groups to quietly observe and monitor birds and mammals. Locate blind near the main park entrance so it will facilitate successful wildlife observation for many visitors. Environmental education and interpretation exhibits should be

constructed at the trail intersections to the pier and the observation blind. The recommended focus for the pier is amphibians and for the observation blind it is waterfowl.

Wetland 3B - Grass Lake East, Category II

Design Recommendations

The Grass Lake Nature Trail, Trail 0-2 in the Capital Area Trails System, will cross via a boardwalk at the southern tip of the wetland. This trail will cross the southern end of the park connecting Cooper Point Road and Kaiser Road and the proposed Grass Lake-Yauger Trail, 0-3, with the Pine Cove Trail, 0-1, and the Grass Lake-Mud Bay Trail, 0-27.

The proposed private developments on the south side of the refuge will have controlled access to the park via connecting trails to the Grass Lake Nature Trail. This is to limit human disturbance within the refuge. Site the Grass Lake Nature Trail to the south of the primary wetlands and most sensitive habitats. It will serve people passing through the refuge as part of a longer hike on the Capital Area Trail System or as a short cut to schools or elsewhere. Capital High School students will also access the refuge on this trail. It is not possible to cross the refuge from east to west without crossing the Grass Lake East wetland. By having the Grass Lake Nature Trail cross the southern tip of the wetland, most of the wetland will be undisturbed.

Utilize a boardwalk and/or pedestrian bridge to cross the narrow connecting wetlands channel between Grass Lake West and Grass Lake East so that water flows are not restricted.

Relocate the LOTT sewer line out of the refuge to restore natural water flow patterns and reduce the number of visitors accessing sensitive wetland via the service road. Have LOTT remove and revegetate the sewer access road so that water freely flows from Wetland 6 to Wetland 3B, Grass Lake East. Reforest sewer easement to close pedestrian access as part of wildlife reserve management.

Management Recommendations

Manage as part of the refuge's Grass Lake East Wildlife Reserve. Close and revegetate all existing trails and paths adjacent to and within the wetland.

Establish water level, amphibian and plant monitoring.

Environmental Education and Interpretation Recommendations

The only signage will be to explain monitoring programs or facilities and to ask people to stay on the trails and out of the wildlife reserve.

Wetland 4 - Northwest Seep/Swale System, Category III

Design Recommendations

Cross Wetland 4 with a pedestrian bridge that does not restrict flow across the swale. This is a component of the connecting trail from 65 Road intersection to park entrance facilities.

Management Recommendations

Request that the Olympia Water Resources Program in partnership with Jim Stroh and the Evergreen State College establish a water inflow monitoring station at 14th Avenue culvert.

As part of the project planning and design for park entrance facilities, request that the Water Resources Program fund design and construction of a swale system capable of handling increasing stormwater flows from culvert and that protects and restores the natural and visual resources between the culvert and Wetland 3A. Some off-site mitigations by the Water Resources Program may also be necessary or desirable.

Wetland 5 - Northeast Swale System, Category III

Management Recommendations

Request that the Water Resources Program in partnership with Jim Stroh and TESC, establish a water inflow monitoring station at the 14th Avenue culvert.

As part of the restoration and management of Habitat O Area, old Yogurt Farm, request that the Water Resource Program help fund design and restoration of the swale and wetlands to better handle urbanized stormwater flows, to restore a more natural appearing and functional swale, to eradicate non-native wetland plants and to plant native plants.

Wetland 6 - Mature Cottonwood Swamp, Category I

Design Recommendations

Provide access off the Grass Lake Nature Trail via boardwalk into the cottonwood swamp.

Management Recommendations

The boardwalk will prevent trampling during low water conditions and confine human disturbance to the boardwalk.

Determine if boardwalk needs to be closed during sensitive waterbird breeding (March-June). If so close by simple gate and informative sign.

Develop improvements to stormwater flows through or across sewer access road until sewer line and road are removed.

Request that the Water Resources Program establish water level and flow monitoring in the swamp that analyzes flows entering the swamp from Wetland 7, which includes urbanized stormwater flows from Cooper Point Road, and from Wetland 8, Cottonwood Swamp, which includes flows from a culvert outletting Conger Avenue and is to receive stormwater flows from proposed private developments south of the park.

Request that the Water Resources Program determine if existing and potential future stormwater inundation is adversely affecting health and vigor of mature and young trees.

Request the Water Resources Program implement actions to prevent adverse stormwater impacts to wetlands.

Remove English ivy before it becomes more pervasive.

Environmental Education and Interpretation Recommendations

The boardwalk will terminate at an environmental learning station that includes room for up to 8-10 people at one time, interpretation of the swamp and seating for quiet respite.

Wetland 7 - Ninebark Stream, Category III

Management Recommendations

Request that Water Resources Program monitor stormwater flow rates and water quality from Cooper Point Road and determine if flows are accelerating erosion and sedimentation.

Do not provide developed visitor access to stream. Manage as part of Grass Lake East Wildlife Reserve. Interim and short-term access related to stream monitoring, restoration and stabilization may be allowed.

Wetland 8 - Willow/Cottonwood Swamp, Category II

Design Recommendations

Cross the wetland with boardwalk as part of the Grass Lake Nature Trail connecting Cooper Point Road and Kaiser Road. This trail will provide access for Capital High School classes.

Management Recommendations

Request that the Water Resources Program establish a monitoring program to determine drainage flow patterns and changes that may occur from proposed developments on the south side of the refuge.

Request that the city require adjacent private developers to protect the refuge's functions and values.

Habitat A - South Side of Lake Louise - Approximately 5.8 acres

Management Recommendations

Through the master planning process, the southeast shoreline area and forested peninsula were identified as being very high value wildlife habitats. To protect these, the Kaiser Road entrance should be moved further south and provide limited parking. This change will result in most vehicular traffic to the refuge using the 14th Avenue entrance.

Manage area to restore native vegetation to this highly disturbed area.

Remove Himalayan blackberry and Scot's broom.

Plant native tree seedlings with adequate spacing to allow for large riding mower to mow twice annually to knock back blackberries and Scot's broom until trees are large enough to shade them out.

Recontour small, man-made mounds and ridges, if desirable, during restoration efforts.

Cut and remove locust trees.

Reset Kaiser Road fencing to close existing pedestrian entrance and remove parking when new Kaiser Road trailhead is completed.

Close lake to fishing to reduce shoreline trampling and protect lake habitats.

Locate manholes from abandoned sewer line, remove covers and vertical cleanouts, fill and compact with dirt to close access and create level surface, seed with native plants.

Have Puget Power remove power line and poles to abandoned well.

Remove well pump and close and seal well according to local, state and federal regulations.

Continue existing and develop new partnerships including utilizing volunteers for planting and monitoring.

Have Public Works reduce the size of the mowed area around the fenced city well.

Plant tree and shrub buffer to visually screen private home and city well.

Enhance and maintain two, small, open meadows for songbirds and butterflies just south of the proposed Lake Louise environmental learning pier along the Grass Lake Nature Trail. These areas as displayed on page 61 on the management plan map have been disturbed in the past and are not forested. Work with butterfly and songbird habitat experts to help select plants and design the meadows. The meadows will need full sun from 10 a.m. - 4 p.m. during spring and summer. Nettles, an important butterfly plant, should be grown around the edges of the meadows. Butterflies like to dabble in the mud along the south shore of Lake Louise. Their favorite flowers include native lupine, bleeding heart, salal, kinnickinnick, giant vetch, spirea and violets. The shrubs and trees should include Scouler's willow, Sitka willow, black cottonwood, red alder, cascara, madrona, garry oak and western and red-osier dogwoods. These are specific host plants for some of the butterflies in Thurston County.

Environmental Education and Interpretation Recommendations

The following features and information are proposed. These are rough ideas and recommendations that need to be refined prior to design and development of facilities and materials. Interpretive exhibits in the refuge should focus on the wetlands.

At the park entrance on 14th Avenue, tell the story of how and why Grass Lake Refuge is protected and how Lake Louise was created.

At Lake Louise pier, include exhibit on history of lake and its values.

At the Lake Louise observation blind, provide exhibits and brochure on neotropical birds -

- How to protect/not disturb
- How to observe
- How to identify
- Their migration
- Risks to and protection of their habitat

Interim - Temporary signs at sites

- Reforesting disturbed habitats
- Establishing meadows - why

Habitat B - Douglas Fir Forest Peninsula - Approx. 2.9 acres

Management Recommendations

Manage this high value habitat area as the Lake Louise Wildlife Reserve with no developed human access. The forest peninsula is now primarily accessed from a path from Kaiser Road across private property. Close the existing path at the refuge boundary by plantings, brush, piles and temporary sign. Do not develop trails on the peninsula. The forest peninsula provides shelter for deer and other species and adds to scenic beauty of lake as seen from proposed observation blind and pier. No plant species are unique to this habitat so visitors will be able to see all plants found in this habitat elsewhere in the refuge.

Cut and remove Rowan trees, hawthorns and holly.

Acquire the private property adjacent to the culvert, including the west arm of Lake Louise so that refuge values are protected.

Environmental Education and Interpretation Recommendations

The refuge map signs at each trailhead will identify the wildlife reserve areas and state that there is no public access to these areas. At the property boundary on Kaiser Road and at few key locations around the boundary of the wildlife reserve, small signs will note "Lake Louise Wildlife Reserve. No people beyond this sign." Graphics may be used to enhance the protection message.

Interim - Trail closure sign at park boundary

Habitat C - Kaiser Road Entrance - Approximately 4.2 acres

Design Recommendations

Develop pedestrian entrance with one service parking space for park, emergency and volunteer's vehicles, one van parking space designated for handicapped parking and three other parking spaces. This entrance will replace the existing Kaiser Road entrance.

Management Recommendations

Remove invasive non-native plants including Scot's broom and Himalayan blackberry.

As part of trail and trailhead design, develop a planting plan for area that will restore native vegetation, discourage non-native plants and improve aesthetic quality along the proposed trail.

Establish and maintain an open meadow for songbirds and butterflies along the Grass Lake Nature Trail near the new Kaiser Road entrance. Work with butterfly and songbird habitat experts to help select plants and design the meadow. The meadow will need full sun from 10 a.m. - 4 p.m. during spring and summer. Nettles, an important butterfly plant, should be grown around the edges of the meadow. Favorite flowers include native lupine, bleeding heart, salal, kinnickinnick, giant vetch, spirea and violets. The shrubs and trees should include Scouler's willow, black cottonwood, red alder, cascara, madrona, garry oak and western and red-osier dogwoods. These are specific host plants for some of the butterflies in Thurston County.

Plant and maintain forested buffer next to adjacent private properties and city well.

Utilize volunteers for planting projects. Possible partnerships include Native Plant Salvage, a local program sponsored by the Thurston Conservation District and Washington State University Cooperative Extension.

Maintain the two small areas adjacent to the proposed trail (necessary for mowing access) as identified on the management plan drawing as meadows for bird and butterfly habitat, wildlife grazing, wildflowers and visual variety. Plant native grasses, forbs and shrubs that benefit birds, butterflies and wildlife.

Reroute trail system to protect important bird habitat, especially the willows along shoreline.

Environmental Education and Interpretation Recommendations

Grass Lake Nature Trail Trailhead - 3 Signs at Trailhead

- Visitor information and orientation
- You are here map
- Park regulations

Interim - Meadow restoration signs

Habitat D - Alder Forest - Approximately 2.7 acres

Design Recommendations

Use existing gravel road corridor for this section of the Grass Lake Nature Trail. The alder canopy creates a popular, scenic trail section.

Management Recommendations

Limit human disturbance to nest sites identified in the Wetlands Inventory and Habitat Assessment.

Remove invasive vines.

Provide a contemplation site via a short dead end spur trail into small, sunny opening.

Environmental Education and Interpretation Recommendations

No signs on exhibits are proposed. Program topics might include:

- Alder Canopy
- Open deciduous forest - spring flora, fall color, fruit/seed producing

Habitat E - Mature Mixed Conifer Forest - Approximately 1.3 acres

Management Recommendations

Acquire private property to add this high value habitat to the refuge. The cedar and hemlock groves add diversity to the refuge and provide an important seed source for non-Douglas fir conifer regeneration. May be possible and desirable to transplant young seedlings from this area to disturbed upland areas of the refuge identified for native plant restoration. Transplant activities shall be designed and managed to protect integrity and future of this habitat.

Design Recommendations

If additional land is acquired the Grass Lake Nature Trail will cross this area because of its higher scenic quality. This area would provide a nice location for a contemplation site with seating to rest along the trail.

Environmental Education and Interpretation Recommendation

No signs or exhibits are proposed. Program subjects could include:

- Past land use - large stumps

- Tree Identification - numerous species

- Mature tree characteristics, forest structure - compare to younger forest within refuge

Habitat F - Scot's Broom/Douglas Fir Forest - Approximately 5.7 acres

Management Recommendations

Close primitive roads, trails and dirt bike circle by tilling heavily compacted soils and seeding with native plants. Scatter large branch debris to prevent use. Post with temporary signs that explain restoration efforts and use restrictions. Monitor efforts to assure that restoration is successful.

Remove water storage tank.

Cut and remove Scot's broom. Plant native conifers to shade out broom. Work with volunteers to help keep broom out and to help plant and maintain new plantings.

Environmental Education and Interpretation Recommendations

Temporary signs addressing native plant restoration efforts and emphasizing “no motorcycles or bicycles” regulations.

Habitat G - Shrub/Douglas Fir Forest - Approximately 27.4 acres

Management Recommendations

Past tree harvest has left much of this area open with shrubs or young trees. The seasonally droughty nature of the soil might prevent successful conifer planting without summer irrigation. Therefore, the best management is probably to allow the area to recover on its own. The plant monitoring program should provide feedback on whether this strategy is successful or if a different vegetation management approach should be implemented.

Close and restore old primitive road as per description under Habitat F.

Allow dogs on leashes, but no bicycles on these trails.

Design Recommendations

Build the Grass Lake Nature Trail across the southern end of this habitat area. A spur access trail from the proposed Grass Lake Village will connect with the Grass Lake Nature Trail. The central section of the Grass Lake Nature Trail will cross several low ridges with slopes greater than 15 percent. As displayed in the Conceptual Site Plan, the trail will curve up and down these slopes to maintain a trail that does not exceed 8 percent vertical slope and is 5 percent or less most of the length.

Environmental Education and Environmental Recommendations

Refuge signs with map and regulations at Grass Lake Village Trailhead.

Habitat H - Even Aged Mature Douglas Fir Forest (West) - Approximately 5.5 acres

Environmental Education and Interpretation Recommendations

No on site signs planned.

Habitat I - Mature Douglas Fir Forest

Design Recommendations

Construct the Wetland Connector Trail to provide an interior refuge loop and to link environmental learning stations. Build the trail on or near the existing path. Adjust the trail location to provide accessible slopes, improve drainage and protect plants or animals.

Management Recommendations

Establish bird monitoring program that surveys current bird use and monitors bird use after the construction of the Wetland Connector Trail.

Environmental Education and Interpretation Recommendations

The interpretation at the refuge will focus on the wetlands, but the Wetland Connector Trail will also provide access to study upland forests of different age, character and structure.

Trailhead signs will address regulations prohibiting plant removal. They will also encourage people to stay on trails to help protect the orchids in this habitat.

Habitat J - East Arm of Lake Louise/South Shore - Approximately 1.9 acres

Management Recommendations

This habitat has some soil settling and slumpage along the Lake Louise shore. This area was disturbed during the construction of Lake Louise. Dandelions, red clover, bentgrass and other non-native plants occur. Because of the interspersed woody vegetation and the proximity to the lake, the exotic plants would be very difficult to remove. They also occur elsewhere in the refuge. The best management is probably to monitor the shore for new, significant or accelerating erosion. Prevent increased stormwater flows through this arm of the lake to eliminate further disturbance to this area. Incorporate a flow monitoring station into the boardwalk or bridge crossing connecting Habitats J and K on the Lake Louise Trail.

Environmental Education and Interpretation Recommendations

Flow monitoring station adjacent to the boardwalk crossing — signs that explain to the public what it is and what purposes it serves.

Habitat K - Mixed Mature Forest - Approximately 2.3 acres

Design Recommendations

Site the Lake Louise Trail to provide visual access to this habitat's key features including mature oaks and fawn lilies.

Management Recommendations

Acquire additional land within this habitat type to help protect the northeast shore of Lake Louise, allow construction of most of the Lake Louise Trail outside of the wetlands and protect the forest for filtering stormwater and providing wildlife habitat.

Because of the proximity of the northwest shoreline to the proposed refuge main entrance, monitor the shoreline for early signs of trampling. If trampling is seen, additional signs may be needed on the Lake Louise Trail to remind users to stay on the trail.

Obliterate trails that are not incorporated into the Lake Louise Trail.

Environmental Education and Environmental Recommendations

No on site interpretation signs are proposed. Small reminder signs may be needed on the Lake Louise Trail to encourage people to stay on the trail.

Lake Louise Trail will cross through this habitat providing environmental education access to the oaks, fawn lilies and other features.

Habitat L - Even Aged Mature Douglas Fir Forest (Northwest) - Approximately 1.7 acres

Provide no trail access into this habitat. Protect buffer and cover for waterfowl and other wildlife and birds. *Streptopus amplexifolius*, twisted stalk, is the only plant occurring in Habitat L that has not been identified elsewhere in the park. "The Wetlands Inventory and Habitat Assessment for Grass Lake Park" report recommended girdling some trees to create snags for wildlife. The December 1996 storm achieved that recommendation.

Environmental Education and Interpretation Recommendations

No planned access provided into this habitat; therefore, there will be no interpretation or education within this habitat.

Habitat M - Main Entrance - Approximately 5.6 acres

Management Recommendations

Identify ornamental and native specimen plants to be saved when entrance facilities are developed. Include specifications for their protection in construction contracts. Provide permission to people who would like to take cuttings of old ornamental or grape plantings. This should be done under the supervision of the park horticulturist.

Design Recommendations

This is an old homesite. It is known by some people as "Fergie Villa" after the past owners, the Fergusons. The site is predominantly grassland with some ornamental trees and specimen old Douglas firs. The northern part is fairly level and suitable for facility development. The location also conveniently serves nearby schools. Protect the specimen Douglas firs. Plant a landscape buffer along 14th Avenue to partially screen the refuge parking lot, the city pump station and residences across the street. For public safety and to reduce vandalism landscaping should maintain some visibility into parking area and shelter.

The environmental learning shelter will provide an area to get out of the rain so that observations can be written and other teaching, learning and research activities can take place.

The main entrance area is less than a 5 percent slope. This will reduce ground and vegetation disturbance due to having less earthwork or grading required. The trails will be easy to construct to desired standards of less than 5 percent slope for easily accessible trails. Below the main entrance the Lake Louise and Marsh trails will have to meander down the hill to maintain less than 8 percent vertical slopes because the hillside exceeds 15 percent slopes in several locations.

Maintain the view from the environmental learning shelter and trailheads into the refuge.

Design and maintain facilities to meet the city's goals for sustainability and for reducing impervious surfaces. Design facilities and select materials to be low maintenance and vandal resistant. The architectural theme shall be appropriate for a wildlife refuge and help to communicate the values and purposes of the refuge site and design facilities to blend in with the landscape.

As described under Wetland 4, improvements to the swale, stormwater flows and wetland vegetation are proposed. These improvements will add a more attractive

water and environmental education feature. The trail connection from 65 Road will require a boardwalk on bridge crossing.

Management Recommendations

Remove Scot's broom and Himalayan blackberry. Keep open by annual mowing approximately 1.2 acres of the grasslands for butterfly and bird habitat. These mowed openings shall be adjacent to the trails to provide mower access.

Meander the trails down the hillside to maintain moderate slopes. Use landscaping to physically and visually encourage visitors to stay on the trails.

Remove abandoned materials, debris, the old arbor and swing from the property.

Environmental Education and Interpretation Recommendations

As described in the design program, a roofed, six panel display is proposed for the trailhead. The panels will be for:

- Refuge "Welcome" and "You are here" map - will include box for take along maps
- Use Regulations, Guidelines & Recommendations
- History & Purpose of Refuge - (Recognize IAC)
- Green Cove Basin including refuge as headwaters and inlet
- Refuge's Wetland Complex - the diversity
- Wetland Features, Functions and Values

The environmental learning shelter will serve as a staging area for large groups. Small group use will be encouraged on the trails and at the environmental learning stations. This should reduce disturbance to wildlife and habitats and protect wildlife observation opportunities.

Groups will reserve through the Olympia Parks, Recreation and Culture Services Department the environmental learning shelter to reduce use conflicts and to monitor group use in the refuge. As described in the design program, the shelter will be designed to facilitate environmental education uses. The amenities were recommended by the environmental education and interpretation focus group.

The bi-annually mowed grasslands should maintain areas to view butterflies and birds. Encourage the Black Lake Audubon to continue sponsoring walks to see these species.

The environmental learning shelter will provide opportunities for weekend and summer, environmental camps and workshops. Such longer sessions should probably not be scheduled on weekdays during the school year if the demand for the shelter is high by K-12 classes.

The trail layout was designed to split up large groups so that smaller groups proceed from the trailheads to the environmental learning stations. The loops should reduce overuse on any one trail.

Habitat N - Mixed Douglas Fir Forest (North) - Approximately 11.9 acres

Design Recommendations

Build the Marsh Trail predominantly on or adjacent to the existing trail along the northeast side of Grass Lake West. Provide access to two environmental learning stations which will also serve as bird monitoring sites, to amphibian monitoring sites and to a water monitoring site adjacent to the boardwalk or bridge crossing between Grass Lake West and Grass Lake East. Site the trail to avoid sensitive species. Locate trail to avoid winter and spring inundation and to maintain moderate slopes as per design standards.

The pier was sited to help prevent shoreline trampling due to the proximity to the main entrance. It provides easy visual access to the wetland for curious visitors who are not capable or do not desire to travel further through the refuge.

Management Recommendations

Obliterate by brushing and planting the old primitive roads and trails that lead to old homesite. Close the trails on the eastern side of the refuge which is to be managed as a wildlife reserve with no human access except for pre-approved monitoring and research. The trails/primitive roads probably resulted from timber harvest and have been used for hunting, camping and grazing access. None of these activities are allowed in the refuge.

Environmental Education and Interpretation Recommendations

- Two environmental learning stations will be built to provide access to Grass Lake West.
- Interpretive signs at the beginning of the pier — groundwater recharge on one sign and amphibians on the second.
- Interpretive signs on the spur trail to the observation blind — waterfowl nesting and observation techniques.

- Water monitoring station adjacent to the boardwalk/bridge crossing — a sign to explain what it is and its purpose.

Habitat O - Old Yogurt Farm

Management Recommendations

The old homesite was known locally as the Yogurt Farm. After the city acquired it, the structures were removed. This area was heavily disturbed by past management.

Restore native vegetation to help eliminate invasion of Scot's broom, Himalayan blackberry and other exotic plants. Improve wildlife habitat value by plantings and maintaining and enhancing vegetative buffer along 14th Avenue. May be desirable to maintain meadow and old apple trees for deer grazing and other wildlife and aesthetic values. When restoration is successful, manage the area as part of the Grass Lake East Wildlife Reserve. Restoration will likely not be completed until the LOTT sewer line and access road are removed. Involve students from the nearby schools and neighbors in the restoration projects. Maintain service access at the old farm entrance until habitat restoration projects are completed.

Stormwater channel enhancements are proposed in the northeast corner of the refuge. Refer to the wetland management recommendations for the northeast swale system on page 69.

Design Recommendations

This site was less desirable as the main park entrance because of the open views to many residences, the greater distance from the schools on the 65 Road and less level area for facilities.

