LOTT
Wastewater
Resource Management
Plan

June 2001

Final Supplemental Environmental Impact Statement

Hawks Prairie Reclaimed Water Project

Prepared for:

LOTT Wastewater Alliance

Prepared by:
Adolfson Associates, Inc.
in association with Brown and Caldwell

LOTT

Wastewater
Management
Partnership

June 11, 2001

Dear Interested Reader:

RE: **Final Supplemental Environmental Impact Statement:**
Hawks Prairie Reclaimed Water Project,
LOTT Wastewater Resource Management Plan

This letter accompanies the *Final Supplemental Environmental Impact Statement* (Final SEIS) for LOTT's Hawks Prairie Reclaimed Water Project. This project will provide the first increment of new wastewater treatment capacity under LOTT's Wastewater Resource Management Plan. The LOTT (Lacey, Olympia, Tumwater, and Thurston County) Wastewater Management Partnership, also known as the LOTT Wastewater Alliance, is both the proponent and lead agency for this evaluation, which has been prepared in accordance with the State Environmental Policy Act (SEPA), RCW 43.21C and LOTT's Environmental Rules of August, 1994, as directed by LOTT's Environmental Review Committee.

The Hawks Prairie Draft SEIS describes and comparatively evaluates alternatives for siting, construction and operation of reclaimed water production and use facilities necessary to implement the first new capacity increment of LOTT's Wastewater Resource Management Plan (WRMP), also described as *The Highly Managed Plan.* These alternatives are also compared with a No Action alternative. Site alternatives include four possible sites within two general zones for a reclaimed water satellite treatment plant; five possible sites for groundwater recharge basin and/or constructed wetlands polishing and storage ponds; several sites where reclaimed water could be put to beneficial use; and routes for conveyance systems necessary to transfer reclaimed water from the satellite plant to ponds, the groundwater recharge basin and use areas. In addition, a number of generic use areas are identified.

This document is the third of three environmental reviews prepared to assist in making decisions associated with the WRMP. The Hawks Prairie Final SEIS builds upon analyses presented in the LOTT *Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement* published November 1998. Both documents are also supplemental to the *Final Programmatic EIS* published by LOTT in December 1996. Consistent with WAC 197-11-620, the Hawks Prairie Draft SEIS does not repeat information or evaluations included in the prior documents. The purpose of the Hawks Prairie Final SEIS is to comparatively evaluate potential impacts of identified facilities and locations, to enable reviewers to accurately evaluate the relative feasibility of the alternatives under consideration. The LOTT Advisory Committee (LOTT Alliance Board of Directors), will use the information in this Final SEIS as it considers possible purchase of one or more of the properties evaluated.

As part of the environmental review process, LOTT provided a 45-day comment period on the Draft SEIS, with a public workshop on April 4, 2001 and a public hearing on May 2, 2001. Written comments were due Friday, May 4, 2001. Public testimony and written comments, along with written responses, are included in the Final SEIS.

a partnership of Lacey, Olympia, Tumwater, and Thurston County
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On behalf of the LOTT Environmental Review Committee, thank you to the individuals, agencies and organizations that provided insights and comments on the Draft SEIS.

Sincerely,

Richard D. Blinn, P.E., Presiding Member
LOTT Environmental Review Committee

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This supplemental environmental impact statement (SEIS) has been prepared consistent with the State Environmental Policy Act (SEPA) WAC 197-11-620. This SEIS supplements the 1998 Supplemental Environmental Impact Statement prepared to evaluate The Highly Managed Alternative of LOTT's Wastewater Resource Management Plan.

PROJECT TITLE

Hawks Prairie Reclaimed Water Project, Wastewater Resource Management Plan

PROJECT DESCRIPTION

The LOTT (Lacey, Olympia, Tumwater, and Thurston County) Wastewater Alliance helps preserve and protect public health, the environment, and water resources by providing wastewater management services for the urbanized areas of North Thurston County. LOTT's four government partners jointly manage wastewater resources for a currently sewered area of approximately 14,000 acres and an estimated sewered population of about 78,000 people. LOTT recently completed a long-range planning process that considered a number of strategies for ensuring the provision of adequate wastewater facilities to accommodate wastewater flow increases that will accompany projected population and employment growth within its service area. That process resulted in the development of the Wastewater Resource Management Plan (WRMP), also described as "The Highly Managed Plan."

LOTT is in the process of implementing the Highly Managed Plan, which incorporates a decentralized approach to providing new wastewater capacity through recycling. This will involve a gradual transition to reclaimed water production and use for such beneficial uses as irrigation, commercial/industrial water supply, and groundwater recharge. New treatment capacity will be added in small increments, just in time to meet the community's future wastewater needs. Small reclaimed water satellite plants will treat wastewater to Class A Reclaimed Water standards.