Environmental Education and Interpretation Recommendations

Interim interpretative signs — the restoration efforts and wildlife reserve purposes.

Boundary signs - "Grass Lake East Wildlife Reserve. No people beyond this sign."

Habitat P - Even Aged Young Douglas Fir - Approximately 3.8 acres

Management Recommendations

Manage as part of the wildlife reserve with no trail access provided. This cannot be accomplished until the LOTT sewer line is removed and the easement restored to original slopes and native vegetation.

Environmental Education and Interpretation Recommendations

No interpretation within this habitat is proposed. It will be managed as part of the Grass Lake East Wildlife Reserve.

No environmental education opportunities will be lost due to closing this area. Similar habitats are accessible elsewhere in the refuge.

Boundary signs - "Grass Lake East Wildlife Reserve. No people beyond this sign."

Habitat Q - Scot's Broom Patch - Approximately 2.4 acres

Management Recommendations

Mow, cut or remove back annually the Scot's broom as long as the sewer access road is maintained. As a component of the removal of the LOTT sewer line and access road, replant area as native forest. After the LOTT actions are completed, manage this area as part of the Grass Lake East Wildlife Reserve.

Environmental Education and Interpretation Recommendations

No interpretation within this habitat is proposed. It will be managed as part of the Grass Lake East Wildlife Reserve.

Habitat R - Mixed Mature Conifer Forest (Northeast) - Approximately 3.9 acres

Management Recommendations

Manage this high quality wildlife habitat as part of the Grass Lake East Wildlife Reserve. Do not provide trail access.

Environmental Education and Interpretation Recommendations

No interpretation within this habitat is proposed. It will be managed as part of the Grass Lake East Wildlife Reserve.

Boundary signs - "Grass Lake East Wildlife Reserve. No people beyond this sign."

Habitat S - Even Aged Mature Douglas Fir Forest (East) -

Approximately 7.3 acres

Management Recommendations

Manage this high quality wildlife habitat as part of the Grass Lake East Wildlife Reserve. Do not provide trail access.

Environmental Education and Interpretation Recommendations

No interpretation within this habitat is proposed. It will be managed as part of the Grass Lake East Wildlife Reserve.

Boundary signs - "Grass Lake East Wildlife Reserve. No people beyond this sign."

Habitat T - Deciduous Forest - Approximately 2.8 acres

Management Recommendations

Manage this moderate value wildlife habitat as part of the Grass Lake East Wildlife Reserve. Do not provide trail access.

Environmental Education and Interpretation Recommendation

No interpretation within this habitat is proposed. It will be managed as part of the Grass Lake East Wildlife Reserve.

Boundary signs - "Grass Lake East Wildlife Reserve. No people beyond this sign."

Habitat U - Douglas Fir Forest - Approximately 1.6 acres

Management Recommendations

Manage most of the area as part of the Grass Lake East Wildlife Reserve to help buffer Cooper Point Road and the trail.

Design Recommendations

The adjacent refuge property is low and wet. For these reasons, only a pedestrian entrance will be built on Cooper Point Road. A safe crosswalk with pedestrian light is needed at the Conger intersection to facilitate student access.

The Cooper Point Road Trailhead/Pedestrian Entrance for the Grass Lake Nature Trail will require either a wooden or earthen ramp to reduce the slope from the elevated roadbed down into the refuge. If fill has to be used it should be eased into existing grade, seeded and planted.

Environmental Education and Interpretation Recommendations

3 Signs at Cooper Point Road / Grass Lake Nature Trail Trailhead

- A welcome with location map
- Information on the Grass Lake Nature Trail and city trail system,
- Refuge use regulations, guidelines and recommendations sign.

Habitat V - Even-aged Mature Douglas Fir Forest (Southeast) - Approximately 5.9 acres

Design Recommendations

The Grass Lake Nature Trail will cross this habitat. It will serve as a collector trail for access trails from the private development to the south. Allow dogs on leash on this trail but no bicycles. Provide bicycle parking at the trailheads. This is consistent with the urban trails plan.

Environmental Education and Interpretation Recommendations

No interpretive signs are proposed for this specific habitat. The Grass Lake Nature Trail will provide access through this habitat which will serve environmental education activities.

VI. Operations and Maintenance Plan

Operations and maintenance in Olympia's parks are done by the Park Services Division based in Priest Point Park. No maintenance or service facilities within the Grass Lake Refuge are proposed. Such facilities are prohibited within areas funded by Urban Wildlife Habitat grants from the Interagency Committee for Outdoor Recreation (IAC). The master plan's acquisition plan recognizes that additional property could be acquired to provide maintenance and other support facilities if deemed desirable in the future.

Developing and managing Grass Lake Refuge as proposed will increase operation and maintenance costs. Due to the existing undeveloped conditions and level of use, daily maintenance is not needed. That will change with master plan implementation.

Providing safe and accessible trails will require a high level of maintenance due to the heavily forested site which drops lots of forest litter on the trails and can block wheelchairs and trip people. The long rainy season challenges maintaining positive drainage and even surfaces on trails. Much of the uplands experiences surface drainage due to high seasonal water tables and heavy rains. Boardwalks are necessary to cross wetlands. Climatic factors require regular carpentry and maintenance to provide safety and longevity of capital investments. Immediate repair of vandalism is important because studies indicate that evident vandalism attracts more vandalism.

Park Services divides operation and maintenance activities by specialities, level of expertise required and other factors that reduce labor costs and increase efficiency. An example is one person is responsible for restroom and refuse maintenance. He/she travels from park to park to pick up garbage. Seasonal trail staff is hired during the spring to fall season for trail maintenance. This includes general and light maintenance such as limb and debris removal, add rock/bark where needed, etc. Full-time employees include specialists in carpentry, plumbing, electrical and horticulture. Increasing facilities and visitation will also place additional demands on administrative staff for planning, scheduling, budgeting and other management activities.

If the need arised to lock parking lot gates and the restroom, sunrise and nighttime personal will be required. The only Olympia park with locking gates is Priest Point. The park closure and opening is done by a private security company. This same arrangement may be utilized at Grass Lake.

The Grass Lake Refuge will require the following maintenance.

Daily or Routine Maintenance

- Clean Restroom
- Refuse Removal
- Trail Maintenance

Surface Cleaning and Repairs
Drainage Repairs
Boardwalk and Pedestrian Bridge Repairs
Pruning Encroaching Vegetation
Repair Vandalism
Remove unauthorized structures and campsites

Annual or On Demand Maintenance

Building Maintenance
Plumbing and Electrical Repairs
Sign Maintenance
Bike Rack Repairs
Service Trail Counters
Close and Restore Non-System Trails
Remove Non-Native Plants
Plant and Maintain Restoration and Enhancement Sites
Mow Meadows
Hazard Tree Removal
Storm Clean Up

VII. Monitoring Plan

A. Monitoring Needs

Grass Lake Refuge is a special component of the park system. It was acquired to protect urban wildlife habitat and to provide wildlife observation and education. Some people including biologists, land use planners and engineers think it is going to be very challenging for the city to successfully protect the refuge's wetlands and wildlife. To do this, the refuge will have to be monitored to see if negative impacts are occurring. If they occur, new protection strategies will have to be implemented by the city. The city will have to remain an active champion for refuge protection.

Water Flows and Biological Impacts - As described in the wetland management sections of the plan, water flows need to be carefully monitored. This monitoring program will be the responsibility of Olympia's Water Resources Program. Faculty and students from The Evergreen State College and other volunteers will help with this long term monitoring. The water monitoring needs to be integrated with monitoring amphibians and aquatic and wetland vegetation. Additional baseline information is needed to help measure changes.

Birds and Mammals - Birds including neotropical songbirds, waterfowl and birds of prey all frequent the refuge. The diversity of birds is outstanding. As facilities are built and visitation changes, monitoring needs to identify changes in numbers, species and locations of birds. No known monitoring of mammals in the refuge is occurring.

Visitation - The Department should develop a program for monitoring visitation. The master plan recommends installing trail counters at the trailheads so that use can be measured. A photo monitoring program should be implemented to document early changes in vegetation and post-construction use of facilities. These photographs can provide feedback on needed management and facility changes. The environmental learning shelter is to be reserved in advance so that frequency of use can be monitored. Visitor satisfaction should be monitored by formal surveys as well as informal communications. The success of the environmental education and interpretation programs and materials should be monitored so that they can be revised to remain useful and effective. All or most of this monitoring can probably be done by students and other volunteers under the supervision of the refuge steward or other city staff.

B. Monitoring System

The Department needs to coordinate all monitoring and research within the refuge. Although research and monitoring are needed, some research and monitoring

activities can result in significant wildlife and other disturbance if not properly designed and managed. Monitoring proposals should be submitted to the department for approval. The proposals should include what is being monitored where, when, for how long, by whom and how the data will be recorded, analyzed and provided to the department. To help maintain the desired natural or wild landscape appearance, monitoring equipment or site markings placed in the field should not be visible from trails and viewpoints. Exceptions may be granted but temporary signs should be placed to explain to the public the study and purpose. Monitoring activities should not result in new paths that will attract public use or interrupt trail restoration efforts. Photo monitoring stations should be established in locations that are easily found, field marked with metal caps and mapped for easy reference.

Monitoring information should be used to help develop environmental education and interpretation exhibits, materials and programs. Monitoring results should be given to other city departments and other agencies who share responsibility for protecting the refuge. Results of the Grass Lake monitoring programs will provide useful information for developing management strategies and plans for other urban wildlife habitats and open spaces that the city acquires. Partnerships with The Evergreen State College faculty and student interns should be used for archiving monitoring reports and data.

VIII. Acquisitions and Conversions Plan

The City of Olympia purchased the Grass Lake Refuge from a development company who assembled the land parcels for a housing development. The land parcels were not assembled on the basis of a refuge. As noted in the “Wetland Inventory and Habitat Assessment for Grass Lake Park”, the upland habitats include areas of high, moderate and low habitat value. Areas of low habitat value may have other values such as buffering the wetlands, screening noise and views and providing trail connections. Habitat values should increase with the management strategies outlined in the master plan. Some adjacent parcels are of high habitat and scenic value.

The master plan for Grass Lake is based on existing public ownership. The Grass Lake Refuge can adequately function without additional acquisitions. However, additional acquisitions would provide the opportunity for further enhancement and protection of the refuge. Thirteen adjacent properties were reviewed for what values they would contribute to the refuge. The analysis did not consider non-adjacent properties.

City ordinances and other regulations help to protect the refuge without additional acquisitions. Olympia’s critical area ordinance protects wetlands and requires wetland buffers. When undeveloped parcels adjacent to the refuge are developed the wetlands will be buffered from development. This should help to maintain wildlife habitat in the city and help to filter and buffer water entering the refuge. The Drainage Design and Erosion Control Manual for Olympia results in stormwater releases from new developments being managed. Flows into the refuge will increase as parcels are developed. Olympia’s tree protection ordinance will help to protect habitat and scenic values on properties adjacent to the refuge.

Park land is a public asset and should be managed as such with flexibility to address changing needs and conditions. Future planning and analysis may identify parcels that should be converted to non-refuge uses. Altering refuge parcels from urban wildlife habitat to other use is called a land conversion. All land conversions within the current boundary of the refuge must be approved by the Washington Interagency Committee for Outdoor Recreation because they are a co-owner of the refuge. An example of a conversion would be:

1. Land along the north perimeter might be converted to a neighborhood park.
2. Low or moderate value habitat might be converted to building lots with proceeds reinvested to purchase other new, open space parcels with greater habitat value. These new parcels could be adjacent to the refuge or other open space lands within the Olympia Growth Area.

Prior to any future City Council decision to convert refuge lands, staff must perform the following analysis:

1. Obtain land appraisals for the parcels being converted, including the new parcels to be acquired.
2. Obtain a wildlife or wetland biologist's evaluation of the habitat functions and values of lands involved in the conversion.
3. Obtain a wildlife or wetland biologist's recommendations on mitigation measures to protect the refuge from any degradation which may result from new land uses developed on the converted refuge parcels.

The Grass Lake Refuge lands are highly valued by the community. Future consideration of conversions must be carefully evaluated utilizing the information required above and other factors deemed necessary.

IX. Implementation Strategies, Schedule and Priorities

A. Implementation Strategies

1. Interagency Coordination

The master plan was developed with help from a technical advisory committee with agency representatives from the IAC, Washington Department of Ecology, Washington Department of Fish and Wildlife, the Thurston Conservation District, Thurston County and numerous City of Olympia departments. These partnerships are important to maintain to help implement the master plan and protect the refuge in the future. Contact with them will be important for facilitating the permitting processes, establishing and maintaining the monitoring program, protecting the functions and values of the refuge and offering environmental education and interpretation opportunities.

2. Funding Sources

The city will actively seek grants and donations to help implement the master plan.

Funding for improvements at Grass Lake Refuge will be included in the Capital Facilities Plan developed annually by the Department.

Potential Grant Sources

- Interagency Committee for Outdoor Recreation, State of Washington
- Urban Wildlife Habitat Program, Washington Department of Fish and Wildlife
- Coastal Zone Management (CZM)/ Washington Department of Ecology
- U.S. Fish and Wildlife Service
- Private Foundations

City Revenues

- Capital Improvement Program (CIP Funds)
- Voter and Non-voter Approved Bonds

Private Donations

- Cash
- Donation of labor, equipment and materials
- Donation of land or easement
- Park Trust

3. Volunteer and Partnership Opportunities

The list of volunteer and partnership opportunities needs to be updated and kept current. Groups and individuals are already asking what they can do to help. This list will offer a variety of projects from simple and of short duration to more sophisticated with longer time commitments required. Projects should be listed for K-12 and college students since they have shown strong interest.

Having the department make and keep a list of volunteer and partnership opportunities will help to direct these efforts to the highest priorities. The list should comply with the priorities and phases outlined in the master plan so that the common vision is achieved and maintained.

Most volunteers do not have funding for materials and supplies so the volunteer opportunities and priorities will have to be linked to available funding. The department should work at matching or assembling donations of labor, equipment and materials.

Potential Volunteer and Partnership Projects for the Grass Lake Refuge

Trail Construction Projects - Order reflects the implementation and priorities strategies. Trail crews require supervision by trail experts so that trails will comply with accessibility standards and other requirements related to drainage, safety and environmental protection.

- Marsh Trail
- Lake Louise Trail
- Wetland Connector Trail
- Forest Trail
- 65 Road Spur Trail
- Grass Lake Nature Trail
- South Side Spur Trails
- Cottonwood Swamp Trail

Environmental Learning Stations - The piers and observation blinds require experts in design and construction to supervise all work.

Seating Areas - The plan calls for five contemplation sites to be located along the trails. These areas should include attractive and comfortable seating that displays high craftsmanship and design appropriate for a refuge for wildlife and people. Volunteers can submit design ideas to the Department for approval.

Landscape Restoration - Includes removing invasive non-native plant species, preparing planting areas, transplanting and seeding native plants, monitoring and maintaining efforts. These projects are scheduled to occur following earlier implementation phases.

Kaiser Road to Lake Louise
Old Yogurt Farm

Landscape Enhancement Projects - Includes removing invasive non-native plant species, planting disturbed sites with appropriate native plants.

Main Entrance Area on 14th Avenue - swale, wetlands, grasslands/meadow
Meadows near Lake Louise pier
Meadow near new Kaiser Road entrance
Swale and Wetlands in northeast corner of the refuge

Monitoring - Needs to be part of an on going monitoring program or the monitoring project needs to be approved by city

Water flow, elevations, quality

Biological

Birds

Amphibians

Mammals

Plants

Visitation

Patterns of Use - time, season, location

Visitor Satisfaction

Success of environmental education and interpretation

Trampling

Vandalism

Trail Obliteration - May include placing brush to block passage, scarifying compacted soils, transplanting trees and shrubs, making and placing temporary signs to explain closures and restoration efforts. Existing trails will not be closed until new trails are built.

Research - Understanding the Grass Lake ecosystem, the human impacts and values is important to successful management of the refuge. The city encourages college and university research within the refuge. All projects need to be approved in advance by the city. All findings and recommendations for improving management should be provided to the city.

Trail and Facility Maintenance - Because of the wet climate and the desire to maintain accessibility for people with disabilities and safety for all, a high level of trail maintenance will be needed. Activities may include removing debris such as twigs, cones and limbs, leveling and compacting surfaces and brushing out any side trails that get started. As facilities age, there will be opportunities to help with painting or staining, sanding and other general wear and tear maintenance. These activities need to be approved and supervised by park services personnel.

4. Phases/Schedule

Although implementing the proposed developments in a single construction effort might be advantageous it is unlikely that such funding will be available. The development cost estimates are broken out by the proposed implementation phases.

Interior trails and environmental learning stations will be built first so the sensitive wetland areas have adequate facilities before visitation increases due to visually attractive new trailheads and facilities. Interior facilities also need to be built first so that construction access is available without damaging other new facilities on the refuge boundaries. Construction access for the Lake Louise facilities can be through the existing Kaiser Road entrance. The proposed Kaiser Road to Lake Louise landscape restoration should not be done until the Lake Louise facilities are built, otherwise construction access would be blocked or construction activities would negatively impact the restoration efforts. Grass Lake West facilities should be built prior to the landscape restoration of the Old Yogurt Farm site and the obliteration of the old primitive roads in this area which can provide construction access.

Main entrance facilities need to be built soon after the new interior trails and environmental learning stations. The environmental learning shelter is to serve as a staging area so that large groups do not travel through the wetlands together. Program leaders can break their groups into smaller units and review refuge protection objectives. The orientation kiosk is also important because it will communicate how to enjoy the refuge while limiting disturbance. This visitor orientation is important to successful management of the refuge. The restroom is also important because new facilities will attract more visitors. If visitation increases prior to construction of the restroom, portable toilets may need to be provided.

Landscape restoration of the Old Yogurt Farm and the wetland and stormwater enhancements to the swale in the northeast corner of the refuge should follow the abandonment and restoration of the sewer line and access road by LOTT.

The new Kaiser Road entrance needs to be built prior to closing the existing one and prior to implementing the Kaiser Road to Lake Louise landscape restoration. This restoration will close off the existing trails.

Facilities should be constructed in late summer and fall after breeding seasons are complete and soils are drier for less compaction.

B. Cost Estimates

1. Wetland Survey and Mapping

Prior to designing, constructing and permitting trails and other facilities, the wetlands will be delineated and surveyed. Their precise location and class have to be determined. The costs will vary depending on area to be surveyed.

2. Soil and Pre-Design Investigations

For the design of the piers, observation blinds, restroom and shelter, soil and subsurface investigations will have to be done. The cost estimate is \$5,000.

3. Development (Design and Construction)

There are numerous options on how to implement facility construction in the refuge. Most system trails and boardwalks in Olympia's parks have been built by a cooperative working relationship with Community Youth Services and park services. This reduces the costs of construction primarily by reducing labor costs.

With design and construction experts, numerous refuge facility components could be built by city park crews, Community Youth Services or volunteers. These projects include the trails, boardwalks, piers, kiosks, seating areas, landscaping and landscape restoration. Volunteers who have expressed interest in Grass Lake projects include Capital High School, Community Youth Services, YMCA Earth Service Corps, the Black Lake Chapter of Audubon Society, the Friends of Grass Lake, the Aspinwall Estates Homeowners Association and the Eld Inlet Watershed Council.

Some of the proposed facilities may attract individuals or groups who would like to donate the funding for the facility. The facilities that are likely to attract sponsors are the environmental learning station piers and observation blinds, environmental learning shelter and seating areas.

The following cost estimates are based on all projects being designed and built under contract.

Photo: A raised observation blind is proposed to help visitors view birds and other wildlife.



Design and Construction Cost Estimates

Phase I - Interior Refuge Improvements

Grass Lake West Environmental Learning Station

Observation Blind	14,000.00
Interpretive Exhibits	<u>6,000.00</u>
	\$20,000.00

Grass Lake West Environmental Learning Station

Pier	14,000.00
Interpretive Exhibits	<u>6,000.00</u>
	\$20,000.00

Lake Louise Environmental Learning Station

Observation Blind	14,000.00
Interpretive Exhibits	<u>6,000.00</u>
	\$20,000.00

Lake Louise Environmental Learning Station

Pier	14,000.00
Interpretive Exhibits	<u>6,000.00</u>
	\$20,000.00

Marsh Trail (2520' including 420' boardwalk) 53,800.00

Lake Louise Trail (2500' including 1000' boardwalk) 86,000.00

Wetland Connector Trail 18,700.00

Forest Trail 10,500.00

Seating Areas 3,600.00

Earthwork - clearing, erosion control, surface grading 14,400.00

General Construction Requirements 22,600.00
mobilization, bonds, surveying, permits \$289,600.00

Taxes @ 8% 23,168.00
\$312,768.00

Contingency @ 10% 31,277.00

Phase I Construction Subtotal 344,045.00

Planning, Design, Administration, Inspection @ 20% 68,809.00

Estimated Total Phase I Construction Costs \$412,854.00

Phase II - Main Entrance

Entrance Sign	2,500.00
Driveway and Parking Lot (Pervious turf block)	23,300.00
Restroom	35,000.00
Orientation Kiosk	25,000.00
Orientation/Interpretive Signs	7,200.00
Bicycle Rack	1,000.00
Aggregate Surfacing	5,000.00
Trailhead and Directional Signs	8,400.00
Landscaping	30,000.00
Environmental Learning Shelter	120,000.00
Utility Connections - electrical, sewer, water	15,000.00
65 Road Connector Trail (300' including pedestrian bridge)	18,000.00
Swales and Retention Basin Improvements	30,000.00
Earthwork - clearing, erosion control, grading	12,000.00
General Construction Requirements	<u>20,000.00</u>
mobilization, bonds, surveying, permits	\$352,400.00
Taxes @ 8%	<u>28,192.00</u>
	\$380,592.00
Contingency @ 10%	38,059.00
Phase II Construction Subtotal	418,651.00
Planning, Design, Administration, Inspection @ 20%	83,730.00
Estimated Total Phase II Construction Costs	\$502,881.00

Phase III - Grass Lake Nature Trail, Kaiser and Cooper Point Trailheads

Grass Lake Nature Trail (5280' including 560' boardwalk) 83,600.00

Seating Areas 2,400.00

Kaiser Road Trailhead

Earthwork - clearing, erosion control, grading 1,200.00

Parking Lot (Pervious turf block) 4,800.00

Entrance Sign 1,500.00

Orientation Kiosk 5,000.00

Orientation Signs 3,600.00

Bike Rack 1,000.00

Trail Counter 3,000.00

Landscaping 11,200.00
\$31,300.00

Cooper Point Road Trailhead

Pedestrian Ramp - road to trail 26,000.00

Entrance Sign 1,500.00

Orientation Kiosk 5,000.00

Orientation Signs 3,600.00

Bike Rack 1,000.00

Trail Counter 3,000.00

Landscaping 6,800.00
\$46,900.00

South Side Spur Trails

3 Trail Connections (300' each)	9,000.00
Trailhead Orientation and Directional Signs	<u>5,100.00</u>
	\$14,000.00

Landscape Restoration

Kaiser Road to Lake Louise	35,000.00
Motorcycle Loop	12,000.00
Yogurt Farm	<u>18,000.00</u>
	\$65,000.00

Northeast Swale and Wetlands Enhancement

48,000.00
\$291,300.00

Taxes @ 8% 23,304.00
\$314,604.00

Contingency @ 10% 31,460.00

Phase III Construction Subtotal 346,064.00

Planning, Design, Administration @ 20% 69,213.00

Estimated Total Phase III Construction Costs 415,277.00

Phase I 412,854.00

Phase II 502,881.00

Phase III 415,277.00

Total \$1,331,012.00

4. Operations and Maintenance Costs

Maintenance activities required in the refuge are described above in the Operations and Maintenance Plan.

Estimated Average Annual Operations and Maintenance Costs

[Security Contract if gates/restroom are locked	\$ 4,200]
Labor	\$14,000
Materials and Supplies	\$ 1,500
Vehicles and Equipment	<u>\$21,060</u>
	\$36,560 - \$40,760

The cost estimate is in 1997 dollars. The costs will increase with the annual increase in the cost of living.

Initial management activities in the refuge may also result in higher operations and maintenance costs. Site cleanup activities still needed include removal and closure of manholes on the southwest side of Lake Louise, removal of the pump, electrical panel and poles and water storage tank and abandonment of the well according to state and federal regulations. The manholes should probably be removed as part of the landscape restoration activities recommended for this area.

As described above in the Management Plan, existing trails that are not developed as part of the trails system will be closed. Required closure activities depend on trail visibility, width and compaction. Ripping, raking, seeding, planting, placing brush and installing temporary signs may be required.

The Management Plan recommends intensive landscape restoration from Kaiser Road to Lake Louise, at the old yogurt homesite and the LOTT sewer easement. The restoration activities may include heavy equipment for removing large stands of Himalayan blackberries and Scot's broom and minor grading. Planting, mowing and weeding will be required. Swale and wetland enhancements are also proposed. Park services may do all of the trail closures and restoration activities, they may supervise volunteer crews or trail closures and restoration activities could be contracted out. Depending on the responsibilities of park services in these management activities, operations and maintenance costs could be doubled for two or more years.

5. Monitoring Costs

The monitoring plan proposes that most monitoring be done by volunteers. The costs to the department will be primarily for coordination. As foreseen, managing the monitoring program may require 5%-10% of one park employee's time. The water monitoring in the refuge is to be done in partnership with the Water Resources Program. They currently have three flow stage markers in place and intend to install three more at approximately \$500.00 each. Volunteers will be used for field work.

C. Public Information Plan

A public information plan for the Grass Lake Refuge should be developed. It should be consistent with management objectives for the refuge. The amount and type of public information on the Grass Lake Refuge will influence the amount and character of public use. Maps should include messages about staying on the developed trails, boardwalks and piers to limit disturbance to wildlife and about limiting group size to 8-10 people maximum except at the environmental learning shelter. Pamphlets and brochures should help people understand the concept that the refuge is a sanctuary for wildlife and for people and what that means in terms of activities and opportunities. Such information should help to protect the refuge and reduce user conflicts.

Because of concerns about overuse reducing wildlife habitat values and wildlife observation opportunities, the city should not seek to market the refuge in a Website on the Internet or in commercial publications or programs. However, the Internet may become a useful environmental education teaching tool.

The city should distribute information on volunteer opportunities and needed donations to help build and maintain the refuge's facilities and habitats.

The Environmental Education and Interpretation Plan discusses partnerships and other strategies to develop environmental education and interpretation materials for teachers, naturalists and other program providers. Facilitating such education and activities are appropriate for the refuge's mission.

X. Appendices

- A. Legal Descriptions (Not bound into the document)
- B. Public Workshops Notices, Newspaper articles and Workbook
- C. Summary of Public Recommendations
- D. Workshop Participants
- E. Adjacent Properties Owners Mailing List
- F. Grass Lake Plant List
- G. Grass Lake Bird List
- H. Wetland Inventory and Habitat Assessment (Two volume report not bound into document.)

APPENDIX A

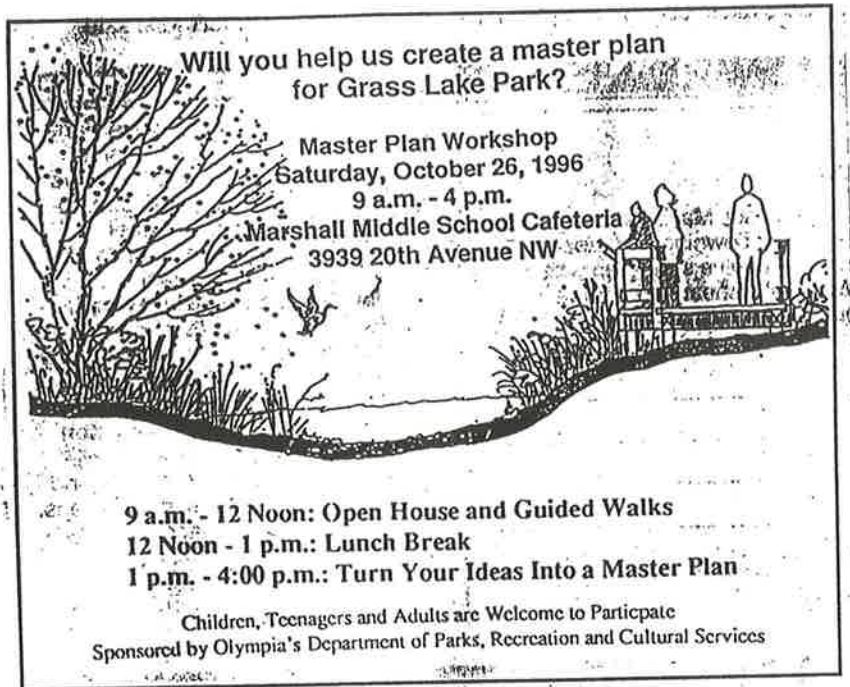
Legal Descriptions

Due to length, not bound into this document. On file at the Olympia Parks, Recreation and Cultural Services Department.

APPENDIX B

Public Workshops Notices, Newspaper Articles and Workbook

Advertisements and notices were placed in The Olympian inviting people to participate in the workshops. The Olympian wrote articles about the park and master plan. Workshop notices were mailed to adjacent property owners and neighborhood associations.



Will you help us create a master plan
for Grass Lake Park?

Master Plan Workshop
Saturday, October 26, 1996
9 a.m. - 4 p.m.
Marshall Middle School Cafeteria
3939 20th Avenue NW

9 a.m. - 12 Noon: Open House and Guided Walks
12 Noon - 1 p.m.: Lunch Break
1 p.m. - 4:00 p.m.: Turn Your Ideas Into a Master Plan

Children, Teenagers and Adults are Welcome to Participate
Sponsored by Olympia's Department of Parks, Recreation and Cultural Services

SOUTH SOUND

EDITOR: LINDA GREEN / 754-5423

SECTION
C

THURSDAY
OCTOBER 24, 1996

RECREATION

Officials ponder Grass Lake Park

■ **Master plan:** While creating access to the park, city officials want to protect its ecosystems.

By Devin Smith
The Olympian

Olympia knows it has a good thing in Grass Lake Park. The trick is in not loving it to death.

The city is working on a master plan for the park that will spell out how best to open it up while protecting the fragile ecosystems on the 165-acre wetland.

"There's a concern that we can have too much environmental education," said Julie McQuary, Olympia parks project coordinator. "The city's intention is not to restrict use but to manage use."

On Saturday, the public will have its chance at an all-day workshop on the master plan to determine just how the park is developed.

The park is used by students of all ages, from nearby Marshall Middle, Hansen Elementary and Capital High schools to students from The Evergreen State College. It is also a hangout for experts on wildlife and wetlands.

The park is sometimes a dumping ground for litter. Part of what city officials want from the plan is a way to keep it free of beer and pop cans, food and other garbage so people can enjoy it.

The city bought the land in 1990 to preserve it as open space.

The residents group Friends of Grass Lake was instrumental in pushing the city to acquire the land, McQuary said.

Mary Ann Swain, a member of the group, said she imagines the park as a nature preserve similar to Priest Point Park or Snake Lake Nature Center in Tacoma.

"I'm excited about the idea of it

AT A GLANCE

Park workshop

A workshop about Grass Lake Park is scheduled for 9 a.m. to 4 p.m. Saturday at the Marshall Middle School cafeteria, 3939 20th Ave. N.W., Olympia.

In the morning, participants will learn about Grass Lake Park and will take guided or self-guided tours of the site.

In the afternoon, participants will break up into small groups and create recommendations for the park master plan.

A workshop about the Olympia Woodland Trail is scheduled for 9 a.m. to noon Nov. 2 at The Olympia Center, 222 N. Columbia St.



Grass Lake Park

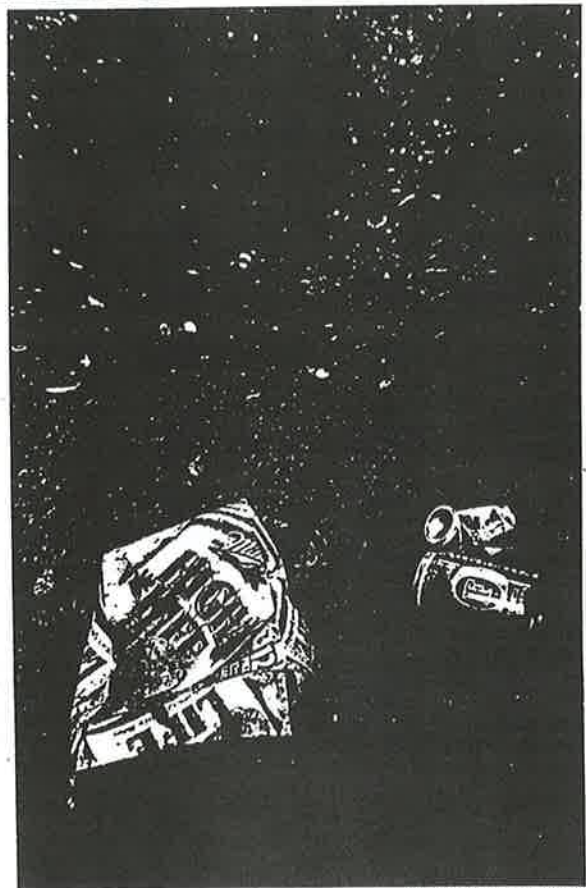
The city is asking the public to help create a plan that encourages people to visit the wetland preserve but also protects it.

Fred Matamoros The Olympian

being used as an environmental education resource for the schools," Swain said.

McQuary agreed. "It's really going to be an ecological island on the west side," McQuary said.

The Grass Lake workshop is the first of two opportunities in the coming weeks for the public to help shape parks.



Craig Sallor The Olympian

UNSIGHTLY TRASH: Olympia officials are asking residents for help in establishing a master plan to protect Grass Lake Park's fragile ecosystems and keep it free from litter.

The city is in the process of acquiring the additional land it needs to complete the Olympia Woodland Trail. The trail will make use of abandoned railroad tracks and will connect the Chehalis-Western trail on the east side of town with Capitol Lake.

The Nov. 2 trail workshop will address whether the trail should

run next to Interstate 5 or next to the hillside bordering the Wildwood neighborhood and how important it is to connect it to Tumwater Historical Park.

The East-West Greenway Association, a group of residents, will take a survey to help determine how the trail corridor would be developed.

SOUTH SOUND

EDITOR: LINDA GREEN / 754-5423

SECTION

C

TUESDAY
JANUARY 21, 1997

INSIDE: CLASSIFIED

▶ LOCAL GOVERNMENT

Proposal trims Grass Lakes trail

■ **Wildlife protection:** City officials recommend limiting access to sensitive wetlands at the Grass Lakes Refuge.

By Devin Smith
The Olympian

Olympia officials might get rid of about two miles of trails at Grass Lakes to preserve some parts of the wetland area as an undisturbed wildlife sanctuary.

That is one of the recommendations in a draft plan that outlines how the city proposes to open the wetland up to the public, but also maintain it as a haven for birds, leech and fox.

The public will get its first look at the city's plans for the area during a

AT A GLANCE

Master plan workshop

A workshop on the draft Grass Lakes Refuge master plan will be at 6 p.m. Monday in Rooms 101 and 102 of The Olympia Center, 222 N. Columbia St., Olympia.

Written comments on the plan will be accepted through Feb. 10 and can be sent to Grass Lakes Refuge, Olympia Parks, P.O. Box 1967, Olympia, Wash. 98507.

workshop Monday.

Formerly called Grass Lakes Park and now called Grass Lakes Refuge, the 165-acre open space is crisscrossed with about five miles of trails, said Julie McQuary, Olympia parks project coordinator.

The plan proposes to keep about three miles of trails but abandon a couple of miles of trails on the east side of the refuge, McQuary said. That would allow the city to keep as much undisturbed wildlife habitat as possible so the deer, birds and foxes aren't chased off, she said.

The plan calls for a main entrance on 14th Avenue featuring a restroom and an environmental learning shelter that will hold 45 people, McQuary said.

The three miles of maintained trails will snake through the western part of the refuge, including around Louise Lake. The trails will be improved with boardwalks through muddy or wet areas and will include piers and blinds at the lake where birds and wildlife can be observed, McQuary said.

There also will be five environmental learning stations built around the refuge where visitors can stop and learn about the 200 plant species, 100 species of birds and other wildlife that inhabit the refuge, McQuary said.

"We're going to encourage everyone not to take too large of a group through there," she said. "If they are trying to see wildlife, it's hard to see it from a crowd."

The city is still working out the costs of developing the refuge as outlined in the plan, McQuary said. She hopes to have the costs estimated in time for the workshop on Monday. The city will pursue grants to help pay for the work.

The Olympia City Council is expected to consider the final plan in March.



Grass Lake Refuge

The city is asking the public to comment on a draft master plan for the 165-acre open space on the city's west side.

Fred Matamoros The Olympian

(Condensed form of the workshop workbook.)
(Maps and graphics not included.)

Grass Lake Park Master Plan

The Challenge - How to balance protection and utilization

**Workshop Workbook
October 26, 1996**

Welcome To The Workshop

Thank You For Helping Us Plan The Park

You May Keep Or Recycle This Workbook

A Chance To Get Your Ideas Heard

**The Opportunity To Help Decide What Is Best For The Park
And The Community**

Small Group Time Line and Process

The workbook begins with background and reference material. Park staff will briefly review this information at the beginning of the session. You may refer back to this information as needed to complete your tasks. Your group will also be given a set of resource maps. You may also refer to wall maps and aerial photographs.

Your group will have from 1:30-3:00 p.m. to complete the tasks in the workbook.

Try to complete Tasks 1-4 by 2:00 pm., Tasks 5-7 by 2:30 p.m. and Tasks 8-10 by 3 p.m.

From 3:00-4:00 p.m., the groups will present and discuss their recommendations.

Task 1 - Appoint a Facilitator, Time Keeper, Note Taker, Map Maker and Presenter. Roles may be shared.

Facilitator - Makes sure that tasks get done and that everyone in the group gets to share their ideas

Time Keeper - Keeps track of time for each task and lets group know when time is up so they can wrap up task and move on to next one

Note Taker - Writes down on Summary Sheets the group's answers to questions and their recommendations

Map Maker - Records information on maps in response to workbook questions and draws site plan map

Presenter - Presents group's site plan and other recommendations to other groups and park staff at 3-4 p.m. presentation session

Background And Reference Information

The Master Plan Process

The master plan for Grass Lake Park is being produced by Olympia's Department of Parks, Recreation and Cultural Services staff. Julie McQuary is the Project Coordinator.

Today's workshop is a key component of the master plan process. The plan needs to address how to balance protection of the wetlands and wildlife with human uses. You will help identify the preferred uses for the park.

Three advisory groups are also helping on the plan. The Technical Advisory Committee is composed of biologists, wetland experts and others who can help evaluate the park's ecological resources and make recommendations on how to protect them. The Environmental Education and Interpretation Focus Group is composed of K-12 teachers, professors and environmental educators from other agencies and organizations who are currently leading environmental education activities in Grass Lake Park or are interested in doing so in the future. They will be making recommendations on environmental education and interpretation facilities, signs and programs. The Park and Recreation Advisory Committee advises the department and city on related matters. They will review the draft master plan and make recommendations to the city council on its adoption. Members are helping at today's workshop.

The mapping for the master plan is being done by the Thurston GeoData Center using Arc-Info. (Information for you technophiles.) They produced the maps on display today. Additional wetland and wildlife habitat mapping and analysis is currently being done by a local environmental consulting firm, The Coot Company.

Your recommendations along with the ecological assessments and advisory committee recommendations will be used to produce the draft master plan. The draft master plan will be presented to the public on December 14 from 9 a.m. - 12 Noon at the Marshall Middle School Cafeteria. Public and advisory committee comments will be used to refine the draft plan. Completion of the final master plan is scheduled for January. The plan will be reviewed for compliance with city ordinances and SEPA (State Environmental Policy Act). A plan hearing will be held before the city council prior to adoption of the master plan.

Primary Master Plan Objectives

Provide clear direction and priorities for park management and development.

Include wide participation in developing recommendations so there is strong agreement and support by the community, the department and other experts in the field

Document the park's natural and cultural resources so that this information can be used to make development and management decisions

Serve as a reference to answer questions about the park

Estimate costs for development and management

Establish a program to monitor the park to see if development and management objectives are being met

Recommend how to implement or accomplish the plan

Perform as a quality plan and marketing tool for soliciting grants and other funding

Identify volunteer and other implementation projects

Why Grass Lake Is Such A Wonderful Place!

It is big! You can get away from other people, traffic and noise. Animals can get away from people, traffic and noise.

You can close your eyes and listen to frogs and birds singing versus people talking.

It is so diverse that you will probably never get bored there or ever see everything. The seasons add even more variety.

The land where the park is has been in constant change and will always be in constant change. Aerial photographs from the 1950s show what the area was like before peat was mined creating Lake Louise. Timber has been harvested. Roads and trails have come and gone. Culverts have been built changing water flow. [Now you have to help decide how it shall change in the future.]

Most urban wetlands do not have the diversity of plants and animals that Grass Lake Park has. The park has open water, swallow water areas with the picturesque sedges and rushes that give the park its name (these plants look like grass), wetland areas covered with shrubs and wetland areas covered with trees. The park has upland forest areas with both evergreen and deciduous trees. It has oaks and aspens which are not common in this area. If you look at the aerial photographs of the park, it looks like a jigsaw puzzle. This mosaic is why there are so many interesting different animals.

The Grass Lake wetlands clean dirty stormwater and provide stable flows to Green Cove Creek to help maintain the salmon and other fish.

Grass Lake Park is a unique and important component of the city park system. Watershed Park has Moxlie Creek. Priest Point Park has the saltwater wetlands of Eld Inlet and Budd Bay. Grass Lake is the only wetlands park with a lake. These parks help to protect diverse and important plant and wildlife habitats and provide visual and educational variety for the community.

Add your own opinions on why Grass Lake Park is special.....

Park Regulations

The following regulations apply to all city parks unless otherwise specified. Your management plan does not need to address these items.

IAC Policies

Washington's Interagency Committee for Outdoor Recreation helped to purchase Grass Lake Park with an Urban Wildlife Habitat grant. Their requirements for these areas include:

Provides habitat for wildlife species, food fish, shellfish, or freshwater or marine fish.

May serve as a corridor for wildlife movement in existing populated areas.

May include and encourage public use for wildlife interpretation and observation.

Development of facilities will be limited to items such as fencing, interpretive/observation trails, interpretive signs/kiosks, restrooms, parking, and creation or enhancement of habitat.

Projects involving renovation of an existing facility are ineligible.

The highlighted text indicates that facilities are to be limited to those appropriate to the purposes of urban wildlife habitat. Active recreation or sports facilities such as soccer fields or running trails are not allowable.

Critical Area Regulations

Olympia has critical area regulations to protect wetlands. The wetlands in Grass Lake Park are Class II wetlands which require a 200' wide buffer from high intensity land use and a 100' buffer from low intensity land use. Carefully sited and designed trails and boardwalks may be allowed and approved within the buffer. ~~When drawing your recommendations, remember to consider these wetland buffer regulations.~~

Park Resources

Topography - Important to consider because:

shows low areas that pond so can avoid placing facilities there

indicates flatter areas that could provide easier, more level trails and better for parking and toilets, etc.

for siting facilities topography can screen views which is useful to consider for hiding less desirable views or hiding people from wildlife to reduce disturbance

topography can reduce noise to reduce disturbance to wildlife

different types of plants grow in lowlands and uplands, shade and sun

Soils - Refer to soils map and adjacent tables if you want to know more about the soils

Stay Out of the Mukilteo Muck!

Soils maps indicates wet areas and other information to consider when siting trails and boardwalks

Soils indicate where foot traffic may cause lots of soil compaction and plant loss

Soils indicate fertility - how easy to grow and restore plants

Vegetation - Important to consider because:

Different vegetation provides food and shelter for different animals

May want trails to go through a variety of different vegetation so trail is more interesting

Vegetation has changed over time - logging, peat mining, culverts and stormwater and other disturbances. It will continue to change depending on park management and use.

How much of the park should be forest?

How much of the park should be open meadows?

Should the blackberries and Scots broom be removed?

Should the park only have native plants?

Should the fruit trees and other ornamental plants at the old house sites be kept?

Animals

It is not unusual in the morning to see on Grass Lake a half dozen different birds (ducks, herons, etc.) and a deer or two in the shadows at the water's edge. Numerous people enjoy birdwatching in the park. Bird research is being conducted by students and faculty at The Evergreen State University. Their report documents the use of Grass Lake Park by migratory birds and the potential threat from too much human disturbance and reduction in habitat in the future.

Other informal studies in the park include the Olympic mudminnow and butterflies. Grass Lake is also notable for amphibians such as salamanders and frogs. The frog chorus is outstanding. Numerous amphibians are sensitive to sudden changes in water levels such as might be caused by increased stormwater from new impervious surfaces - buildings, roads, etc.. Many amphibians attach their eggs to aquatic plants. A sudden increase in water may wash them away or a sudden drop by leave them stranded to dry out.

When the lake is full some people enjoy fishing. The park's wetlands act as a sponge to help stabilize flows for salmon and other fish downstream in Green Cove Creek. In spring, the park holds a lot of water so downstream streambanks are not eroded by flash floods. During the dry summer, the wetlands release water to help maintain downstream pools for fish.

Having too many people frequently in the park could negatively impact the wildlife. Limiting the number of trails and the amount of parking and other facilities may help to prevent too much human use. Also, keeping some areas of the park undeveloped so wildlife is not disturbed may be good. Maintaining a mix of forested and unforested areas may also help to maintain the animal diversity.

Task 2 - Answer Visitation Questions

Transportation - These questions are important to consider prior to deciding where to put parking lots, bicycle racks and trails.

How are you and others going to get to the park?

Where do you enter the park now?

From which directions will most of the pedestrians be coming from and going to?

From which directions will most of the bicycles be coming from and going to?

Where are the connections to existing and proposed trails and bike lanes?

Where are the bus routes?

Which direction will most of the cars be coming from now and in the future?

Which side of the park has the most convenient car access?

Activities - It is important to consider where people want to do what in the park and how many are likely to be there at the same time so trails, shelter, lookouts, etc. are properly located and sized. The desired activities also help to determine the type of facilities needed.

What activities such as walking, fishing, birdwatching or drawing have you done in the park? Where do you do them?

How often do you go to park? Daily, weekly, monthly, only in summer or ???

Do you usually go to park at certain time of day?

If the park is developed to include the facilities that you want, how often will you go to the park? When are you mostly likely to visit the park - early am, daytime, after school, evenings, night, weekdays, weekends, year round or what season?

What activities have you observed others doing in the park? Where?

How many people do you usually see in the park? Are they alone, small groups of 3 or less people, med groups of 4-10 people, large groups over 10 people?

Will you bring organized groups to park? School, service club, environmental group or. Other/? To do what? How often?

Task 3 - Other Social Factors To Discuss and Consider

Scenic Areas And Features

Where are the prettiest places in the park? How do you want to protect them? Build no facilities there? Provide trail so folks can see view? Plant young trees or shrubs?

Favorite places

Where are your favorite places in the park?