Providing the first increment of new capacity under the Highly Managed Plan will involve:

- Siting and construction of a reclaimed water satellite plant;
- Siting and construction of a series of constructed wetlands polishing ponds and a groundwater recharge basin;
- Identifying public and private sites, such as golf courses, parks, large green belt areas, farms, and industries, where Class A Reclaimed Water could be put to beneficial use; and
- Construction of conveyance routes and other needed conveyance facilities to connect the reclaimed water satellite plant to the constructed wetlands polishing ponds, groundwater recharge basin, and identified users of reclaimed water.

This phase of the Highly Managed Plan will also involve establishment of the policies and institutional arrangements necessary to implement an effective reclaimed water production and use program.

PROJECT LOCATION

The potential reclaimed water satellite plant sites, constructed wetlands polishing pond sites, groundwater recharge basin sites, and reclaimed water users (use areas) are located in the Hawks Prairie Resource Management Basin in northeast Thurston County. The affected areas include portions of the City of Lacey and unincorporated Thurston County.

PROPONENT

LOTT Wastewater Alliance

LEAD AGENCY

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RESPONSIBLE OFFICIAL

LOTT Environmental Review Committee
Richard D. Blinn, P.E., Presiding Member

CONTACT PERSON

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PERMITS AND LICENSES REQUIRED

The following permits and licenses may be required.

Federal:
Section 404 Permit (Nationwide 12)

State:
NPDES
Application for Short Term Water Use
Waste Discharge Permit – Reclaimed Water
Order of Approval to Construct New Air Pollution Source (Notice of Construction)
Hydraulic Project Approval
401 Water Quality Certification

Local:
Conditional Use/Special Use Permit
Zoning Code Variance
Building/Grading Permits and Drainage Review
Right-of-Way Use
Wetlands Development Permit
Commercial Design Review

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DATE OF DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (DRAFT SEIS) ISSUE

Tuesday, March 20, 2001

DATE DUE FOR COMMENTS ON DRAFT SEIS

Comments were~~are~~ due at the LOTT Office
Friday, May 4, 2001 by 5:00 p.m.

2101 4th Avenue E, #101
Olympia WA 98506-4729
Fax: 360-664-2336
E-mail: karlafowler@lottonline.org

DATES OF PUBLIC WORKSHOP

Wednesday, April 4, 2001
7:00 p.m. to 9:00 p.m.
Department of Ecology auditorium
300 Desmond Drive
Lacey, Washington

DATE OF PUBLIC HEARING

Wednesday, May 2, 2001
Starting at 7:00 p.m.
Department of Ecology auditorium
300 Desmond Drive
Lacey, Washington

DATE OF FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (FINAL SEIS) ISSUE

Monday, June 11, 2001

FUTURE ENVIRONMENTAL REVIEW

The Highly Managed Plan divided the north Thurston County Urban Growth Management Area (LOTT's service area) into four semi-homogenous Resource Management Basins, small watersheds or basins with similar conditions and population characteristics. The Highly Managed Plan proposes construction and operation of reclaimed water production and use facilities as well as other wastewater system improvements within each Resource Management Basin. The Hawks Prairie Reclaimed Water Project represents the first comprehensive implementation phase for a Resource Management Basin and for adding new treatment capacity to the LOTT system. An implementation project is being initiated for the Budd Inlet Resource Management Basin, and future projects are planned for the Chambers Creek Resource Management Basin and the Airport/West Resource Management Basin. The cumulative impacts of the four projects are addressed in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement.*

DOCUMENTS INCORPORATED BY REFERENCE

1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement.*

1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement.*

These documents are available for review at the LOTT office, LOTT Wastewater Treatment Plant, and local public libraries. They are incorporated by reference to present the alternatives, environmental impacts, and mitigation measures considered in the decisions leading up to implementation of the Hawks Prairie Reclaimed Water Project.

PURCHASE OF COPIES

The Summary Chapter is available on LOTT's web site (www.lottonline.org).

Copies of the printed document are available for public review at the LOTT Alliance office; the LOTT Budd Inlet Treatment Plant; the Lacey, Olympia and Tumwater City Halls; the Thurston County Courthouse; and the Lacey, Olympia, and Tumwater Timberland Libraries. Copies of the printed document may be purchased for the duplication cost of $47~~15~~ per copy.

Copies of the ~~entire document~~ Draft EIS are also available in CD-ROM format along with the *1998 Wastewater Resource Management Plan and Final Supplemental EIS.* CDs are available at no charge.