Potential Environmental Education and Interpretation Signs, Brochures or Programs

What would you like to see and learn more about? Birds, fish, frogs, plants, butterflies? How to see animals more often? How to protect animals? Where the water goes when it leaves the park?????

Zoning and Changing Land Use

How do you think the area around the park will change in the future? How will these likely change things in the park? Consider the following:

- changes in number of visitors
- changes in where visitors enter park
- changes in surrounding landscape and scenery
- changes in wildlife corridors and habitat
- changes in stormwater

Utilities

LOTT has an existing sewer line and service lane that runs north/south on the east side of the park. The service lane might serve as a trail, however, odors from the manholes may reduce enjoyment if they are not sealed and filtered.

Previous owners of the land that is now within the park installed sewer and water lines south and west of Lake Louise. They also installed a well, water tank and power line on the southern end of the park.

At the park entrance on Kaiser Road is a city well. Copies of the city's new wellhead protection report are available at the workshop.

Task 4 -Facilities Needs and Preferences - Answer Questions

What facilities do you want in the park?

What facilities would you use?

[Paved trails, gravel trails, bark trails, boardwalks, docks or piers, wildlife blinds or observation platforms, birdwatching tower, environmental educational/nature signs or brochures, shelters, toilets, drinking faucets, parking, environmental education or nature center, bike parking, amphitheater, observation scopes, benches, tables, easels, canoe, kayak or raft launch???)

What worries you most about the park? Current use - be specific? Future uses? What are possible solutions?

[Safety, noise, wildlife protection, trespass, crime???)

Task 5 - Site Analysis

Discuss as a group and mark on map:

most scenic places

favorite activity places - where people want to go

wetlands and other sensitive areas where may not want to put facilities

flat, dry areas that may be good for facilities

where should be the quieter places where the trails are far apart and there are not loud activities such as parking?

Where should be the busier places where people could meet in groups ?

Other factors that you want considered in your site plan

Task 6 -Site Plan

Utilizing your site analysis map, your preferred activities and facilities lists and your responses to the other questions and discussions, draw a site plan on the park map provided to you. Show where you would put the different facilities. Label areas where you want different management activities or practices. Please print neatly. Include all your recommendations on the map. Your group will give your site plan and your completed summary sheets to park staff at the end of your presentation.

Where should the park entrances and trailheads be built? With or without parking? How much parking? May consider limiting the amount of parking to discourage people from driving to the park. This may discourage some use and overcrowding.

Darkness is a precious resource - how much lighting where? Night lighting can disturb species particularly nocturnal animals. It also reduces the amount of stars visible. Yet we want to be safe. What should be lighted at night? Parking lots, trailheads, trails??

Consider public safety. Wide trails might be usable for emergency access if someone is hurt.

Task 7 - Facility Priorities

What should be built first? List in order on the Summary Sheet provided.

Task 8 - Management Plan - Discuss and make recommendations for management activities

Write these on the Summary Sheet provided. Consider the following:

What regulations do you think the park needs that are not already covered by existing city park regulations?

Should the park be open on all nights for nighttime wildlife and star observation or only on special occasions - consider risk of nighttime vandalism?

Are there specific mgmt activities that you would like to recommend (do not need to address routine maintenance such as cleaning toilets, removing trash)

Are there programs or events that you would like to have at the park?

What information should go on park signs that would help visitors?

Consider use regulations such as no bikes, dogs on leash, carry out trash

How to reduce disturbance to wildlife - stay on trails, etc.

Environmental education subjects - what are the neatest things about the park that the public should know about?

For example, other mgmt activities to consider include:

Remove blackberry, Scots broom, canary reed grass or other nonnative plants

Install new caps and filters for sewer manholes

Close and replant undesirable paths and trails

Establish monitoring program - water quality, streamflows, animals, plants, humans

Task 9 - Management Priorities

List management activities in order of importance on the Summary Sheet provided.

Task 10 -Implementation

How should the city implement the master plan? Where should the money come from?
Tell us your preferences and ideas. Be creative! Write your recommendations on the Summary Sheet provided.

Tell us possible strategies for implementing your recommendations.

- use open space impact fees
- city revenues
- apply for matching grants
- citizen stewardship group to raise funds
- volunteer projects
 - stream team
 - school groups
 - service clubs
 - other?

Optional -Personal Commitment - may answer and turn in if you wish.

It is your park. How do you want to help? (You already have helped by sharing your ideas today!)

How are you willing to help with the park's development and management?

- Pick up litter when visiting park
- Volunteer for plant removal and planting projects
- Help build trails
- Contribute materials
- Contribute construction labor
- Donate items such as bench
- Provide art work for signs or brochures
- Participate in research studies and monitoring on wildlife or plant?
- Lead walks or programs in the park
- Other??

APPENDIX C

Summary of Public Recommendations

Summaries of Summary Sheets
Grass Lake Park Master Plan Workshop
October 26, 1996

TASK 2 -Answer Visitation Questions

Group 1

Transportation

- Autos primarily
- Bus (primarily Cooper Point) (and Mud Bay)
- Access from West, East and North
- * West side with lake forecasted as most popular (Kaiser Road)
- * Bikes: Need bike lanes. Potential popular access from Cooper Pt. south on Kaiser from Evergreen College and 14th Avenue
- * Traffic ideally going to park through Cooper Pt and Harrison. With adequate parking facilities on these streets, 14th Avenue might be "protected" from additional
- * Kaiser has current best access to park. Cooper Pt. draws most traffic.

Activities

- Walking
- Snorkeling
- Bird watching
- Boating
- Photography
- Fishing
- Swimming

Note: Most activities are centered around the park.

*Go to park: Just in our group, 50% at various segments of time went daily, 1 went weekly, and 1 went monthly. East side person had never visited before.

*Morning and sunset are currently most popular, but it was noted the park is fun to visit all day.

*We have seen horseback riding, nude bathing, brush cutting, homesteading, fishing, hiking, swimming, snorkeling, motorcycle riding, truck and car racing, BB gun hunting, bow & arrow hunting, beer parties, pot smoking, ice skating.

*Usually see small groups of 3 or less. Will see 0-5 typically. Up to 20 on a "popular" day. Depends on weather and season.

*Plant walks, Stream Team, work parties, bird watching are reasons we would bring people to park.

Group 2

Transportation

- Enter park from Kaiser Road and 14th Avenue
- Get to park by bus, foot, bike, car
- People coming from North and West
- Bicycles coming from NW and South, North and East
- Connections of trails and bike lanes at Kaiser and 11th Avenue
- Bus routes are Cooper Pt. and Mud Bay
- Most convenient car access on 14th Avenue

Activities

- People do fishing, nature walks, bird watching, canoeing, class trips, art
- Not many people go to the park (1 per month) in the afternoon, early in the morning
- People walking dogs, jogging, swimming
- 0-5 people seen at park a day
- Will bring organized groups to parks

Group 3

Transportation

- Parking areas West and South sides
- Walk-in access North and East sides - East: CHS, bus, North: Marshall, Hansen

Activities

- Uses: CHS - classroom work - science, art, PE, English, cross country, jog, walk animals
- School groups to park - monthly?

Group 4

Transportation

- Concern with parking on Kaiser Road. due to traffic which is already a problem area.
- Pointed out that north side will be developed for residential so there will be increased population meaning several park visitors on foot.
- Main current access right now is Kaiser Road.
- Need parking for boaters and disabled visitors.
- 14th Avenue seems to be open enough for parking without removing trees.
- Parking would be limited on Kaiser Road. entrance.
- More parking means more people flow which would disrupt natural life.

- Don't want to see bicycle routes on trails with more pedestrian traffic. Limit maybe to around parameters. Currently, main trail running from Kaiser to Mud Bay is used as shortcut.
- Don't want motorized boats, canoes, etc. o.k.
- Adequate trails are needed to monitor park too.
- No boat launch needed. Just maintain beach or south side of main lake.
- Clear out blackberry vines, scotch broom, etc. and leave only natural life in path areas and areas out of control.

Activities

- Limit parking
- Limit bikes

Individual Comment

Transportation

- Outside parking - gravel with log boundaries
- Off 14th Avenue, Mud Bay, by Conger
- Provide bike racks
- Bus route - Cooper Pt.
- Car - Mud Bay

Activities

- Walking, bird watching, drawing from North
- Monthly
- Saturday afternoon
- Monthly, after school, evenings
- Jogging, walk animals, homeless sleeping
- 3 or less
- School

TASK 3 - Other Social Factors to Discuss and Consider **Group 1**

Pretty Places

- Lake edge, Lake Louise
- Grass Lake East by sewer access road
- Section in north central between Grass Lake East and Grass Lake West has beautiful conifers

*Would like to see no new trails.

- Would like to see interpretive signs describing wildlife, ecosystem, how the ecosystem is intertwined with our lives and the fragility of the ecosystem.

- Growth, development, more people will be factors in future.

Group 2

- Scenic view of water
- Put in info. maps
- Build trails for people
- City be built up around park in future
- Keep park well defined, trails cleared for people
- Utilities! Spring water drinking fountains, restrooms on main trails, entrances

Group 3

Provide

- Benches
- Boardwalks in sensitive areas
- Rails to discourage off trail
- Overlook water (favorite place)

Education - CHS

- Wetlands-importance
- Art, English (creative writing), science, PE, chemistry

Land use changing

- Close sensitive areas as necessary for wildlife

Group 4

- Concerns regarding storm water drainage and the impact after development
- Educational signs pointing out different trees, plants, etc. Not throughout entire park, just in areas of diversity.
- Another southern trail may be needed.
- Restrooms are needed, possibly in parking areas only. Same with lighting. Do not want it on trails. Don't really want lighting anywhere, but have considered security reasons.
- No to amphitheaters.
- Need benches and tables. Picnic areas by accesses. Maybe not picnic tables. May encourage parties, other problems. Benches throughout trails.
- Would like to retain natural surroundings.
- Need some sort of year round path on east side.
- Placement of blinds north end of middle pond or east end.
- Need bike parking
- Want benches with educational signs.

Individual Comment

- Benches
- Boardwalks for fragile
- Rails to discourage

- Overlook water (benches)

- Art, English, creative writing, science, PE, jog, chemistry
- Stations
- Wetland - imptc
- Loop trails

- Close areas during critical times for animals

- Seal and filter

- Water fountains and restrooms at major entrances
- Additional restrooms (solar port-a-potty)

TASK 4 - Facilities Needs and Preferences

Group 1

- No paved trails
- Handicapped access loop to Lake Louise
- Maintained, park trails without paving or bark
- Keep the trails low impact and "wild seeming"
- Boardwalks that are non-obtrusive so they do not cause wildlife to be startled.
Recommend blinds and keeping them in protected areas to avoid scaring wildlife in wetland areas.
- Blinds around Lake Louise for wildlife viewing.
- Interpretive signs. Markings in park saying "you are here", one way, another way
- Drinking water, no, maybe in parking lot but preferably not.
- Toilets - no, but ok in parking lot
- Benches - yes, on trails
- Picnic tables - no
- Park Hours - sunrise to sunset
- Boats - no
- No amphitheater - keep it natural
- Parking lots on Kaiser and Cooper Point as main access to park. Additional lot(s) on 14th Avenue

Group 2

- Drinking fountains (spring water)
- Benches, tables
- Restrooms on main trails
- Hog field, wood chip trails
- Bike racks
- Parking strip
- Water level to pump water into lake
- Don't want any pollution, crime
(Concerned that run offs be filtered)

Group 3

- Benches
- Restrooms/fountains
- Boardwalks
- Info signs
- Bark trails
- No pavement
- Limited wheelchair access (wider trails)
- Loop trails
- Garbage cans
- Light only parking areas

Concerns

- Where will homeless go?
- Overuse
- Impact on wildlife
- Parties in area

Group 4

-
- Good solid trail around park parameter with smaller foot trails within

Individual Comment

- Benches
- Restrooms/fountains
- Boardwalks
- Info signs
- Bark trails
- No pavement
- Limited wheelchair access

- Bark trails
- Observation platforms
- Environmental educational/nature signs or brochures
- Toilets
- Drinking faucets
- Parking
- Benches
- Garbage cans (on trails)

- Homeless people need place to go
- Overuse
- Impact on animals and wildlife
- Parties in area

- Access points - rules
- Stay on trails, etc.

TASK 5 - Information on Map: Site Analysis

Group 1

Worries

- Trespassing
- Noise
- Wildlife harassment
- Wetland destruction (trails, dogs, motorcycles, urban development causing drainage problems)
- Storm water damage
- Lake going into residential drain fields
- Transients
- Parties
- Vandalism to things in the park (benches, signs)
- Horseback riding
- Motorcycles
- Pollution

Group 2 - nothing

Group 3 - nothing

Group 4 - nothing

Individual Comment

- Loop trails
- Central
- All habitats represented (with disability access)

TASK 6 - Most information on maps

Group 1

Site Plan

- Parking lots on Cooper Pt, Kaiser and 14th Avenue
 - Lights
 - Paved or dirt lots
 - Restrooms - yes
- Parking lots double as trailheads
- Should be trail that goes from Kaiser to Cooper Point
- Build wildlife viewing towers on West and East sides of Lake Louise. Similar to Percival Landing Tower, but not as big. Construct so blends into scenery as well as possible. Have stairs and railing to the top. Has roof.

Group 2 - nothing

Group 3 - nothing

Group 4 - nothing

Individual Comment

- lights only at lots, none inside central areas
- Night lighting - parking lots, trailheads, trails-no
- Wide trails for wheelchairs

TASK 7 - Facility Priorities

Group 1

- Trails and interpretive/learning signs
- Management philosophy; rules maintenance
- Towers (to protect wetlands)
- Boardwalks
- Parking

Group 2

- No lighting (dawn til dusk)
- Build trails (3 ft. wide) and parking first
- Signs and benches and garbage cans
- 20 car parking lot

Group 3

- Trails
- Parking/bike racks
- Block off sensitive areas
- Restrooms/drinking fountains
- Observation platforms by lakes
- Signs
- Garbage cans
- Benches

Group 4 - nothing

Individual comment - nothing

TASK 8 - Management Plan

Group 1 - nothing

Group 2 - nothing

Group 3

- Permits to use park after dark
- Night use permits only
- Offer classes - volunteer groups
 - birds
 - plants
 - wetlands
- Signs
 - stay on trails
 - hours of use
 - animals - dogs on leash
- Students - water quality monitoring plants/animals
- Safety

Group 4 - nothing

Individual Comment

- Special occasions or permit
- Regulations

TASK 9 - Management Priorities

Group 1

- Purchase additional shoreline along Lake Louise
- Swap southwest 5 acre corner along Kaiser Road (scotch broom flat land) with 5 acres bordering it and the park that has cedar grove.
- Purchase conservation easements where land purchases aren't possible

Group 2

- Take out scotch broom and blackberries
- Fruit trees along trails
- Cattails along water way to help filtration
- Bio-filtration on southeast side

Group 3

- Human safety - parking with lights
- Keep trails open and clean
- Animal safety most important
- Monitoring
- Develop educational programs for public

Group 4 - nothing

Individual Comment - nothing

TASK 10 - Implementation

Group 1 - nothing

Group 2

- Impact fees dedicated to storm water filtration
- Grant money from other places

Group 3

Money

- Programs in park with fees
- Donation boxes
- Volunteers - CHS horticulture, biology, x-country
 - Water testing
 - Litter
 - Community service projects

Group 4 - nothing

Grass Lake Refuge Draft Master Plan Public Review Comments

I. Summary

A. Workshop Comments (Attached)

B. Formal Comments Received (Attached)

1. Olympia Park and Recreation Advisory Committee - Added directly to text
2. Olympia City Council - Added directly to text
3. 2 Organizations
 - Black Lake Audubon Society
 - Camberton Court Homeowners Association
4. 3 Letters from Individuals
 - Darrell Jennings
 - Nancy Partlow
 - Susan Palustrude
5. 2 Letters from Advisory Committee Members
 - John Paul, Biologist
 - Rochelle Rothaus, South Sound Green

C. Major Concerns Expressed By The Public

1. Trail width and surface - Staff Recommendations attached
2. Wildlife disturbance - Staff thinks plan is adequate

D. Details Added to Plan

1. Parking Lot Gates
2. 911 Phone and Fire Hydrant at 14th Avenue Trailhead
3. Handrailings to Boardwalks and Piers

4. Possible Use of Photovoltaics for Shelter and Restroom

E. Staff Refinements to Master Plan

1. Monitoring - added direction for coordination and feedback to design and management
2. Wetlands Management - added direction related to land use review and SEPA
3. Marketing Plan - added environmental education opportunities via the Internet

F. Corrections to Document

1. Typographical and Grammatical Errors
2. Improved page and map numbering

G. Public Recommendations That Staff Recommends Against

1. Running/Jogging
2. Not having environmental learning station piers and observation blinds
3. Fewer trails/More trails
4. Several recommendations from Capital High School Students including a concession stand and paintball

II. Comments Received and Replies Given at the Grass Lake Refuge Draft Master Plan Workshop 1/27/97

Comment: (Page 48-49) Having all parking in one place draws all the impacts to 14th. Might consider more parking at Kaiser.

Reply: Desirable to have most impacts on 14th at old homesite. Keeps noise and disturbance on periphery.

Staff Recommendation: Provide three additional parking spaces at proposed Kaiser entrance.

Comment: Like the vision.

Comment:(Pages 47, 48, 85, 98) During Phase I when 14th parking not built yet where are kids/parents going to park? Want to see parking in Phase I. Concern that people will park next to city's pumping station and will block service access. Will the parking lot be gated? Will refuge be open at night?

Reply: Until new parking areas are constructed, the Kaiser Road and old homesite parking areas will remain. Additional parking is available on the 65 Road. If people start parking next to pumping station, the area could probably be signed for service parking only. Refuge parking lots will be gated. Refuge hours are dusk to dawn with evening activities by permit from the Department.

Staff Recommendation: Install gates at 14th Avenue and Kaiser Road parking lots. Determine if it is necessary to lock and unlock gates daily. If so, the addition to annual operation costs will be approximately \$4,200.

Comment: (Page 36) How is permit process going to be set up especially for nighttime activities?

Reply: Permits will be applied for at Olympia Parks, Recreation and Cultural Services Department at The Olympia Center.

Staff Recommendation: Add specific direction on park signs as noted in plan.

Comment: (Page 91) What is the schedule for new developments?

Reply: Developments will depend on funding. No city revenues are currently available. After adoption of the master plan, the City will propose refuge projects into the city's Capital Facilities Plan. City will actively seek grants and donations.

Comment: (Page 47, 50) What is the design of the shelter - is it enclosed?

Reply: It maybe partially enclosed from prevailing winds. Refer to design program and conceptual sketches in plan.

Comment: (Page 52) Concern that Grass Lake would lose it mystical quality w/trails through it. Are all trails aggregate?

Reply: We hope that the beauty will not be harmed. The trails are at low densities with wide

buffers between trails. The best trail surfaces are a challenge because the site is extremely wet and we want to provide accessible trails for people with disabilities. If trail sections are not accessible, people with disabilities will not be able to experience the range of diversity within the refuge.

Staff Recommendation: Include additional trail details in plan to address public concerns. Describe in more detail trail objectives, standards and options.

Comment: Please provide draft plan copies to Tumwater and Lacey libraries, too.

Reply: We will.

Public: Concern with where kids ride bikes to get to schools esp. along 14th Avenue. 14th Avenue needs to be improved with bike lanes before the refuge facilities are built.

Reply: 14th Avenue is currently not scheduled for improvements. Teachers involved in the master planning process also expressed concern for children walking and biking on 14th. The master plan proposes a trail from the 65 Road intersection into the refuge so students don't have to walk down 14th to enter the refuge.

Comment: How does the property owner on the SW corner access his property?

Reply: Under arrangement with the Olympia Public Works Department.

Comment: (Pages 60-65) What will be the long term management of the wetlands and forest?

Reply: Two areas will be managed as wildlife reserves with no trails. We are proposing intensive landscape restoration on the heavily disturbed sites as displayed on the management plan. No timber harvest will be done. Refer to management plan section of the plan for more details.

Comment: (Page 48) Will city tie into other development to the south?

Reply: The developers have been asked by Olympia's land use review committee to provide a section of the Yauger to Grass Lake Trail according to the urban trails plan. This will tie into the proposed Grass Lake Nature Trail as shown on the conceptual site plan. The plan includes three south side spur trails to provide access to and from private developments.

Comment: (Page 60-65) What about invasive exotic plants - will they be eradicated?

Reply: The plan proposes major eradication efforts in the most disturbed sites. Concern elsewhere in the refuge is that we don't do more disturbance during eradication. Scattered non-native plants will probably be removed by hand by volunteers.

Comment: (Page 49) Will the parking lot be lighted?

Reply: No

Comment: (Page 52) Want some trail sections to not be aggregate - bark creates different experiences.

Reply: Refer to reply above concerning site conditions, trail maintenance and accessibility.

Comment: (Page 87) Purchase the five acre cedar grove on the south side of refuge.

Reply: We have completed an acquisition analysis that evaluated what values adjacent parcels might add to the refuge. The city does have funding for open space acquisitions. Additional purchases maybe made around the refuge but other important habitats throughout the city are under review.

Comment: If Albertsons builds on SW side of refuge they may help buy land or do other things for the refuge because they have helped with parks in Boise but they over light their parking lots. Worried about lighting impacts to refuge.

Reply: We do not know what the city's standards are for commercial lighting but we will look into this.

Staff Recommendation: Add additional management objective to page 61 to help address this concern.

Comment: (Page 51) Concern about piers in lake. Could be hazard to kids falling into quick sand, piers seem out of place. Prefer observation blinds that only have peepholes to look out.

Reply: Kids are going into the lake now. The goal is to limit shoreline trampling by providing limited access points. The soils are organic and soft but not quick sand. The drawings are only concepts. Safety will be a major concern during design phases.

Staff Recommendation: Add handrailings to design standards and sketches in plan.

Comment: (Page 48) Move piers to artificial stormwater ponds on 14th.

Reply: The school already have detention facilities with nature trails. What can be learned and experienced there is different than what Grass Lake has to offer. Don't think the environmental education and interpretation focus group would agree with limiting learning stations to the detention ponds.

III. 1/27/97 Workshop Summary Feedback Sheet Questions and Answers

Question: What Do You Like Most About The Master Plan?

Protection of the land, vegetation and biological life as opposed to development

No boats or fishing

Looks good

Question: What Isn't Addressed That Should Be?

Grass Lakes are already substantially impacted by storm water run off. Future development may well adversely affect the entire wetland system. Enough monitoring exists to know that. (According to the Wetlands Inventory and Habitat Assessment, the Grass Lakes and the cottonwood swamp are very high value habitats with little disturbance. The draft plan recommends a number of actions to help protect the refuge from stormwater impacts. The Grass Lake wetlands system is very complex. We think additional monitoring is needed to understand existing functions and values and to watch for future changes.)

Is an environmental impact study being done? How about effect on threatened species like the Olympic Mud Minnow? (The State Environmental Policy Act (SEPA) checklist was prepared for the master plan. There are no known threatened, endangered or sensitive species within the refuge. The Olympic Mud Minnow is not a listed species.)

Law enforcement? (The draft plan includes a section on safety and risk management on page 42. The Olympia Police Department is responsible for law enforcement within the refuge.)

Fences may be needed to protect private property from trespassers. (Most existing trespass appears to occur up the sewer access road from Mud Bay Road and on private property along

Kaiser Road. The draft plan calls for the access along the sewer to be eliminated when the sewer line is abandoned. The improved public entrances and trails may help to eliminate trespass that occurs from the public not knowing which areas are public and which are private. If trespassing is or becomes a problem, the city will work with adjacent property owners to help resolve the problem.)