To order printed documents or CD copies, contact the LOTT office at 664-2333 ext. 101. For more information, contact the LOTT Contact Person (see information on page FS-2).

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CHAPTER ONE: SUMMARY

1.1 PROJECT OBJECTIVE

The objective of the Hawks Prairie Reclaimed Water Project is to provide the first increment of new wastewater treatment capacity, consistent with the LOTT Wastewater Resource Management Plan's Highly Managed Alternative, to accommodate projected population and employment growth within the LOTT sewer service area. Wastewater services provided through this project are intended to be consistent with adopted land use, water use, and wastewater plans, policies, and regulations; incorporate public values; and be cost effective over the long-term.

1.2 PURPOSE AND NEED FOR THE PROJECT

LOTT recently completed an extensive long-range planning process to develop a program for management of projected wastewater flows that is consistent with identified public values, is technically feasible, and is in compliance with adopted policies and regulations.

The four-year, $5.2 million planning process was the result of studies that showed the existing LOTT wastewater treatment plant could be out of capacity during high rainfall periods as early as 2001. LOTT's discharge permit from the Washington Statement Department of Ecology requires planning to begin when the plant reaches 85 percent of its design capacity. LOTT's four government partners – Lacey, Olympia, Tumwater and Thurston County – authorized the planning to begin when they approved an Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning as of March 27, 1995.

The purpose and need for wastewater service improvements in the LOTT service area are more fully described in Chapter 1 of the 1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement* (Final PEIS), and in Chapter 2 of the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement.*

The Plan provides a blueprint for management of wastewater in the urbanizing portions of Northern Thurston County through the year 2020. Under the approved Plan, also known as the "Highly Managed Plan," LOTT will incorporate a decentralized approach to providing new wastewater capacity through recycling. This will involve a gradual transition to production of reclaimed water for such beneficial uses as irrigation, commercial/ industrial water supply, and groundwater recharge. New treatment capacity will be added in small increments, just in time to meet the community's future wastewater needs. The Hawks Prairie Reclaimed Water Project is intended to provide the first increment of that new capacity.

1.3 PLANNING PROCESS/ PREVIOUS SEPA REVIEW

The planning process started by evaluating the broad spectrum of possible approaches, then became progressively more specific as step-by-

step decisions have been made. The process emphasized environmental evaluations and incorporated engineering, planning, and scientific evaluations. Extensive input from stakeholders and other citizens throughout the service area was an integral part of the planning throughout each stage.

Planning started in September 1995 with public opinion and stakeholder surveys and interviews, resulting in a series of 10 public values. One of those values is the desire to begin treasuring LOTT's treated water as a valuable, long-term resource to be cleaned and restored, used for productive purposes, then returned to the environment.

Nine possible "Program Directions" for managing LOTT's wastewater future were defined, representing the full range of treatment and discharge or use options available:

1. Demand Management
2. Reclamation
3. Groundwater Recharge
4. Discharge More in Budd Inlet
5. New Puget Sound Discharge in Thurston County
6. Puget Sound Discharge in Pierce County
7. Freshwater Discharge
8. Combination
9. No Action

During 1996, the directions were evaluated through preparation of a *Programmatic Environmental Impact Statement*. It compares general environmental impacts of the nine Program Directions, without reference to specific sites.

As the result of the environmental evaluation and extensive public comment, two of the Program Directions, 6 and 7, were discontinued from further evaluation in January 1997.

In September 1996, the LOTT Advisory Committee authorized a scientific study of Budd Inlet to more fully explore the potential for increased discharge of treated water, especially during the wintertime.

Demand Management received the strongest public support and it became apparent this needed to be part of any final solution chosen. Thus, a Combination (program Director 8) became the focus of the next stage of evaluation during 1997. Strongest public and stakeholder support was indicated for combining moderate levels of the first four Program Directions – Demand Management, Reclamation, Groundwater Recharge and Discharge More Into Budd Inlet. The evolving program would be an environmentally-based system for adding small units of capacity, responding just-in-time to actual measured conditions. New units of capacity would be gained by recycling of wastewater through Reclamation and Groundwater Recharge methods. Transitioning to these new methods would be supported through reserve capacity in Budd Inlet (if environmentally acceptable) and Demand Management programs. On May 30, 1997 that "Combination" was formally chosen as the "Preferred Program Direction."

A new round of environmental and technical evaluations followed, comparing three alternatives:

- The preferred program, described as "The Highly Managed Alternative"
- "The Traditional Facilities Alternative," a single large treatment plant discharging into marine waters, and
- "The No Action Alternative", involving no new capital facilities to increase capacity

The alternatives were described and the probable significant adverse environmental impacts, mitigation measures, cumulative impacts, and significant unavoidable adverse impacts were evaluated and documented in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact*

Statement (1998 Final SEIS). The Final SEIS expanded upon the previously prepared 1996 *Final Programmatic Environmental Impact Statement* and provided more focused evaluation of probable impacts. It also provided a general evaluation of representative sites within the planning area.