Outdoor lighting on properties nearby. (The draft plan does not call for any exterior lighting. The shelter and restroom will have interior lights. Due to the shelter's open design, if the lights are on for an evening event they would be visible from 14th Avenue. The plan's design program will be revised to state that the lighting should be designed to avoid flooding outside of the structures. This is also an issue for wildlife protection.)

Acoustic control on board structures. (This concern was discussed when working on the conceptual designs but not included in the draft plan. The designs should try to reduce sound. This will be added into the plan's design program.)

Question: What Changes Would You Like In The Plan? If Site Specific, Please Mark Them On A Site Map And Return Them With Your Comments?

No docks should be buildt out into Lake Louise. They will be in mud 4 months out of the year, then rise 8-10 feet in winter. I and my neighbors may want to build our docks also. Mine would need to be 120' long to stay in water. (The environmental learning station piers are proposed to be floating to allow for the changing water levels. During the dry years in late summer, the piers will not be in the water. They will provide access to water most of the year during typical years and will provide improved observation access and pedestrian control compared to existing conditions. As seen on the master plan drawings, the piers are conceived to be fairly short in length. The objective is to allow people to have a better view without trampling the sensitive shoreline and aquatic habitats. Monitoring will be done to see if facilities are working as desired.)

Keep trails low maintainance and inexpensive. (The lowest maintenance trails would be concrete. Concrete would be the most expensive to construct. The resulting aesthetic experience would feel too urban and not be preferred by most people who have participated in the master planning. Concrete trails are not feasible in much of the refuge due to the extensive wetlands and even in the uplands they would likely serve as dikes for surface and near surface water flow which is not desirable for maintaining natural conditions. The least expensive to construct trails are wood chip surfaces but they are higher maintenance especially in wet areas like the refuge. The proposed aggregate trails in the uplands are more expensive to construct than wood chips but the maintenance will be less and they will provide leveler and drier surfaces for improved access. The trails across the wetlands will have to be boardwalks.)

No electricity is needed into the park. (Because of low light especially during short winter days, lighting is needed in the restroom and the shelter. Electrical service is also needed for

construction and maintenance. It may be possible to use photovoltaic cells to supply the electrical needs.)

The plan is overly responsive to the wants of educators and does [not?] sufficiently protect the park. The area is basically opened to more access by more people so more garbage, abuse, crimes, and adverse impact may occur. (Believe the word 'not' was left out of the comment. The concern is that the plan does not sufficiently protect the park. The refuge is currently open to the public. We think that much of the garbage and abuse has occurred because people are unaware of the refuge's values and regulations. We think that the new entrance orientation signs as described on page 36 will reduce these negative behaviors. By not having a developed trail system and good access to the water, people have trampled in their own trails and the shorelines. The proposed improved trails and water access points should reduce trampling. The draft plan proposes two wildlife reserves where no public access would be provided. About 2 miles of trail will be obliterated. This management should help to protect wildlife from human disturbance.)

Wild waterfowl fly away from people. The cover illustration is a dream. (Some waterfowl and other birds adjust to human disturbance. Flushing distances will vary. Waterfowl continue to use areas with boardwalks such as at McLane Nature Trail. Too limit disturbance to sensitive species utilizing the Grass Lake wetlands, breaching the open water surfaces will be limited to two environmental learning station piers and two boardwalk crossings.)

Night time mammal studies may for humans and not animals?? (Question is not clear.)

How will horses and motorcycles be kept out? (Trailhead signs will list them as prohibited. Violators that are caught will be ticketed.)

Include a hands-on wetland up by parking area that is intensively managed by a botanical society. (This idea was not suggested by the environmental education and interpretation focus group. They recommended that the refuge's environmental education and interpretation focus be the natural wetlands. No botanical society has expressed interest in such a project.)

Loop trail for dogs instead of up & back. (The proposed trails were carefully sited to provide adequate buffer for wildlife. Increasing trail density will reduce wildlife usage. Dogs probably don't care if they are on loop trails. The proposed spur trails providing access to and from the private developments on the south side could be used to create dog walking loops. The urban trails plan includes the Grass Lake Nature Trail as part of a 5 mile loop.)

Concerns about adjacent neighbors. My house is across the street on Westpark & am concerned about noise & security. Please keep me informed as to progress. (The main facilities including the environmental learning shelter, restroom and parking were located to be highly visible for increased security. The plan will be revised to include parking lot gates to be locked at night.)

Feedback Sheets Received From:

Mark Upton
Lyle Tribwell
Fred Gustafson

IV. Comments from Organizations

Black Hills Audubon Society (Letter is attached.)

Comment: (Page 1) Pleased that city wishes to protect the area as a sanctuary for wildlife and native plants

No action or reply needed.

Comment: (Pages 15, 34, 52, 85) Concerned with providing additional accessibility for people. 6' wide trails are too wide. Will reduce vegetation and natural infiltration of rainfall, cause runoff into lake and scouring of vegetative areas. Will allow more people to utilize the area. May lead to degradation, trampling of vegetation, scaring wildlife and birds (particularly if dogs are allowed) and increased garbage

Reply: Our objective was to provide improved accessibility not necessarily "additional accessibility." The plan recommends obliterating and restoring to natural conditions about half of the refuge's existing trails, i.e., over 2 miles of existing paths and primitive roads. The existing primitive roads are wider than our proposed 6' trail width. The master plan recommends that most of these primitive roads will be obliterated and restored to natural conditions. Providing improved trails to the desired features allows the elimination of the many duplicate paths and paths and roads in sensitive or undesirable locations.

We share your concerns about how to prevent the environmental degradation. We analyzed and discussed trail design standards including width and surfaces extensively. We compared trail width and adjacent vegetation trampling at Watershed, Priest Point and McLane. We also relied on trail standards and our staff's expertise. For the site conditions and type of use, we think that 6' wide is the best standard but we also stated in the trail design standards that trails may narrow to 36" to protect significant trees, plants or other natural features. The 6' width will seem narrower outdoors within the lush vegetation of the refuge. Even with good routine maintenance there will be some vegetative encroachment along the trail margins and organic debris on the trail surfaces.

Trail construction is the most expensive element of providing trails and it is the time when the

most resource disturbance occurs. It is desirable to build to the needed width versus trying to expand the width later. When trails are built too narrow so adjacent trampling occurs, the costs of widening the trail are often as much or more than original construction costs and by re-entering the area with construction equipment and crews, resource disturbance is doubled.

Paved trails require the least maintenance but we did not recommend them because of concerns of interfering with drainage patterns due to the extensive surface and subsurface drainage in the area. Paved trails do not provide the aesthetic character that many people desire within the refuge. Wood chip trails are the least expensive to build and the most expensive to maintain in areas with the climatic, soil and drainage conditions of the refuge. They do not meet accessibility standards. Compacted, crushed aggregate allows some infiltration. Construction and maintenance costs are moderate. With proper construction and maintenance, compacted, crushed aggregate trails are accessible for people with disabilities.

The trails will be properly designed, built and maintained to avoid erosion. Sediment and erosion controls will be implemented where needed during construction. The wet areas will be crossed by boardwalks or pedestrian bridges but not surface trails.

Dogs will be restricted to the Grass Lake Nature Trail across the southern end of the refuge. We agree that they should not be allowed in the interior wetlands and the wildlife reserve areas.

Garbage has been a long term problem in the refuge. The city has actively cleaned up abandoned debris and campsites. The plan acknowledges the need for daily and routine maintenance including garbage and litter pickup.

Staff Recommendation: Add additional detail to the trail design standards in the plan to better define and display resource protection measures including vegetation clearances, boardwalk railings, sediment and erosion control and drainage issues.

Comment:(Page 8) Utility connections will also temporarily impact the area during installation.

Reply: The only proposed utility connections are at the 14th Avenue main entrance. This old homesite is nearly level ground and has few trees and mostly non-native vegetation. Construction disturbance will be minimal. This site was selected to limit disturbance to high value and sensitive habitats within the refuge.

Comment: (Page 61) More area will be consumed for human use rather than keeping the area as a refuge.

Our objective is for the refuge to be a sanctuary for wildlife and people. We admit it is a challenge on how to balance protection and utilization. Currently, the entire refuge is open to

human access. The master plan recommends managing over 1/3 of the refuge as wildlife reserves. The largest is the Grass Lake East Wildlife Reserve. The other is the Lake Louise Wildlife Reserve. All existing trails and paths in these areas will be closed and no access will be provided. The public will be asked via signs and educational programs and materials to stay out of the reserves. The reserves are consistent with the recommendations of our consulting biologists, The Coot Company.

Comment: (Pages 86, 87) While there will be interest from volunteers to help monitor the project, there is concern that, as in all volunteer programs, interest wanes... people move away... Can TESC realistically guarantee long-term support?

Reply: We share your concern for a high quality, long term monitoring program. Our next step is to have a meeting with city staff, representatives from related agencies and programs, TESC administrators, faculty and students and interested individuals to further identify how the monitoring program can be accomplished.

Comment: (Pages 34, 88, 89) You indicate that the learning station may be built by volunteers with supervision by volunteer or paid experts. Piers and blinds extending into the lake area, or near the shore, should be well-thought out and may need trained personnel to perform the construction.

Reply: We agree. The plan outlines the design review and permitting processes required for the proposed facilities. Carpenters and other building professionals sometimes volunteer to build park and other public facilities. This is a generous community and we are optimists.

Comment: (Pages 60-65) Careful attention to native grasses should be adhered to when removing invasive non-native plant species. The Evergreen State College uses this area as a field trip site for the study of grasses, sedges and rushes. Some of the species are not native. Will complete removal of these species damage the 'grass' like appearance of Grass Lake?

Reply: The management plan expresses concern with protecting native plants during removal of non-native plants. Numerous plants contribute to the 'grass' like appearance of the lake. Some are native and some are non-native. The shallow lake will always have protruding plants. As recommended in the management plan, restoration plans will be developed in the future to supplement the initial direction in the master plan.

Comments from the Camberton Court Homeowners Association

Comment: (Page 36) Jogging should be allowed.

Reply: We disagree because the area is a refuge. Joggers and runners typically increase

disturbance to wildlife and wildlife observers, trail damage and maintenance and off-trail trampling.

Comment: (Page 52) Consider glass and aluminum recycling containers.

Reply: This may be implemented in the future.

Comment: (Page 52) Sanican for bathrooms, not water equipped

Reply: Portable toilets are not a good long-term solution, however, they may be used as an interim solution if use increases prior to construction of a restroom. The permanent restrooms may be flush or composting.

Comment: (Pages 85, 98) Who's locking this remote bathroom at night?

Reply: This restroom will not be more remote than other park restrooms that are not locked at night.

Staff Recommendation: Add under Operations and Maintenance sections that restrooms may need to be locked at night. The cost of locking each evening and unlocking each morning will be approximately \$4,200 per year. This estimate includes locking and unlocking parking lot gates.

Comment: (Page 42) Access For Emergency Vehicle? Community Policing? Bike Patrol or what format? Fire Access?

Reply: The police and fire departments have reviewed the plan and their recommendations are incorporated into the plan.

Comment: (Page 36) Snorkeling Allowed?

Reply: No due to potential disturbance to sensitive species.

Comment: Bike/Pedestrian walkway monies available from DOT. Will this be accessed to improve 14th?

Reply: The master plan is for the refuge and does not address transportation planning for 14th Avenue.

V. Comments From Individuals

Darrell E. Jennings (Letter is attached.)

Comment: (Page 87) Encourage city to aggressively seek land acquisitions in the immediate area to provide a "natural" buffer to this environmentally rich and sensitive area.

Reply: The city is currently negotiating land acquisitions adjacent to the refuge.

Comment: (Pages 5, 89, 99) Keep the public involved. (Letter recommends methods.)

Reply: We agree. Directions for continued public involvement are described in the plan.

Comment: (Pages 46, 55-56) Also improve access for people with visual impairments. Funds available from the Lions Sight Conservation Foundation.

Reply: Thank you for the potential funding information. Grass Lake is a chorus of sounds and palette of textures. The trails and learning stations will serve people with visual impairments. Signing will comply with federal and state regulations.

Staff Recommendation: Strengthen direction in plan for providing universal access to facilities, interpretation and other opportunities. Include trail clearing standards.

Comment: (Pages 28-29, 52) Good distribution of users through a meandering trail system. Does the current vegetation provide such a buffer to limit the view of other trails and abate noise? (Includes more trail ideas.)

Reply: Most upland areas are thickly vegetated. Most trails will be not be visible from other trails or viewpoints. The topography and other features provide some noise abatement.

Comment: (Page 52, 92) Need for a restroom.

Staff Recommendation: Add the potential need for portable toilet prior to construction of permanent restroom.

Comment: (Page 49) Provide an accessible route to the restroom. (Other recommendations for restroom.)

Reply: All trails will be accessible. The conceptual site plans and drawings will be refined during the design process.

Comment: (Page 36) Allowing dogs, although on leashes, onto the Grass Lake Nature Trail, is a use incompatible with the overall management plan of the refuge. Dogs naturally tend to bark at other animals, wildlife and people, and their owners are not always "skilled" at cleaning up after them.

Reply: During the planning process the issue of dogs in the refuge were discussed on

numerous occasions. Dogs are not banned from any Olympia parks. Some people think the master plan's recommendations are too restrictive. Presently, some owners let their dogs run loose in the park which is prohibited by city ordinance. Restricting dogs to leashes only on the proposed Grass Lake Nature Trail is more restrictive than the current situation and is a compromise with dog advocates.

Suzanne Paulsrude (Letter is attached.)

Comment: (Pages 89-91, 93) Are there other options for labor in developing the trails, such as using prisoners for community service work? Also, can the trail development be scale back to reduce the cost/ Will the construction of restrooms contribute to homeless population currently living in that area?

Reply: The city is receptive to all implementation ideas. Utilizing volunteers will reduce trail construction costs. Camping is prohibited within the refuge. Camps are routinely removed from the refuge.

Comment: (Page 44) If it weren't developed at all, it would probably be most beneficial to the wildlife residing there.

Reply: We think that not having a developed trail system would result in additional disturbance to wildlife and wildlife habitats because people would wander and create more trails and random disturbance.

Comment: (Page 49) Will fruit trees be removed for restroom construction?

Reply: Tree removal will be dependent on the final site plan and design for the 14th Avenue entrance area. Areas disturbed during construction will be planted.

Nancy Partlow (Letter is attached.)

Comment: (Pages 6-7, 52) My concerns with the Master Plan have to do with Grass Lake being over-developed to accommodate human uses...Nobody seems to like the six foot wide trails paved with aggregate material and there is some question about the need for the intensive development of boardwalks, environmental piers and bird blinds.

Reply: Our objective is not to overdevelop the refuge but we think that inadequate facilities will result in additional resource damage. The proposed facilities were recommended by the general public and advisory group members. The number and location of the piers and blinds were determined by group sizes and preferences. We don't think that five environmental learning stations are excessive for the size and diversity of the refuge and the public needs.

Staff Recommendation: As described in above reply to Black Lake Audubon Society,

additional trail description will be provided that better establishes habitat protection measures and options.

Comment: (Page 86) Grass Lake should be vigorously protected for wildlife.

Reply: We agree. The plan recommends managing approximately 1/3 of the refuge as wildlife reserve with no human access and hiring a refuge steward to help manage the refuge.

Comment: (Page 52) Wonder if Grass Lake Nature Trail is necessary.

Reply: The city's comprehensive plan and urban trails plan call for this trail as part of the regional trail system. The trail location proposed in the master plan was selected to limit impacts to the interior wetlands. Hopefully, it will intercept visitors from private developments proposed for on the south side of the refuge so they do not create many random trails and increase habitat disturbance.

Comment: Grass Lake is a mystical place - a place of solitude, wonder and discovery for humans, and a shrinking island of habitat for wildlife.

VI. Letters from Advisory Committee Members

John Paul, Biologist

Comment: (Page 52) I see no need for costly and time-consuming use of rock or bark as trail filler. The current dirt trails are fine, except in extremely wet areas where a boardwalk could be used.

Reply: The current trails do not comply with accessibility regulations and guidelines. Most need to be leveled and some need to have slopes reduced. To meet accessibility and maintenance needs, stable surfacing needs to be installed. Refer to above reply to the Black Lake Audubon Society.

Comment: (Page 53) Make sure the new boardwalk trails won't inhibit movement of waterfowl between open water habitats.

Staff Recommendation: Add this specification into the plan.

Comment: (Page 62) More specifically outline how you will stop people from living in the park and using motorbikes.

Reply: We think plan direction is adequate.

Comment: Costs seem very high...use what you've got wherever possible.

Reply: We think the costs accurately estimate the plan's recommendations for durable facilities and adequate maintenance and supervision.

Rochelle Rothaus, South Sound Green

Comment: (Page 89-91) The plan offers numerous opportunities for South Sound Green participation in the implementation of strategies. The list of potential projects fits in well with types of activities that interest our participants. They have successfully implemented similar projects (trail building and restoration, landscape restoration, etc.) in other areas.

Reply: Thank you for your help on the plan and your commitment to future partnerships.

VII. City Staff Letters

George Ziesemer, Fire

Comment: (Page 52) Include fire hydrant at 14th Avenue Trailhead

Staff Recommendation: Include fire hydrant at 14th Avenue Trailhead

BLACK HILLS AUDUBON SOCIETY

A Washington State Chapter of the National Audubon Society
Mailing Address: P.O. Box 2524, Olympia, WA 98507

February 10, 1997

Olympia Parks, Recreation
and Cultural Services Department
The Olympia Center
222 N. Columbia Street
Olympia, Washington 98507



Dear Olympia Parks, Recreation
and Cultural Services Dept.:

RE: Grass Lake Refuge Draft Master Plan

After reviewing the Grass Lake Refuge Draft Master Plan, Black Hills Audubon would like to comment on the following items.

We are pleased that you wish to protect the area as a sanctuary for wildlife and native plants. Our concern lies with providing additional accessibility to people.

While we agree that this area should not limit access to those in wheelchairs, widening the trails to six feet is much wider than is needed and will reduce vegetation areas. If trails are compacted or an aggregate surface material is used, this could reduce natural infiltration of rainfall into the soils and cause runoff into the lake or scouring the vegetative areas. Utility connections will also temporarily impact the area during installation.

With toilets, over-water piers, viewing blinds, sitting areas and additional trails, more area will be consumed for human use rather than keeping the area as a refuge. This accessibility will allow more people to utilize the area. This may lead to degradation of the area, e.g. trampling of vegetation, scaring wildlife and birds (particularly if dogs are allowed) and increased garbage littering the refuge area.

While there will be interest from volunteers to help monitor the project, there is concern that, as in all volunteer programs, interest wanes. People that are active leave the local area, and some individuals are better able to contribute to the Grass Lake project than others. While you recommend that TESC should continue their monitoring and encourage students to participate in this project, can the college realistically guarantee long-term support? You indicate that the learning stations may be built by volunteers with supervision by volunteer or paid experts. Piers and blinds extending into the lake area, or near the shore, should be well-thought out and may need trained personnel to perform the construction.

Careful attention to native grasses should be adhered to when removing invasive non-native plant species. The Evergreen State College uses this area as a field trip site for the study of grasses, sedges and rushes. Some of the species are not native. Will complete removal of these species damage the 'grass' lake appearance of Grass Lake?

Thank you for the opportunity to comment. If there will be additional meetings or publications concerning this project, we would like to be contacted. Please send any additional information to Black Hills Audubon Society, P.O. 2524, Olympia, Washington 98507.

Sincerely,

A handwritten signature in cursive script that reads "Cynthia R. Pratt". The signature is written in dark ink and is positioned above the typed name.

Cynthia R. Pratt
Conservation Co-Chair
for Black Hills Audubon Society

PUBLIC COMMENT RE/GRASS LAKE

1. JOGGING SHOULD BE ALLOWED.
2. CONSIDER GLASS & ALUMINUM RECLYLING CONTAINERS
3. SANICANS FOR BATHROOMS, NOT WATER EQUIPPED
4. WHO'S LOCKING THIS REMOTE BATHROOM AT NIGHT?
5. ACCESS ROAD FOR EMERGENCY VEHICLE?
6. COMMUNITY POLICING? BIKE PATROL OR WHAT FORMAT??
7. FIRE ACCESS??
8. SNORKELING ALLOWED?
9. BIKE/PEDESTRIAN WALKWAY MONIES AVAILABLE FROM D.O.T. WILL THIS BE ACCESSED TO IMPROVE 14TH?

12 February, 1997

Olympia Parks, Recreation & Cultural Services
Attn: Grass Lake Refuge
The Olympia Center
222 North Columbia
Olympia, WA 98507

Dear Grass Lake Refuge Committee:

I would like to offer the following comments on Grass Lake Refuge [GLR] for your review. On Monday, January 27, I attended the workshop at the Olympia Center and have reviewed the draft master plan handed out that evening. Unfortunately, my schedule has not afforded me the opportunity to review the draft master plan at either the Olympia Center or the Timberland Regional Library. The comments I offer, in no particular order, are based solely on my perception from the workshop, draft master plan, and my personal knowledge of the Grass Lake Refuge.

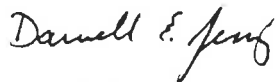
- I am aware that it is the City's intention to seek acquisition projects over the development of existing lands. I encourage to City to aggressively seek land acquisitions in the immediate area to provide a "natural" buffer to this environmentally rich and sensitive area.
- Keep the public involved. Good projects live and die through public support and lack thereof. Help them to create a sense of ownership through public meetings, announcements and volunteer work parties. Build this element, and an action plan, into the Master Plan. I also encourage there to be direct face-to-face contact with property owners adjacent to the GLR in an effort to gain their support and commitment to the project.
- To maintain contractual compliance with IAC and ADA standards, the plan design provides for accessible parking stalls. It was also noted during the workshop that a firm, hard-packed surface would be used to ensure trails are wheelchair friendly and "accessible" to all members of the public. I would encourage you to consider other disabilities when putting together the final plan. I recently came across a source of funding available to projects for improving access to the visually impaired. Perhaps including these elements into the project could not only provide funding for them, but also fund the trails and paths that "connect" these elements. For more information on the availability of these funds contact: the Lions Sight Conservation Foundation at [206] 682-8500.
- Good distribution of users through a meandering trail system. Does the current vegetation provide such a buffer to limit the view of other trails and abate noise? Consider using a porous surface similar to the parking lot, or extensive boardwalk

system, for trails where muddy paths are anticipated. The mud will tend to encourage users to create informal paths in areas and through habitat you are trying to protect. Consider seasonal closures of certain trails or alternative surfaces that are prone to becoming "wet".

- I would encourage you to look at either moving the construction of the restroom to phase 1 of development, or to provide a sanitary, accessible alternative during the interim. Opening the GLR to park users invites, along with them, their waste. It would be a terrible thing for the refuge to become a 165 acre toilet.
- Be sure to provide an accessible route to the restroom. The current design places the restroom at the furthest point across the parking lot from the accessible parking sites. Accessibility standards are met regarding the number of sites, however, is it the best design for the parking lot? I would encourage you at the very least, to locate an accessible parking stall near the restroom. Preferably, it would be nice to see the restroom relocated closer to the current proposed accessible parking sites and trailhead. There are several companies around these days that build restroom facilities for parks that are vandal-resistant yet aesthetically pleasing. Consider tying it into the Environment Learning Shelter.
- Lastly, I think that allowing dogs, although on leashes, onto the Grass Lake Nature Trail, is a use incompatible with the overall management plan of the refuge. Dogs naturally tend to bark at other animals, wildlife and people, and their owners are not always "skilled" at cleaning up after them.

Overall, I think the GLR Master Plan is looking fairly good so far. I am curious and eager to see the actual Master Plan after comments are considered. Will it be available for review at a later date? Additionally, I would like to commend the City of Olympia for its dedication to providing quality open-space recreational opportunities. Grass Lake Refuge is a great addition to an already, quality and diverse park system.

Sincerely,



Darrell E. Jennings

118 E. Carson Street
Centralia, WA 98531-3502

TO: Pauls
Jane Boubel, David Hanna
FROM: Mark Foutch



Suzanne Paulsrude
2950 14th Ave., N.W.
Olympia, Wash. 98502

February 13, 1997

Mayor Bob Jacobs and
City Council members
City of Olympia
P.O. Box 1967
Olympia, Washington 98507

cc: Council
Dick
Steve
Jane B
David H
Mark

Dear Honorable Mayor and Council members:

I've been reading with interest regarding the development of the Grass Lake Park property, and appreciate your request for input on the proposed plan.

I haven't seen the actual plan, but will respond to what I've read in the paper so far. It was reported that it will cost approximately \$1.3 million for the trail development and construction of the restrooms to be built in the area off 14th Ave., N.W. That amount is almost the same as what it cost to buy the whole property originally, which seems incredible.

Are there other options for labor in developing the trails, such as using prisoners for community service work? Also, can the trail development be scaled back to reduce the cost? Will the construction of restrooms contribute to homeless population currently living in that area?

The property currently is utilized by wildlife that has been forced out of other nearby areas, so if it weren't developed at all, it would probably be most beneficial to the wildlife residing there.

There are fruit trees growing in the area planned for the restrooms which are used for feed by the wildlife. Is it intended that those trees would be removed?

With regard to the construction of the new library, is it possible that the existing library at 8th and Franklin could also be kept? The property at the abandoned Best Store has been suggested as a possibility for a library. The cost for purchasing that property could be quite reasonable given all the vacancies of commercial properties now on the West side of Olympia. If the property could be purchased reasonably enough, maybe the downtown library could be also retained.

I appreciate your request for input, along with all your hard work.

Thank you,

Suzanne Paulsrude

C-33

Suzanne Paulsrude

943-2524 - home phone

Suzanne says deer eat the apples & trees should be saved if possible.

February 14, 1997

Dear Parks People,

My concerns with the Master Plan have to do with Grass Lake being over-developed to accomodate human uses. As one person I talked to put it, "They call it a wildlife refuge, but are turning it into a park." Nobody seems to like the six foot wide trails paved with aggregate material and there is some question about the need for the intensive development of boardwalks, environmental piers and bird blinds.

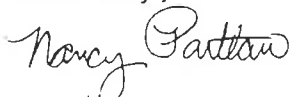
Grass Lake is an emerald in the rough, and it is my belief that it should stay that way as much as possible to protect wildlife. After reading the report on Thurston County Neotropical Migratory Birds at Grass Lake and McClane Creek, it seems clear to me that the very few natural areas being set aside in Thurston County should be vigorously protected for wildlife. The terms "urban densities" and "infilling", so blithely used in Growth Management mandated land-use plans, translate in the real world into "no more wildlife habitat." Park land is the only land of any size within cities that has been conserved to remain in its "natural" state, and even this is not enough. For example, it is my observation that many of the "protected" areas within the City of Olympia are so over-run with human-introduced, invasive, non-native species of plants that they have almost completely lost their value as native ecosystems. The Garfield Ravine between Rogers St. and West Bay Drive is a perfect illustration; smothered with English Ivy at one end and Japanese Knotweed at the other. I am not seeing any forest regeneration happening in these places - in fact, just the opposite - the forests are dying. It is my fear that the opening up of the tree canopy occasioned by this winter's ice storm will serve as a death knell to remaining urban forests by giving aggressive plants such as English Ivy, Japanese Knotweed, Himalayan Blackberry, Holly, and Scotch Broom their place in the sun.

That being said however, the protective aspects of the Grass Lake Master Plan are appreciated. If it is to be developed, the idea of a steward for the park is a good one. A steward could help organize efforts to eradicate the afore-mentioned problem plants before they become rampant at Grass Lake.

It was interesting to read about the study done in Boulder, Colorado which shows that "(human) impacts to wildlife extend a greater distance than previously documented. Wildlife use may be reduced for 300 feet or more along each side of the trail." That is the length of a football field! In light of this, I appreciate the fact that some trails and the LOTT sewer line maintenance road will be closed, but am concerned that a new southern trail is being proposed. This trail has the potential for receiving very heavy usage and I am wondering if it is really necessary.

I am impressed with the level of study and care that went into compiling this plan. It is very obvious that the people involved with this project really care about Grass Lake and appreciate it for the right reasons.

Grass Lake as it is now is a mystical place - a place of solitude, wonder and discovery for humans, and a shrinking island of habitat for wildlife. It seems clear that the "less is more" approach works best for both these groups and will, I hope, be the philosophy followed by those responsible for making final decisions about Grass Lake's future.

Sincerely,


Nancy Partlow
Tumwater, WA

John Paul
821 Roosevelt St. NE
Olympia, WA
98506

Feb. 20, 1997

Julie McQuary
Project Coordinator
Grass Lake Refuge
City of Olympia Parks, Recreation and Cultural Services

Dear Julie,

I was hoping to have a nice letter typed up for you but of course time ran short. Here I will try to briefly touch on a few issues and ideas in relation to the master plan.

First of all, I feel you did an excellent job of including public participation in the project. You seemed to consider all the comments presented to you thoughtfully. Overall, the plan looks very good.

A few points to consider:

- Trails: Despite popular opinion, the majority of trails currently in use do not become very muddy in many places in the winter. I see no need for costly and time-consuming use of rock or bark as trail filler. The current dirt trails are fine, except in extremely wet areas where a boardwalk could be used. The December 26, 1996 storm damaged some boardwalks at Priest Point - keep this in mind when planning the trail system, by only using boardwalk where really needed. This will save costs now and in the future. Also, new trails should be put in carefully. You may want to make sure the new boardwalk trail connecting between Grass Lake East and West won't inhibit movement of waterfowl between the two open water habitats.

- Abuses: You may want to more specifically outline how you will stop people from living in the park and using motorbikes there. As far as I can tell, stopping

South Sound GREEN

A Member of the Global Rivers Environmental Education Network
6128 Capitol Boulevard, Olympia, WA 98501 (360) 754-3588 FAX (360) 753-8085
e-mail: budd@igc.apc.org

RECEIVED

FEB 12 1997

OLYMPIA PUBLIC WORKS

11 February 1997

TO: Julie McQuary

FROM:

Rochelle Rothaus



SUBJECT: Grass Lake Refuge Draft Master Plan

Thank you for sending me a copy of the draft master plan. I appreciate being kept updated on the progress of this project. The plan offers numerous opportunities for South Sound GREEN participation in the implementation of strategies. The list of potential projects fits in well with the types of activities that interest our participants. They have successfully implemented similar projects (trail building and restoration, landscape restoration, etc.) in other areas.

One way of proceeding with a GREEN partnership would be to have a contact person (the Park Steward?) participate in an action project panel at our Summer Teacher Training Institute in June. Other representatives from local jurisdictions and organizations will also sit on the panel. They will share ideas for action projects with teachers, including some timeline, amount of time expected to complete the project, amount of technical skills needed, etc. Then, teachers interested in a particular project will contact the lead person to begin planning and implementing the project.

This is just one suggestion, I am confident other strategies could be used to involve youth and community partners in these activities. South Sound GREEN is interested in engaging participant in the action research community problem solving process. Assisting in the implementation of this master plan would be an excellent opportunity.

Please give me a call if you would like to discuss these ideas further.

OLYMPIA FIRE DEPARTMENT

108 W. STATE ST.
OLYMPIA, WA 98501
PHONE: 753-8348

Transmittal Letter

TO: Julia McFarley

DATE 2-12-97

FILE NO. _____

ATTENTION: _____

PRIORITY

- REPLY NEEDED
- SOON AS POSSIBLE
- NO REPLY NEEDED

SUBJECT: Green Lake Region Dept water flow

MESSAGE:

> 14th Avenue trail head structure (approx 48' x 32')
 This may require a gas hydrant
 installation on 14th Ave or within
 300' of structure.

Please identify gas hydrant's on next map
 of 14th Ave trailhead

SIGNED: George Ziesema

REPLY BY: _____

DATE OF REPLY: _____

REPLY TO: _____

REPLY: _____

SIGNED: _____

Feedback Sheet

Grass Lake Refuge

Draft Master Plan

Please return comments and recommendations by February 14, 1997 to the Olympia Parks, Recreation and Cultural Services Department, The Olympia Center, 222 N. Columbia, Olympia, WA, 98507

What do you like most about the master plan?

What isn't addressed that should be?

What changes would you like in the plan? If site specific, please mark them on a site map and return them with your comments.

Concerns about adjacent neighbors. My house is across the street on Westpark & am concerned about noise & security. Please keep me informed as to progress

Your name and mailing address if you would like to include them:

Fred Gustafson
3923 Westpark Ct NW
Oly, WA 98502
866-9118

Feedback Sheet

Grass Lake Refuge

Draft Master Plan

Please return comments and recommendations by February 14, 1997 to the Olympia Parks, Recreation and Cultural Services Department, The Olympia Center, 222 N. Columbia, Olympia, WA, 98507

What do you like most about the master plan?

Looks good

What isn't addressed that should be?

*Outdoor lighting on properties nearby.
Acoustic control on board structures.*

What changes would you like in the plan? If site specific, please mark them on a site map and return them with your comments.

Include a hands-on wetland up by parking area that is intensively managed by a botanical society.

Loop trail for dogs instead of up + back.

Your name and mailing address if you would like to include them:

Lyle Tribwell

Feedback Sheet

Grass Lake Refuge

Draft Master Plan

Please return comments and recommendations by February 14, 1997 to the Olympia Parks, Recreation and Cultural Services Department, The Olympia Center, 222 N. Columbia, Olympia, WA, 98507

What do you like most about the master plan?

1. PROTECTION OF THE LAKE, VEGETATION, AND BIOLOGICAL LIFE, *as opposed to*
2. NO BOATS OR FISHING. *Edwin*

What isn't addressed that should be?

Grass Lake is already substantially impacted by storm water run off. Future developments may well adversely affect the entire wetland system. Enough information exists to know that.

Is an environmental impact study being done? How about effect on threatened species like the Olympic mudminnow? Law enforcement? Fences may be needed to protect private property from trespassers.

What changes would you like in the plan? If site specific, please mark them on a site map and return them with your comments.

1. NO DOCKS SHOULD BE BUILT OUT INTO LAKE LOUISE. THEY WILL BE IN MUD 4 MONTHS OUT OF THE YEAR, THEN RISE 8-10 FEET IN WINTER. I AND MY NEIGHBORS MAY WANT TO BUILD OUR DOCKS ALSO, MORE WOULD NEED TO BE 120' LONG TO STAY IN WATER.

2. Keep trails low maintenance and inexpensive.

3. no electricity is needed into the park.

4. The plan is overly responsive to the wants of educators and does not protect the park. The area is typically opened to more access by more people so more garbage, abuse, crimes, and adverse impact may occur.

Your name and mailing address if you would like to include them.

MARK UPTON
3445 14TH AVE NW.
OLYMPIA, WA

Wild waterfowl fly away from people.
The cover illustration is a dream.

→ Night time mammal studies may for humans and not animals??

↑ How well horses and motorcarts kept out?

Proposed Changes to the Grass Lake Refuge Master Plan

(Typographical and grammatical corrections and improved map labels and page numbering are not included in this list.)

Page numbers refer to pages in the draft master plan.

Page Number/Proposed Change (Additions are in bold, italics typeface. Deletions are set in brackets.)

Page 2 - Addition to refuge acquisition section

The refuge was purchased by the City of Olympia for \$1.8 million. The *matching grant from the Interagency Committee for Outdoor Recreation (IAC)* specifies that, “Development of facilities will be limited to items such as fencing, interpretive/observation trails, interpretive signs/kiosks, restrooms, parking and creation or enhancement of habitat.”

Page 5 - Text to master plan audience section

[The other important] *More broadly speaking, the* audience for the master plan is the public - *users, volunteers and supporters.*

Page 18 - Addition to potential stormwater impacts to the Grass Lake wetlands section

The community faces a major challenge in this sub-basin of Green Cove Creek. The challenge is how to assess cumulative impacts of increasing quantities of runoff into the Grass Lake system, while continuing to review and approve on an incremental basis projects that will increase flows into the refuge. If a program is not developed to confront this challenge, several factors associated with stormwater runoff could result in deteriorating wetland habitat with the Grass Lake system.

Page 26 - Additions to soils section

As shown on the soils map on page 26, the interior wetlands of the refuge are muck soils. This is consistent with an old wetlands system like Grass Lake. Most of the upland soils have high seasonal water tables from November to April. During the summer, these soils have low soil moisture. The following soils table include additional information that should be used to for siting and designing facilities and planning and maintaining vegetation restoration projects.

Insert soils table

Page 28 - Additions to habitats section

As described in more detail in the management section of the master plan, the upland vegetation has been disturbed by past activities including timber harvest and utility construction. Most of the forest is fairly young. Under the proposed refuge management, no timber harvest will occur so these forests will continue to mature. The forest mosaic and structure will change but diversity will remain due to the mix of micro-climates, soils and water in the refuge.

Lake Louise was created out of a wetland of similar size and shape. It is shallow and dries up almost completely during dry summers. Water entering the refuge is low in sediments so the lake is not filling in from upstream sediments. Grass Lake West and Grass Lake East appear to be almost identical to their condition in 1950 aerial photographs. By maintaining adequate buffers around these wetlands and by preventing significant changes in water flows, these wetlands will be protected. Noticeable changes in their size and character are not anticipated.

Page 36 - Additions to proposed trailhead regulation signs

The following uses or activities are prohibited:

Bicycles *except for Police*

Environmental learning shelter reservations *and evening use permits*: Schedule through Olympia Department of Parks, Recreation and Cultural Services, The Olympia Center, 222 N. Columbia, (360) 753-8380.

Page 42 - Addition to the safety/risk management section

A 911 emergency phone is proposed for the 14th Avenue main entrance area.

Pages 46, 47 - Additions to design standards and process section

Photovoltaic systems may be used at the restroom and shelter.

Trails should be sited so that the many beautiful and interesting species may be seen while avoiding sensitive nest and plant sites. When trails are designed and constructed additional field work should be done to accurately locate sensitive sites and key features. *Some of this information will be supplied by the monitoring reports. Trails will meander to help maintain visual interest and path-like character.* Piers and boardwalks will be designed, built and maintained to provide stable surfaces. *Piers and boardwalks will have hand railings for public safety and to encourage people to stay on the developed trails.*

Page 47 - Additions to design program for refuge facilities

Parking Lot Gate

Fire Hydrant

Page 52 - Changes to the trail system section

The trail system *as displayed on page 48* will include six main trails and four spur trails totaling about three miles in length. All trails will be six feet wide, barrier-free and with vertical slopes of [less than 8% and] 5% or less preferred. *Vertical slopes may ramp up to 8% with landings at the top and bottom of the steeper sections.* Surfaces and cross-slopes will also meet the guidelines for accessible trails. *The current recommendations are for compacted, crushed aggregate surfacing. Utilization of binders and geotextiles will help to maintain level trail surfaces. Cross slopes on trails will not exceed 3%.* Trails may be narrowed to 36" width to protect significant species or avoid other factors or features. Boardwalks and pedestrian bridges will be used to cross wetlands, swales and ravines. *They will be sited and designed to allow free movement of water and waterfowl.* Trails will be developed where possible on existing primitive trails. Locations adjustment will be made to maintain moderate slopes, protect sensitive species, improve visual access to features, stay above high water line and avoid areas where surface flow or ponding are potential problems. *Vegetation clearance for construction should not be allowed to be greater than one foot wider than the trail on each side. Vertical clearance should be 80". Pruning as part of trail maintenance should not extend beyond the trail edges. The lush vegetation in the refuge is vital to the aesthetic and habitat values.* Existing trails that are not scheduled for development are to be obliterated according to specifications in the management section of the master plan.

Page 55 - Additions to the environmental education and interpretation process summary section

Three references that should be used are:

U.S. Department of the Interior, Interpretation for Disabled Visitors in the National Park System

Hunter, Carol, Everyone's Nature: Designing Interpretation to Include All, 1994, Falcon Press

Ham, Sam H., Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets, 1992, North American Press

Page 60 - Addition to the department's role section

To help maintain the natural character of the refuge, interpretive signs and exhibits

should be located at the trailheads and the trail intersections at the environmental learning stations rather than scattered throughout the refuge. The master plan map on page 48 indicates recommended interpretive topics for these locations. Additional direction is provided in the following habitat- specific management recommendations section.

Page 60 - Addition to refuge-wide management objectives section

Apply city ordinances to adjacent, future private development to help protect refuge from noise, night lighting, stormwater and negative visual impacts.

Page 64 - Additions to wetlands management recommendations section

The need to protect the wetland and habitat values of Grass lake are contained in numerous policy documents adopted by the City of Olympia. The comprehensive plan and the drainage manual are clear about protecting habitat, especially city owned park land. There are both short term and long term strategies to protect Grass Lake:

Long Term:

Page 65 - Additions to the wetland management recommendations section

Evaluate the potential for retrofitting existing stormwater ponds or constructing new facilities in the contributing area for increased storage and/or treatment.

Encourage continued partnerships with Stream Teams to help educate people about pollutants and what they can do to improve and protect water quality.

Short Term:

Require projects which direct flows to Grass Lake to strictly delineate and analyze the downstream affects on Grass Lake. This may include field surveying, wetland and wetland buffer delineation, hydrological evaluation and modeling.

Page 85 - Addition to operations and maintenance section

If the need arises to lock parking lot gates and the restroom, sunrise and nighttime personal will be required. The only Olympia park with locking gates is Priest Point. The park closure and opening is done by a private security company. This same arrangement may be utilized at Grass Lake.

Addition to daily and routine maintenance activities list

scooper stations will be provided on the Grass Lake Nature Trail.

Page 60 A. Refuge-Wide Management Objectives

- *Salvage native plants during construction of new trails or other facilities. Transplant these to restoration sites within the refuge.*
- *Restrict new plantings to transplants from the refuge or from Thurston County's Native Plant Salvage Project or western Washington nursery-grown, native stock.*

Page 71 Habitat A - South Side of Lake Louise

Management Recommendations

Enhance and maintain two, small, open meadows for songbirds and butterflies just south of the proposed Lake Louise environmental learning pier along the Grass Lake Nature Trail. These areas as displayed on page 61 on the management plan map have been disturbed in the past and are not forested. Work with butterfly and songbird habitat experts to help select plants and design the meadows. The meadows will need full sun from 10 a.m. - 4 p.m. during spring and summer. Nettles, an important butterfly plant, should be grown around the edges of the meadows. Butterflies like to dabble in the mud along the south shore of Lake Louise. Their favorite flowers include native lupine, bleeding heart, salal, kinnickinnick, giant vetch, spirea and violets. The shrubs and trees should include Scouler's willow, Sitka willow, black cottonwood, red alder, cascara, madrona, garry oak and western and red-osier dogwoods. These are specific host plants for some of the butterflies in Thurston County.

Page 73 Habitat C - Kaiser Road Entrance

Management Recommendations

Establish and maintain an open meadow for songbirds and butterflies along the Grass Lake Nature Trail near the new Kaiser Road entrance. Work with butterfly and songbird habitat experts to help select plants and design the meadow. The meadow will need full sun from 10 a.m. - 4 p.m. during spring and summer. Nettles, an important butterfly plant, should be grown around the edges of the meadow. Favorite flowers include native lupine, bleeding heart, salal, kinnickinnick, giant vetch, spirea and violets. The shrubs and trees should

include Scouler's willow, black cottonwood, red alder, cascara, madrona, garry oak and western and red-osier dogwoods. These are specific host plants for some of the butterflies in Thurston County.

Page 78 Habitat M - Main Entrance - Approximately 5.6 acres

Management Recommendations

Identify ornamental and native specimen plants to be saved when entrance facilities are developed. Include specifications for their protection in construction contracts. Provide permission to people who would like to take cuttings of old ornamental or grape plantings. This should be done under the supervision of the park horticulturist.

Design Recommendations

This is an old homesite. *It is known by some people as "Fergie Villa" after the past owners, the Fergisons.* The site is predominantly grassland with some ornamental trees and specimen old Douglas firs. The northern part is fairly level and suitable for facility development. The location also conveniently serves nearby schools. Protect the specimen Douglas firs. Plant a landscape buffer along 14th Avenue to partially screen the refuge parking lot, the city pump station and residences across the street. For public safety and to reduce vandalism landscaping should maintain some visibility into parking area and shelter.

Page 81 Habitat O - Old Yogurt Farm

Management Recommendations

The old homesite was known locally as the Yogurt Farm. After the city acquired it, the structures were removed. This area was heavily disturbed by past management.

Restore native vegetation to help eliminate invasion of Scot's broom, Himalayan blackberry and other exotic plants. Improve wildlife habitat value by plantings and by maintaining and enhancing vegetative buffer along 14th Avenue. May be desirable to maintain meadow and old apple trees for deer grazing and other wildlife and aesthetic values. When restoration is successful, manage the area as part of the Grass Lake East Wildlife Reserve. Restoration will likely not be completed until the LOTT sewer line and access road are removed. Involve students from the nearby schools and neighbors in the restoration projects. Maintain service access at the old farm entrance until habitat restoration projects are completed.

Stormwater channel enhancements are proposed in the northeast corner of the refuge. *Refer to the wetland management recommendations for the northeast swale system on page 69.*

Friends of Grass Lake

1716 Giles Avenue NW, Olympia, WA 98502

Phone: (360)352-0486
or: (360)352-9009

March 1st, 1997

Olympia City Council
800 Plum St
Olympia, WA 98501

Re: The Grass Lake Refuge Master Plan

Dear Council Members,

The board of Friends of Grass Lake has reviewed the Draft Grass Lake Refuge Master Plan and has the following comments we wish to make for the public record.

In general, we are quite pleased with the plan. We very much appreciate the work and care that has gone into thinking about and creating the plan. We especially want to thank Julie McQuiery and the rest of the Olympia Parks staff for their hard work in developing this project, and for their community outreach to ensure public comment. It is exciting to know that the park will be providing a haven for wildlife while helping to awaken our community's children and adults to the importance of natural habitat for many years to come.

That said, the Board has several concerns which we wish to bring to the discussion.

Trail Development: We are committed to the concept of the Grass Lake Refuge as a wild preserve. We are pleased to see the property designated as a refuge, for it reflects our belief that though the property is to become a park for the benefit of people, it should foremost remain a haven for wildlife. This is the vision that the Friends of Grass Lake has had from the beginning and it has not changed. To this end we would like to see all refuge trails be placed so as to cause the minimum displacement to animals and plants. Individual members of the Friends have submitted comments addressing this issue more specifically.

We are also concerned about how the trails look and feel. We want to preserve the sense that people are having an experience in a wild place. Six foot wide trails with a compressed aggregate rock surface (in essence, pavement) do not make for such an experience. While we would like the Refuge to be accessible for all people, we cannot support a plan to make every trail conform to ADA standards. We suggest the six foot wide ADA aggregate surfacing for two trails in the Refuge. One is existing in the plan, from the Kaiser Road entrance to Lake Louise and back. The other, from the 14th Avenue entrance to the proposed amphibian pier and nearby bird blind, would require a new stretch of trail running East-West to connect the amphibian pier trail with the boardwalk trail. We believe that the rest of the trails should remain narrow (approximately three feet), with fewer switchbacks, and with surfacing more appropriate to a refuge such as a natural, untreated bark surface. This would be in keeping with trail surfaces at other City nature parks such as Watershed Park and Priest Point Park.

The Friends recommend that where new trails are constructed, native plants should be salvaged from them and used to fill in those existing trails that are to be abandoned and revegetated. The Thurston County Native Plant Salvage Project may be able to provide some additional plant material. Any additional native plants which are required should come from nursery raised stock,

as opposed to wild-dug, with a genetic background from western Washington.

The Sewer Line Road All of us in our trips through the refuge are very conscious of the problems created by the sewer line road. We strongly encourage that the City pursue abandonment of the line by LOTT and that the easement be returned to the refuge. After the line is abandoned, we believe it is important to assess it's impact on the Refuge and to restore the hydrology of the area to the flows that existed prior to the building of the line.

Landscaping Concerns: In the new construction at the 14th Avenue trailhead as well as at the Yoghurt Farm site, we strongly encourage that the old large trees be protected and incorporated into the design. At Yoghurt Farm there are several apple trees as well as some other specimen non-native trees. At the new 14th Avenue entrance there is a large Big-leaf Maple, several heirloom fruit trees, and some unique specimen conifers. While the grape arbor at the 14th Avenue entrance is derelict, several people have expressed hope that these profusely bearing grape plants can be incorporated into some new structure. These living trees and plants are part of the human history of Grass Lake, remnants of the Ferguson's farmstead, once located at the 14th Avenue entrance to the Refuge. (Several anecdotes about the Ferguson's survive, and many of us continue to call the site "Fergie Villa", the name which both the Ferguson's and later residents called it.)

The Friends also wish to encourage the suggestion in the Refuge Master Plan of using solar technology to meet some of the utility needs for the refuge. Doing so would provide another wonderful environmental education learning opportunity for guests of the park.

Boundary Concerns: In the SW corner of the park near the Kaiser Road Trailhead, the park boundary jogs north towards Lake Louise. There is a proposed trail through this area, referred to in the plan as "Habitat E". This five acre parcel contains a wonderful Western Red Cedar grove which the Friends would like to see preserved. We strongly encourage the acquisition of this section, (agreeing with the staff recommendation), so that this unique area is protected and can add to the natural diversity of the refuge. There is no other habitat of this type in the refuge.

Along the SE edge of the refuge, there are two wetland areas that run north and south into what is now privately held commercially zoned property. These areas are important in the overall refuge health and should be acquired or permanently protected with conservation easements. In addition, the remaining privately held shoreline of Lake Louise should be protected with conservation easements.

The Steward: The Friends of Grass Lake believe that the Steward position is critical to the function of the refuge and must be funded. All of us have walked the refuge regularly for years and have seen the devastation that is made by unleashed dogs, motor and mountain bikes, three-wheeled motorized vehicles, joggers, horses, and homeless camps. For the park to function as a wildlife refuge, it will require an on-going, attentive presence to enforce the rules of the park. We strongly encourage the City to make this a key part of the plan.

The Friends of Grass Lake has enjoyed reviewing the draft plan and we look forward to continuing to work with the City of Olympia in the formation of the refuge.

Sincerely,



Glen Buschmann
President, Friends of Grass Lake

cc: Olympia Parks Department

25 February 1997

To the Olympia Parks & City Council:
re: Grass Lake Refuge Draft Master Plan

Hello,

I am writing to comment on the Draft Master Plan for Grass Lake Refuge. I have talked with length with Julie McQuary, and have read through the expanded version of the draft plan.

I am also a long-time fan of Grass Lake. I have been active with Friends of Grass Lake and for two years led (with Glen Buschmann) a monthly nature walk around the refuge. I am an experienced naturalist and my expertise is in birds, bats and butterflies. I have a strong knowledge of native plants, and have done a fair amount of wetland studies through the UW and Evergreen. I am also very active with the Black Hills Audubon Society and the Washington Native Plant Society. So in terms of my interest in the refuge, I potentially wear a lot of different hats and can speak to a number of different agendas.

But today I have decided to write in behalf of the animals who use the refuge. While the people who want to use it can stand up and speak their piece, the animals have no such venue. They need advocates to speak for them. This is the role I want to take.

I took a copy of the draft plan and made a color outline (see attached) of the human impact areas, based on the 300 feet impact zone found in the Colorado study. When I look carefully at the amount of trails that impact the refuge, I am very concerned that these are excessive. I am particularly concerned about the Marsh Trail.

The network of trails is very suitable for the human uses: recreation, education, etc. These trails provide good access to all areas of the refuge, allowing people to see the diversity of plants and animals in the refuge. Unfortunately, the same network that provides good access for people creates a number of significant problems for wildlife.

Some of these problems include:

=Fragmentation As I look carefully at the unimpacted areas, I see islands of white, surrounded by large corridors of human impact. Both of the wetland ponds that have been unchanged since 1950 aerial photos are now fairly surrounded by trails, particularly the middle pond. The over all effect is to create lots of habitat edge: this favors the animals that live along edges, which includes many of the predators: The Crows, the Jays, the Squirrels, the raccoons, the possums, the skunks. These trails also open up the Refuge even more to access by dogs and cats, and the occasional human visitor who doesn't follow the signs and stay on the trail. In a larger ecosystem, the prey animals, such as the neotropical migrant birds, respond to the pressure of these predators by moving deeper into the woods to nest. But if the interior of the woods is not deep enough, the predators will follow. One study I have read has said that in the Pacific Northwest, a piece of land needs to be minimally 75 acres to help the prey species survive the pressure from predators. Even something as simple as opening a plot of land to telephone lines creates an opening that predators can move along and use as an access road to the deeper forest. So as I look at the network of trails, and the fragmented habitat left between them, I am very concerned that we are not providing good habitat for our vulnerable neotropical migrant birds, our owls, waterfowl and our songbirds.

=Preservation of natural animal pathways: Another problem I see is the ways in which the trails impact the natural animal highways throughout the refuge. In this case I am looking out for the animals that cannot fly or run away from a bad situation: the amphibians, many insects, many small mammals. In this wetland, the movement is very likely along the edges of the different ponds, utilizing the openings created by pond edges, stream edges and other wet places to move throughout the whole system. There are two places where the trails cut right across those natural highways: the Marsh Trail just north of its intersection with the wetland connecting trail, and the Lake Louise trail from 14th as it comes to the western edge of Lake Louise. Now Julie McQuary has assured me that bridges will be built above these areas, so the natural hydrology is preserved. But along the Marsh trail in particular, I am quite concerned once again about the impact of predators, who utilize the openings we have created to impact animals along their usual highways. I am particularly concerned about the impact of cats. While I fully expect cats to be an on-going problem in the

refuge, they are very likely to use the human trails to make their way around the area. I believe a trail in any area greatly increases the risk of use by cats. The question we need to ask ourselves is this: is this particular area one in which we can afford to lose animals to predators?

Which brings me to a final point.: in my discussion with Julie, she mentioned that special effort was made to preserve Lake Louise, because that is where many of the migrant birds and nesting waterfowl are to be found. In my work in the park, I would agree with that, but *only because* access to the other wetland areas is quite difficult much of the year, and so nobody has spent much time in these areas figuring out what animals are there, utilizing these areas. I think we need to do a lot more research in the less explored areas of the park before we make final decisions about the trail system. From my knowledge of habitat, wetlands and animal uses of the land, I believe those undisturbed ponds/wetland areas in the middle and east part of the refuge are VERY likely to hold some of the richest diversity of plants and animals. I believe these will prove to be key areas and need to be carefully considered in the plan.

My biggest recommendation in this plan is that the Marsh trail idea be completely abandoned. I would suggest as an alternative a short loop trail which allows people access to the north end of the middle wetland, where an Environmental Learning Pier for amphibians is sketched in. In the interest of those with disabilities, I think that would be an excellent site for a wheelchair accessible route and a short loop trail. I would close off the area beyond the pier to access. This ensures a bigger, contiguous area of habitat that is set aside for wildlife. It minimizes disturbance to the middle wetland pond, particularly for waterfowl that probably use it during breeding season. It assures that some of the key animal highways are left intact and undisturbed. And in my opinion, the most important reason is that it limits some of the predator impacts.

I would like to say in closing that I have been incredibly impressed with the good work of Julie McQuary, David Hanna and Olympia Parks in putting this plan together. I am especially impressed with their ability to reach out to a wide variety of human animals to ensure that their viewpoints get considered as well. It has been very enjoyable to be part of this process and I look forward to working on it in the future.

Sincerely,

Janet Partlow

Janet Partlow

Butterfly Meadows at Grass Lake Refuge

In response to your request, Julie, I have written up some information about butterflies and how best to plan for them at the Refuge. I hope this is helpful; when it comes to the actual design process, I would be interested in working with the designers to develop these butterfly meadows.

We have about 50 species of butterflies in Thurston County. Many of these are specific to the Mima Prairies of south Thurston County. However, a wetland with the right sorts of plants is likely to attract many of these butterflies.

Our butterflies have a flight period of April to October. They are solar powered, so their activities & flight period are entirely dependent on full sun, with temperatures above 60. The meadows need to be designed so that they have full sun from 10-4pm each day in the spring and summer. The southern edges need to have few tall conifers, so there are no shade problems. Butterflies like mud to dabble in, so parts of the wetlands that border intermittent streams or have wet spots that stay open much of the year would be nice. I have seen a lot of butterflies use the muddy southern edge of Grass Lake to bask in

For trees/shrub to surround the meadow, these are my top choices:
=WILLOWS WILLOWS WILLOWS. Scouler's Willow does well in upland conditions, Sitka Willow does okay as long as water is within say 200 yards. Willows need full sun to prosper.
=Other trees: Black Cottonwood, Red Alder, Cascara, Madrona, Garry Oak, Western and Red-Osier Dogwood are all specific host plants for some of the butterflies we have in Thurston County.
=The next layer is the herbaceous plants. Native Lupine, Native Bleeding Heart, Salal, Kinnickinnick, Giant Vetch, Spirea, Violets. All of these should be native species, preferably collected from within the refuge and/or watershed.
=A really important butterfly plant is NETTLES NETTLES NETTLES. Several of our native butterflies require these as host plants. They should be grown along the edge of the meadows in full sun and in dappled sunlight.

This is a fairly abbreviated list, but at least it gets things started. Let me know if you need more. See you on the 4th!

Janet

Janet Partlow

Attachment for Grass Lake Refuge Master Plan Staff Report 3/18/97
(Additions to the text are printed in bold italics.)
(Deletions to the text are in [])

III. Design Program

B. Design Standards and Process (Page 47 in the draft master plan)

(Note: To review all proposed changes to the trail design standards, Council may refer to the changes provided in previous staff report attachments.)

Piers and boardwalks [will] *may* have hand railings for public safety and to encourage people to stay on the developed trails.

The Marsh Trail Wetland Crossing and the other proposed wetland crossings will require special design, construction and management to protect these high value and sensitive habitats. Techniques that will be utilized include:

- *Railings on both sides of the boardwalks.*
- *Elevated boardwalks to discourage users from casually jumping off. The elevated structures will allow free flow of water and waterfowl under the structures. Elevations for the structures will be determined during design phases and based on resource protection, public safety, aesthetics, water elevations and other factors.*
- *Existing trees and other brushy vegetation adjacent to the boardwalks will be protected during construction. As can be seen on Map 7, Wetlands, on page 15, the Marsh Trail Wetland Crossing is through a forested wetland. The branches next to the boardwalk railings add another deterrent for staying on the boardwalk crossing. The branches will also help to screen people from wildlife.*
- *Trailhead signs and environmental education programs and materials will emphasize the importance of staying on the trails and boardwalks.*
- *Small signs will be incorporated into the design of the boardwalks to remind people to stay on the trails.*
- *Trails may be closed at certain times of the year to protect animal breeding and nesting activities.*
- *Actively monitor the wetland crossings by visual observation and photo*

monitoring techniques. If problems begin to arise because visitors disregard the request to stay on the trails, additional measures to protect the wetlands will be implemented by the Department.

VIII. Acquisitions and *Conversions* Plan (Page 87)

The City of Olympia purchased the Grass Lake Refuge from a development company that assembled the land parcels for a housing development. The land parcels were not assembled for the purpose of a refuge. As noted in the Wetland Inventory and Habitat Assessment for Grass Lake Park, the upland habitats include areas of high, moderate and low habitat value. Areas of low habitat value may have other values such as buffering the wetlands, screening noise and views and providing trail connections. Habitat values should increase with the management strategies outlined in the master plan. Some adjacent parcels are of high habitat and scenic value.

The master plan for Grass Lake is based on existing public ownership. The Grass Lake Refuge can adequately function without additional acquisitions. However, additional acquisitions would provide the opportunity for further enhancement and protection of the refuge. Thirteen adjacent properties were reviewed for what values they would contribute to the refuge. The analysis did not consider non-adjacent properties.

City ordinances and other regulations help to protect the refuge without additional acquisitions. Olympia's critical area ordinance protects wetlands and requires wetland buffers. When undeveloped parcels adjacent to the refuge are developed the wetlands will be buffered from development. This should help to maintain wildlife habitat in the city and help to filter and buffer water entering the refuge. The Drainage Design and Erosion Control Manual for Olympia results in stormwater releases from new developments being managed. Flows into the refuge will increase as parcels are developed. Olympia's tree protection ordinance will help to protect habitat and scenic values on properties adjacent to the refuge.

Park land is a public asset and should be managed as such with flexibility to address changing needs and conditions. Future planning and analysis may identify parcels that should be converted to non-refuge uses. Altering refuge parcels from urban wildlife habitat to other use is called a land conversion. All land conversions within the current boundary of the refuge must be approved by the Washington Interagency Committee for Outdoor Recreation because they are a co-owner of the refuge. An example of a conversion would be:

- 1. Land along the north perimeter might be converted to a neighborhood park.*

2. Low or moderate value habitat might be converted to building lots with proceeds reinvested to purchase other new, open space parcels with greater habitat value. These new parcels could be adjacent to the refuge or other open space lands within the Olympia Growth Area.

Prior to any future City Council decision to convert refuge lands, staff must perform the following analysis:

1. Obtain land appraisals for the parcels being converted, including the new parcels to be acquired.

2. Obtain a wildlife or wetland biologist's evaluation of the habitat functions and values of lands involved in the conversion.

3. Obtain a wildlife or wetland biologist's recommendations on mitigation measures to protect the refuge from any degradation which may result from new land uses developed on the converted refuge parcels.

The Grass Lake Refuge lands are highly valued by the community. Future consideration of conversions must be carefully evaluated utilizing the information required above and other factors deemed necessary.

IX. Implementation Strategies, Schedule and Priorities

C. [Marketing] *Public Information Plan* (Page 99 in the draft master plan)

A [marketing] *public information* plan for the Grass Lake Refuge should be developed. It should be consistent with management objectives for the refuge. The amount and type of [marketing and] public information on the Grass Lake Refuge will influence the amount and character of public use.

APPENDIX D

Grass Lake Workshop Participants (1st & 2nd Workshops)

Rosie Poitra-Chalmers
122 Percival St NW
Olympia, WA 98502

Walter & Claudia Knittle
3421 14th Avenue
Olympia, WA 98502

Mark Upton
3445 14th Ave NW
Olympia, WA 98502

Mary Kick
S.F. Gomulkiwicz
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Olympia, WA 98502

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Cheryl Bedlingren
6305 Elizan Dr. NW
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Ryan Munevar
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Antony Szolomayer
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Olympia, WA 98502

Molly Banks
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Olympia, WA 98512

Teri Camus for Alvin Camus
2827 14th Ave NW
Olympia, WA 98502

Annie Summers-Wright
1001 Cooper Pt Rd SW #140-298
Olympia, WA 98502

Perry Lund
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Olympia, WA 98512

Mary Ann Swam
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Olympia, WA 98502

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Anne Ewan
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Samantha Raphael
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Olympia, WA 98502

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Olympia, WA 98502

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Rhonda Brown
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Appendix E

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JOSEPH RAMSAUER
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ALBERTUS GABO JR.
3820 WESTPARK CT NW
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1409 SUNNYVALE CT NW
OLYMPIA, WA 98502

ERLING SORENSEN
1405 SUNNYVALE CT NW
OLYMPIA, WA 98502

CHARLES RUSSELL
1404 SUNNYVALE CT NW
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CHARLES BUTROS
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WILBUR BOLENDER
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HOODSPORT, WA 98548

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Appendix F
Grass Lake Plant List

FLORAL INVENTORY - Grasslake City Park, Oly., Thurston Co., WA - 11/11/1994-96

Temperate forest, Wetland & prairie Flora. Compiled by: Michael R. Clegg

Species were identified according to Flora of the Pacific N.W., by Hitchcock & Cronquist.

KEY:

1. FOREST.....Coniferous forest-type, shaded/ well-drained.
2. WOODS.....Mixed deciduous/coniferous forest-type, partial-shade/moist.
3. MEADOW.....Moist-clearings overgrown W/ grass & deciduous trees.
4. FIELD.....Open/ well-drained areas dominated by introduced grasses & herbs.
5. RIPARIAN.....Deciduous trees & shrubs growing on moist-ground along streams and wetlands, partially-open
6. LAWN.....Open/level areas of cultivated/ maintained grass.
7. WETLAND.....Low-lying/poorly-drained areas under water most of the year.
8. TRAILS.....Clear ground along-side trails, often at forest edge.
9. DISTURBED.....Sites cleared of vegetation and/ or W/ bare soil.
10. SATURATED/ MUCKY.....Wetland sites W/ water-table at or near ground-level.
11. *.....Prairie/ Oak woodland species

FAMILY:	SPECIES/GENUS:	ORIGIN:	HABITAT:	COMMON NAME:
ACERACEAE	<i>Acer macrophyllum</i>	Native	Riparian, moist-woods, clearings.	Big-If maple
ARISTOLOCHIACEAE	<i>Asarum caudatum</i>	Native	Moist/shaded Woods & Forest.	Wild ginger
BERBERIDACEAE	<i>Achlys tryphylla</i>	Native	Deep For./Woods to open, moist.	Vanilla leaf
	<i>Berberis aquifolium*</i>	Native	Forest-edge, open-field.	Shrt.-lvd oregon grape
	<i>Berberis nervosa</i>	Native	Forest.	Long-lvd. oregon grape
	<i>Vancouveria hexandra</i>	Native	Woods, Forest.	Inside-out-flower
BETULACEAE	<i>Alnus rubra</i>	Native	Riparian, meadow, woods, Moist/Dist.-areas.	Red alder
	<i>Corylus cornuta</i>	Native	Forest, Woods.	Western hazel
	<i>Betula sp. ?</i>	Introduced	Wetland-edge	Birch
BORAGINACEAE	<i>Borago officinalis</i>	Introduced	Along Road/Trail, Open-Dist areas	Borage
CAMPANULACEAE	<i>Campanula scouleri</i>	Native	Forest-edge, along trail.	Scouler's harebell
CAPRIFOLIACEAE	<i>Linnaea borealis</i>	Native	Dense-For. to For.-edge, moist.	Twin flower
	<i>Lonicera ciliosa</i>	Native	Open-woods, For.-edge, clearing.	Vining honeysuckle
	<i>Lonicera involucrata</i>	Native	Wds. at Wetl.-edge, Wds., Mdw.	Bush honeysuckle
	<i>Sambucus racemosa</i>	Native	Open-woods, Meadow, Field	Red elderberry
	<i>Symphoricarpos albus</i>	Native	Oaks, Along strms., moist woods, mdw.	Snowberry
	<i>Symphoricarpos mollis</i>	Native	Moist woods	Snowberry
CARYOPHYLLACEAE	<i>Arenaria macrophylla*</i>	Native	Oak-stand along Wetland-edge.	Swamp sandwort
	<i>Cerastium viscosum</i>	Introduced	Disturbed sites, along trails	Sticky chickweed
	<i>Stelaria crispa</i>	Native	Moist woods	Crisped stelaria
	<i>Stelaria media</i>	Introduced	Field, lawn, open/dist. areas.	Chickweed
	<i>Stelaria nitens</i>	Introduced	Disturbed sites, along trails	Shining chickweed
COMPOSITAE	<i>Achillea millefolium</i>	Native	Field, Along Trls., For.-edge.	Yarrow
	<i>Adenocaulon bicolor</i>	Native	Open-Wds., along Trl., For.-edge.	Pathfinder
	<i>Anaphalis margaritacea</i>	Native	For.-edge, along Trl., Field.	Pearly-everlasting
	<i>Chrysanthemum leucanthem.</i>	Introduced	Field, along Trls., Dist.-areas.	Oxeye-daisy
	<i>Crepis capillaris</i>	Introduced	Disturbed sites, forest edge	Smooth hawksbeard
	<i>Cirsium vulgare</i>	Introduced	Field, along Trls., Dist.-areas.	Bull-thistle
	<i>Gnaphalium sp. (palustre?)</i>	?	Open-grnd.along Trl., Dist.-areas.	?
	<i>Hypochaeris radicata</i>	Introduced	Lawn, Field, open/Dist.	Hairy Cat's-ear
	<i>Lactuca muralis</i>	Introduced	Woods, For.-edge, along trail.	Wall lettuce
	<i>Lapsana communis</i>	Native	Woods, For.-edge, along trail.	Nipplewort
	<i>Senecio jacobaea</i>	Introduced	For.-Trls.& clearings, Dist./open.	Tansy ragwort
	<i>Solidago canadensis</i>	Native	Open For., For.-edge & trls.	Goldenrod
	<i>Tanacetum vulgare</i>	Introduced	For.-Trls.& clearings, Dist./open.	Common tansy
	<i>Taraxacum officinale</i>	Introduced	Lawn, Field, Trls., open/Dist.	Dandelion

CONVOLVULACEAE	<i>Convolvulus sepium</i>	Introduced	Roadside, Field, For.-edge.	Morning-glory
CORNACEAE	<i>Cornus Nuttalli</i>	Native	Forest edge, clearings, Ripar.	Pacific dogwood
CRUCIFERAE	<i>Cardamine oligosperma</i> <i>Teesdalia nudicaulis</i>	Introduced Introduced	Lawn, Field, Open/Dist. areas. Lawn, Field, Open/Dist. areas.	Bittercress Shepherd's cress
CUPRESSACEAE	<i>Thuja plicata</i>	Native	Moist-shaded, conifer-forest.	Western red cedar
CYPERACEAE	<i>Carex deweyana</i> <i>Carex obnupta</i> <i>Carex vesicaria</i> <i>Dulichium arundinaceum</i> <i>Eleocharis palustris</i>	Native Native Native Native Native	Moist/shaded woods Wetld.-edge, Rip., Moist -woods. Wetland, Satur./Mucky ground. Wetland, Satur./Mucky ground. Wetland, Satur./Mucky ground.	Dewey's sedge Slough sedge Inflated sedge Dulichium Spike-rush
EQUISETACEAE	<i>Equisetum arvense</i>	Native	Riparian, open-disturbed areas, along trails.	Horsetail
ERICACEAE	<i>Arbutus menziesii</i> <i>Arctostaphylos uva-ursi</i> * <i>Chimaphila umbellata</i> <i>Gaultheria shallon</i> <i>Pyrola asarifolia</i> <i>Vaccinium ovatum</i> <i>Vaccinium parvifolium</i>	Native Native Native Native Native Native Native	For-edge, clearings, wl.-drn. soil. For.-edge, trail, Gravelly-soil. Moist/dense conifer forest. For., woods, For.-edge. Moist-woods at Wetl.-edge. Moist/dense Conifer Forest. Moist-open wds/For., on stump.	Pacific madrone Kinnikinnik Pipsisewa Salal Common pink pyrola Ever. huckle berry Red huckleberry
FAGACEAE	<i>Quercus garryana</i> *	Native	Rip. along wetnd., elevated/ well-drmd.	
FUMARIACEAE	<i>Dicentra formosa</i>	Native	Along stream, moist-woods.	Bleeding heart
GRAMINEAE	<i>Agropyron repens</i> <i>Agrostis tenuis</i> <i>Aira caryophylla</i> <i>Anthoxanthum odoratum</i> <i>Bromus vulgaris</i> <i>Bromus tectorum</i> <i>Dactylis glomerata</i> <i>Elymus glaucus</i> <i>Festuca arundinacea</i> <i>Festuca bromoides</i> <i>Festuca occidentalis</i> <i>Festuca subulata</i> <i>Glyceria borealis</i> <i>Holcus lanatus</i> <i>Melica subulata</i> <i>Panicum capillare</i> <i>Phalaris arundinacea</i> <i>Poa annua</i> <i>Poa compressa</i> <i>Poa pratensis</i>	Introduced Introduced Introduced Introduced Native Introduced Introduced Native Introduced Introduced Native Native Native Native Native Introduced Native ? Introduced Introduced Introduced Introduced	Meadow, Field, to For.-edge. Field, Trail, open/Dist. areas. Along Trail, open/Dist. areas. Along Trail, open/Dist. areas. Moist forest and woods Open/disturbed areas, field, trail Meadow, Field, to For.-edge. Open forest & woods, trailside Alder grove, meadow Field, Trail, open/Dist. areas. Moist woods, forest edge. Moist woods and forest. Wetland, Satur./Mucky ground. Along Trail, open/Dist. areas. Moist woods. Wetland-edge, sandy soils Wetld.-edge, mdw., moist/open. Along Trail, open/Dist. areas. Meadow, field, along trail. Meadow, field, along trail.	Wheatgrass Bentgrass Hairgrass Sweet vernalgrass Columbia brome Cheat grass Orchardgrass W. rye-grass Reed fescue Barren fescue Western fescue Nodding grass Mannagrass Velvetgrass Oniongrass Common witch grass Canarygrass Bluegrass Bluegrass Bluegrass
GROSSULRIACEAE	<i>Ribes sanguinium</i>	Native	Forest opening	Red flowering currant
HYDROPHYLLACEAE	<i>Hydrophyllum tenuipes</i> <i>Nemophila parvifolia</i> var. <i>parv.</i>	Native Native	Along stream, moist-woods. Meadow, open-Woods, moist.	Water-leaf Nemophila
HYPERICACEAE	<i>Hypericum perforatum</i>	Introduced	Open/Dist. areas, roadside.	St. john's wort
JUNCACEAE	<i>Juncus acuminatus</i> <i>Juncus effusus</i> <i>Juncus tenuis</i> <i>Luzula campestris</i> <i>Luzula parviflora</i>	Native Native Native Native Native	Wetland, Satur./Mucky ground. Wetland, Satur./Mucky ground. Trail, Dist./Grvl. soil, moist-plcs.. Forest edge, trail, gravelly soils. Dense/moist Forest.	Slender rush Common rush Rush Field woodrush Woodrush
LABIATAE	<i>Mentha arvensis</i> <i>Prunella vulgaris</i> <i>Satureja douglasii</i> <i>Stachys cooleyae</i>	Native Native Native Native	Wetland edge, moist-mucky soil. Open For/Woods, Meadow, Trail. Dense/moist Conifer Forest. Open/moist woods, riparian.	Field mint Self-heal Yerba buena Great Betony

LEGUMINOSAE	<i>Coronilla varia</i>	Introduced	Trailside, forest-edge	Coronilla
	<i>Cytisus scoparius</i>	Introduced	Open/Disturbed areas.	Scott's broom
	<i>Lotus corniculatus</i>	Introduced	Moist/Disturbed areas.	Lotus
	<i>Robinia pseudo-acacia</i>	Introduced	Open/grassy field.	Black locust
	<i>Trifolium pratense</i>	Introduced	Open/Dist. areas, field, lawn.	Red clover
	<i>Vicia sativa</i> var. <i>sativa</i>	Introduced	Open/Dist. areas, field.	Common vetch
LENTIBULARIACEAE	<i>Utricularia inflata</i>	Introduced	Wetland(Aqua.Nat.to S.E.-U.S.).	Bladderwort
LILIACEAE	<i>Camassia quamash</i> *	Native	Oak woodland	
	<i>Disporum hookeri</i>	Native	Moist Forest & woods.	Hooker's fairybell
	<i>Erythronium oregonum</i> *	Native	Oak-woodland at Wetld.-edge.	Giant fawn-lilly
	<i>Lilium columbianum</i>	Native	For.-edge & Trls., moist pls.	Columbia lilly
	<i>Maianthemum dilatatum</i>	Native	Streambanks, moist Woods/For..	False lilly-of-the-vly.
	<i>Smilacina racemosa</i>	Native	Moist-Forest, partial shade.	W. solomon-plume
	<i>Smilacina stellata</i>	Native	Moist-Forest, partial shade.	Star-fld solomon
	<i>Streptopus amplexifolius</i>	Native	Moist-Forest, partial shade.	Twisted-stalk
	<i>Trillium ovatum</i>	Native	Dense/moist Forest.	w. trillium
MALVACEAE	<i>Malva moschata</i>	Introduced	Open/Dist. areas, roadside.	Musk mallow
	<i>Malva sylvestris</i>	Introduced	Open/Dist. areas, roadside.	Common mallow
NYMPHAEACEAE	<i>Brasenia schreberi</i>	Native	Wetland, Aquatic.	Water-shield
	<i>Nuphar polysepalum</i>	Native	Wetland, Aquatic.	Water-lilly
	<i>Nymphaea odorata</i>	Native	Wetland, Aquatic.	Water-lilly
OLEACEAE	<i>Fraxinus latifolia</i>	Native	Riparian, Meadow, moist areas.	Ash
ONAGRACEAE	<i>Epilobium angustifolium</i>	Native	Clearings, For.-edge, Dist. areas.	Fireweed
	<i>Epilobium minutum</i>	Native	Forest edge, mdw.,	Small-flwd. willow herb
	<i>Ludwigia palustris</i> var. <i>pacif.</i>	Native	Wetland, Satur./Mucky ground.	False loosestrife
ORCHIDACEAE	<i>Corallorhiza maculata</i>	Native	Dense/moist Forest.	Spttd. coral-root
	<i>Goodyera oblongifolia</i>	Native	Dense/moist Forest.	Rattlesnake plantain
PINACEAE	<i>Pinus contorta</i>	Native	Meadow (Escaped ornamental).	Lodgepole pine
	<i>Pseudotsuga menziesii</i>	Native	Forest to open/Well-drained ground.	Douglas fir
	<i>Tsuga heterophylla</i>	Native	Moist-shaded, conifer-forest.	Hemlock
PLANTAGINACEAE	<i>Plantago lanceolata</i>	Introduced	Trailside, Field, Dist areas.	English plantain
	<i>Plantago major</i>	Introduced	Trailside, Field, Dist areas.	Common plantain
POLEMONIACEAE	<i>Navaretia intertexta</i>	Introduced	Disturbed/gravel areas	Needle-leaf navaretia
POLYGONACEAE	<i>Polygonum hydropiperoides</i>	Native	Wetland, Satur./Mucky ground.	Waterpepper
	<i>Rumex acetosella</i>	Introduced	Field, Lawn, Open/Disturbed areas	Sorrel
	<i>Rumex crispus</i>	Introduced	Field, Open/Disturbed areas,	Curly dock
POLYPODIACEAE	<i>Athyrium felix-femina</i>	Native	Forest, Riparian, forest-edge.	Lady-fern
	<i>Blechnum spicant</i>	Native	Moist-shaded, conifer-forest.	Deer-fern
	<i>Dryopteris austriaca</i>	Native	Moist-shaded, conifer-forest.	Shield-fern
	<i>Polypodium glycyrrhiza</i>	Native	Oak & Maple trunks, Rip. & Woods.	Licorice-fern
	<i>Polystichum munitum</i>	Native	Forest, Riparian, forest-edge.	Sword-fern
	<i>Pteridium aquilinum</i>	Native	Forest, Riparian, fields, along trails, Dist.,	Bracken
PORTULACACEAE	<i>Montia sibirica</i>	Native	Moist-shaded woods, Riparian.	Candyflower
PRIMULACEAE	<i>Trientalis latifolia</i>	Native	Moist Woods/For., For.-edge.	Starflower
RANUNCULACEAE	<i>Actaea rubra</i>	Native	Moist-shaded woods & forest	Baneberry
	<i>Ranunculus flammula</i>	Native	Wetland, Satur./Mucky ground.	Creeping buttercup
	<i>Ranunculus uncinatus</i>	Native	Forest edge, open woods, trailside, moist.	Little buttercup
RHAMNACEAE	<i>Rhamnus purshiana</i>	Native	Rip., woods, for.-openings.	Cascara
ROSACEAE	<i>Amelanchier alnifolia</i>	Native	Open-woods, Forest-edge.	Serviceberry

	<i>Crataegus monogyna</i>	Introduced	Forest-edge, open-grassy areas.	Hawthorne
	<i>Fragaria vesca</i>	Native	Open-woods, along Trails.	Woods strawberry
	<i>Geum Macrophyllum</i>	Native	Moist-woods, Alder stand.	Large-lvd. avens
	<i>Holodiscus discolor</i>	Native	Open-woods, Forest-edge.	Ocean-spray
	<i>Oemleria cerasiformis</i>	Native	Open-woods, Riparian.	Indian plum
	<i>Physocarpus capitatus</i>	Native	Riparian, meadow, open-woods.	Ninebark
	<i>Prunus emarginata</i>	Native	Riparian, meadow, open-woods.	Bittercherry
	<i>Pyrus fusca</i>	Native	Forest-edge, open-grassy areas.	W. crabapple
	<i>Rosa gymnocarpa</i>	Native	Moist to dry woods.	Woodrose
	<i>Rubus discolor</i>	Introduced	Open/Disturbed areas.	Himalayan Blackberry
	<i>Rubus laciniatus</i>	Introduced	Open/Disturbed areas.	Evergreen blackberry
	<i>Rubus leucodermis</i>	?	Meadow, open woods	Black raspberry
	<i>Rubus parviflorus</i>	Native	Woods, open & Dist. areas.	Thimbleberry
	<i>Rubus spectabilis</i>	Native	Riparian, moist-woods, meadow.	Salmonberry
	<i>Rubus ursinus</i>	Native	Dense to open-woods, clearings.	Trailing blackberry
	<i>Sorbus aucuparia</i>	Introduced	Forest Edge/Breaks.	Rowan-tree
	<i>Spirea douglasii</i>	Native	Wetland, damp-meadows	Hardhack
RUBIACEAE	<i>Galium aparine</i>	Native	Woods, For.-edge, mdw. moist.	Cleavers
SALICACEAE	<i>Populus tremuloides</i>	Native	Riparian, meadow, wetland-edge.	Quaking aspen
	<i>Populus trichocarpa</i>	Native	Riparian, meadow, wetland-edge.	Black cottonwood
	<i>Salix hookeriana</i>	Native	Riparian, Wetland-edge.	Hooker's willow
	<i>Salix scouleriana</i>	Native	Riparian, Woods, meadow.	Scouler's willow
SAXIFRAGACEAE	<i>Tiarella trifoliata</i>	Native	Damp/shaded Forest.	Coolwort
	<i>Heuchera chlorantha</i> *	Native	Oak stand along wetland, open/moist	Green-fld. heuchera
SCROPHULARIACEAE	<i>Digitalis purpurea</i>	Native	For.-edge, Trls., Mdw., Moist-Dist. areas.	
	<i>Parentucellia viscosa</i>	Introduced	For.-edge, along trl., moist-Dist. areas.	
	<i>Veronica americana</i>	?	Along trals, open woods & forest	American brooklime
	<i>Veronica scutellata</i>	Native	Wetland, Satur./Mucky ground.	Skullcap Speedwell
	<i>Veronica serpyllifolia</i>	Introduced	Along trail, Alder stand.	Speedwell
SPARGANIACEAE	<i>Sparganium emersum</i>	Native	Wetland, Satur./Mucky ground.	Bur-reed
TAXACEAE	<i>Taxus brevifolia</i>	Native	Moist-shaded Woods/Forest	Pacific yew
UMBELLIFERAE	<i>Daucus carota</i>	Introduced	Field, open/Dist. areas.	Wild carrot
	<i>Osmorhiza chilensis</i>	Native	Moist/open to closed forest.	Sweet cicely
	<i>Sium suave</i>	Native	Wetland, Satur./Mucky ground.	Water-parsnip
VIOLACEAE	<i>Viola sempervirens</i>	Native	Moist/dense conifer forest.	Evergreen violet
	<i>Viola palustris</i>	native	Moist ground along wetland edge, riparian.	Marsh viola
	Native Species:	119		
	Introduced Species:	51		
	Unknown origin (sp.):	4		
	Total Species:	174		

Appendix G
Grass Lake Bird List

BIRD SPECIES INVENTORY OF GRASSLAKE PARK, OLY., WA. Compiled by Michael R. Clegg, Oct. 1994-96

This list includes all the birds that have been confirmed to live or visit Grass Lake Park, Olympia, Washington. Families are ordered in accordance with the systematic checklist found in Peterson's Western Birds. All species included were sighted & identified by atleast two persons familiar with field identification of Northwest birds. Contributing Field Observations: Marcus Taylor, John Paul, Jim Norwalk & Michael Clegg

KEY

STATUS: U = uncommon (sighted <50% of the time) R = rare (sighted <5 times)
 C = common (sighted 80% of the time or >) Z = resident year round
 * = Neotropical migrant T = seasonal transient
 V = variant or subspecies

HABITAT: RIP = riparian/ wetland edge FOR = coniferous forest
 WDS = mixed conifer/ deciduous woods WTL = wetland
 FLD = field overgrown w/ exotics OPN = forest opening/ meadow
 LWN = Open lawn/grass GRV = Deciduous groves

*Data in the Dates Sighted column is listed in the following order: Status/ Dates sighted.
 *Nesting habitats are listed according to preference, those most frequently inhabited are listed first.

Family	Genus/Species	Common Name	Habitats	Dates sighted
Gaviidae	Gavia immer	Common loon	WTL	R 3/5/94
Podicipedidae	Podilymbus podiceps	Pied-billed grebe	WTL	C 3/22-11/1
Phalacrocoracidae	Phalacrocorax auritus	Double-crested comorant	WTL	C fall/wntr
Anatidae	Aix sponsa	Wood duck	WTL	C 9/7-9/24
	Anas acuta	Northern pintail	WTL	C 10/1-22
	Anas americana	American wigeon	WTL	C 10/1-22, 3/30
	Anas clypeata	Northern shoveler	WTL	C 10/1-22
	Anas crecca	Green-winged teal	WTL	C 10/1-11/25
	Anas cyanoptera	Cinnamon teal	WTL	R 10/10
	Anas discors	Blue-winged teal	WTL	R 10/1-22
	Anas platyrhynchos	Mallard	WTL	C Z
	Anas strepera	Gadwall	WTL	R 3/20
	Aythya collaris	Ring-necked duck	WTL	U 10/25-4/15
	Bucephala albeola	Bufflehead	WTL	C 10/25-4/15
	Bucephala islandica	Barrow's goldeneye	WTL	R 1/27
	Branta canadensis	Canada goose	WTL	U Z
	Lophodytes cucullatus	Hooded merganser	WTL	C 10/1-11/25
	Mergus merganser	Common merganser	WTL	R 1/27
	Oxyura jamaicensis	Ruddy duck	WTL	R 1/17
Ardeidae	Ardea herodias	Great-blue heron	WTL	C Z
	Butorides striatus	Green-backed heron	WTL	U 9/1-10/15
	Casmerodius albus	Great egret	WTL	R 10/23/93
	Botaurus lentiginosus	American bittern	WTL	6/1-8/25
Charadriidae	Charadrius vociferus	Killdeer	WTL	C 6/15-9/1
Scolopacidae	Gallinago gallinago	Common snipe	WTL	C 10/1-10/22
	Tringa melanoleuca	Greater yellowlegs	WTL	C 10/1-10/22
Phasianidae	Callipepla californica	California quail	FLD, LWN, OPN	C Z
	Phasianus colchicus	Ring-necked pheasant	FLD, OPN, WDS	U Z
	Bonasa umbellus	Ruffed grouse	WDS, OPN	C Z
Accipitridae	Accipiter cooperii	Cooper's hawk	WDS, FOR, WTL	U 11/25, 12/2
	Accipiter striatus	Sharp-shinned hawk	WDS, FOR, WTL	C Z (3/10, 10/22)
	Circus cyaneus	Northern harrier	WTL, FOR	R 10/20
	Buteo jamaicensis	Red-tailed hawk	FOR, WTL	U Z
	Haliaeetus leucocephalus	Bald eagle	Soaring	U Z
	Pandion haliaetus	Osprey	WTL; soaring	U Z
Strigidae	Bubo virginianus	Great-horned owl	FOR, WDS	R 12/10

→ New sp. →

→

8 (8/31)

	<i>Aegolius acadicus</i>	Northern saw-whet owl	FOR, WDS	R 8/5
Cathartidae	<i>Cathartes aura</i>	Turkey vulture	Soaring	U Z
Alcedinidae	<i>Ceryle alcyon</i>	Belted kingfisher	WTL	C sprg-fall
Columbidae	<i>Columba fasciata</i>	Band-tailed pigeon	OPN, WDS	C 4/8-5/10
Trochilidae	<i>Selasphorus rufus</i>	Rufous hummingbird	OPN, RIP, WDS	C 3/10-8/5
Picidae	<i>Colaptes auratus</i>	Northern flicker	FOR, OPN, LWN	C Z
	<i>Dryocopus pileatus</i>	Pileated woodpecker	WDS, FOR, OPN	R Z
	<i>Picoides pubescens</i>	Downy woodpecker	RIP, OPN, Oaks	C Z
	<i>Picoides villosus</i>	Hairy woodpecker	RIP, OPN, WDS, FOR	C Z
	<i>Sphyrapicus ruber</i>	Red-breasted sapsucker	WDS	R Z
Tyrannidae	<i>Contopus sordidulus</i>	Western wood-pewee*	RIP, OPN, Oaks	U 5/15-6/20 ?
	<i>Empidonax difficilis</i>	Western flycatcher*	OPN, FOR, WDS	C 4/27-9/1 ?
	<i>Empidonax traillii</i>	Willow flycatcher*	RIP, OPN, WDS	C 4/15-9/7
Hirundinidae	<i>Hirundo rustica</i>	Barn swallow*	WTL, OPN, FLD	C 4/5-9/7
	<i>Iridoprocne bicolor</i>	Tree swallow*	WTL, OPN, FLD	C 4/5-9/7
	<i>Tachycineta thalassina</i>	Violet-green swallow*	WTL, OPN, FLD	C 4/5-9/7
Corvidae	<i>Corvus brachyrhynchos</i>	American crow	WTL, OPN, WDS	C Z
	<i>Cyanocitta stelleri</i>	Steller's jay	OPN, WDS, FOR	C Z
Paridae	<i>Parus atricapillus</i>	Black-capped chickadee	OPN, WDS, RIP	C Z
	<i>Parus rufescens</i>	Chestnut-backed chickadee	FOR, WDS, OPN	C Z
Aegithalidae	<i>Psaltriparus minimus</i>	Bushtit	OPN, WDS, FOR	U 4/5-9/15
Sittidae	<i>Sitta canadensis</i>	Red-breasted nuthatch	FOR, WDS	C Z
Certhiidae	<i>Certhia americana</i>	Brown creeper	FOR, WDS	U Z
Troglodytidae	<i>Thryomanes bewickii</i>	Bewick's wren	RIP, OPN, WDS	C Z
	<i>Troglodytes troglodytes</i>	Winter wren	FOR, WDS	C Z
Muscicapidae	<i>Catharus ustulatus</i>	Swainson's thrush*	WDS, FOR	U 5/21-8/5
	<i>Ixoreus naevius</i>	Varied thrush	FOR, WDS, OPN	U Z
	<i>Myadestes townsendi</i>	Townsend's solitaire	FOR, OPN	U 4/6-5/10
	<i>Regulus calendula</i>	Ruby-crowned kinglet	OPN (low shrubs), WDS	C Z
	<i>Regulus satrapa</i>	Golden-crowned kinglet	FOR, WDS, OPN	C Z
	<i>Turdus migratorius</i>	American robin	OPN, LWN, FLD, WDS	C Z
Sturnidae	<i>Sturnus vulgaris</i>	European starling	FLD, OPN, LWN	U Z
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar waxwing	RIP, OPN, FLD	C T(5/23-10/28)
Vireonidae	<i>Vireo gilvus</i>	Warbling vireo*	RIP, GRV, OPN	U 5/4-7/5 ?
	<i>Vireo huttoni</i>	Hutton's vireo	FOR, WDS, OPN	U Z
	<i>Vireo solitarius</i>	Solitary vireo*	GRV, OPN, FOR	U 4/25-9/10
Emberizidae	<i>Pheucticus melanocephalus</i>	Black-headed grosbeak*	WTL (edge), OPN	C 5/5-6/20 ?
	<i>Junco hyemalis</i>	Dark-eyed junco	OPN, WDS, FOR, LWN	C Z
	<i>Melospiza melodia</i>	Song sparrow	OPN, FLD, RIP, WDS	C Z
	<i>Pipilo erythrophthalmus</i>	Rufous-sided towhee	OPN, FLD, WDS	C Z
	<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow	FLD, LWN, OPN	C 4/15-6/30
	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	FLD, LWN, OPN	C 4/15-6/30
	<i>Agelaius phoeniceus</i>	Red-winged blackbird	WTL	C 3/5-8/15
	<i>Molothrus ater</i>	Brown-headed cowbird	OPN, FLD, WDS	U 4/20-6/5
	<i>Dendroica coronata</i>	Audubon's warbler (V)	RIP, GRV, OPN	C 4/4-5/1, 10/18
	<i>Dendroica coronata</i>	Myrtle warbler (V)	RIP, GRV, OPN	C 4/4-5/1
	<i>Dendroica nigrescens</i>	Black-throated gray warbler*	FOR, WDS, OPN	C 4/15-9/19
	<i>Dendroica petechia</i>	Yellow warbler*	WTL, RIP	C 5/5-6/20 ?
	<i>Dendroica townsendi</i>	Townsend's warbler	FOR, OPN	R T(10/18, 1/1)
	<i>Geothlypis trichas</i>	Common yellowthroat*	WTL, FLD, OPN	C 4/9-9/24
	<i>Oporornis tolmiei</i>	MacGillivray's Warbler*	OPN, RIP (dense shrubs)	U 5/17-6/15
	<i>Vermivora celata</i>	Orange-crowned warbler*	OPN, FLD, WDS, RIP	C 4/7-9/7
	<i>Wilsonia pusilla</i>	Wilson's warbler*	OPN, RIP, WDS	C 4/22-9/7
	<i>Piranga ludoviciana</i>	Western tanager*	FOR, OPN	U 6/12-17-9/8/3)
Fringillidae	<i>Carduelis pinus</i>	Pine siskin	FOR, GRV	C 4/5-12/20
	<i>Carduelis tristis</i>	American goldfinch	FLD, OPN, GRV	C 6/15-10/1
	<i>Carpodacus mexicanus</i>	House finch	FLD, GRV, OPN	C Z
	<i>Carpodacus purpureus</i>	Purple finch	FOR, OPN	U Z
	<i>Coccothraustes vespertina</i>	Evening grosbeak	GRV, FOR, RIP	C T(4/8-5/10)
Passeridae	<i>Passer domesticus</i>	House sparrow	FLD, GRV, LWN	C Z

Byt 1983-2004 in - 12/1/00

Appendix H

Wetland Inventory and Habitat Assessment

(This two volume report is not bound into this document due to length. It is available for review at the Olympia Parks, Recreation and Cultural Services Department.)



City of Olympia Parks, Recreation and Cultural Services

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