Action was taken on November 25, 1998 to submit the Proposed Plan and Final Supplemental EIS to the Department of Ecology as LOTT's response to its permit planning requirement conditions.

During 1999, the LOTT Partners took the actions required to implement financing and governance changes as the basis for implementing the Plan. LOTT connection fees and monthly rates were increased. By January 2000 all four of the LOTT Partner governments had approved the Wastewater Resource Management Plan's Highly Managed Alternative of November 1998 and an Interlocal Agreement for Wastewater Management by the LOTT Wastewater Alliance.

Implementation of the Plan will be phased:

- Demand Management, in the form of Flow Reduction Programs, was implemented in 1997.
- With findings from the Budd Inlet Scientific Study suggesting that LOTT could increase wintertime discharge in Budd Inlet without environmental harm, the LOTT Board of Directors voted in February 2001 to request a permit modification from the Department of Ecology.
- Improvements at the existing Budd Inlet Treatment Plant will include facilities to treat a portion of the flows to Reclaimed Water standards.
- The Hawks Prairie Reclaimed Water Project is being planned to implement the first increment of new Reclaimed Water and Groundwater Recharge capacity. Future increments, as outlined in the Plan, are anticipated in other parts of LOTT's service area.

1.4 PUBLIC INPUT/SCOPING

Throughout the nearly four year process of developing the Wastewater Resource Management Plan, LOTT actively solicited input from key stakeholders and the public regarding the plan and its potential environmental impacts. Such input played a crucial role in shaping the plan's final outcome. LOTT will continue to encourage public involvement during implementation of the Wastewater Resource Management Plan and to provide opportunities for citizens to learn more about the plan.

Scoping for this SEIS was conducted in October 2000. LOTT received a number of written comments and heard public testimony concerning the scope of this SEIS at a public hearing held on October 25, 2000. Table 1-1 provides a summary of the major concerns and comments received during scoping.

LOTT will take testimony regarding this SEIS at a public hearing to be held May 2, 2001. Refer to the Fact Sheet for time and location.

Table 1-1. Scoping Comment Summary

Name	Major Concerns/Comments
	SCOPING COMMENTS OCTOBER 2000
Washington State Department of Ecology Kari Rokstad SEPA Coordinator Southwest Regional Office P.O. Box 47775 Olympia, WA 98504-7775	• Discharges to natural or constructed wetlands must conform to the Water Reclamation and Reuse Standards (DOH, DOE, 1997, Publication Number #97-23).
Olympia/Thurston County Chamber of Commerce Wayne K. Beckwith Chamber Task Force P.O. Box 1427 Olympia, WA 98507	• Supports the notion that additional wastewater treatment is needed now and tomorrow in Thurston County. • LOTT should continue to develop information and analyses for a marine outfall west of the Nisqually Reach. This outfall would consider long-term growth and wastewater needs in west Olympia and west county, growth between Yelm and Lacey, and the potential of legal action creating long delays for, or prohibiting, multiple satellite treatment facilities.
Donna J. Jorgenson 5523 15th Avenue N.E. Lacey, WA 98516	• Concerned that a satellite reclamation plant site in the 5600 block of 15th Avenue N.E. would preclude her from selling her property. • Objects to siting in a residential area. • Portions of her property and the adjoining property have been purposely kept in a natural state and serve as a wildlife corridor. • If the reclamation plant will be constructed to provide service to new development to the north, could its location be a larger site in the area of the new development or in a commercial or light industrial area. • Concerned about odors from a reclamation plant would be held close to the ground in the fall and winter due to fog created by wetlands. • The proposal did not address the amount of noise pollution or additional traffic pressure created. • The proposal did not illustrate the visual effects of the facility or if it would be appropriate for a residential neighborhood. • Concerned with contamination of groundwater and domestic wells. Groundwater levels in the area are high.
Leroy and Patricia Paine 2017 Woodland Creek Street NE Olympia, WA 98516	• Wastewater treatment plant should not be sited in a residential neighborhood. • Property values would be decreased and the Woodland Creek watershed would be threatened. • An appropriate site would be closer to proposed sites A, B, or C where the land use is commercial and industrial and further away from Woodland Creek. • Concerned about contamination to wetlands in the Woodland Creek area. Opposes further damage to the natural habitat. • Concerned with extra water in the area since residents have septic systems. • A mitigation suggestion would be to hook up the residents in the area to the existing sewer system free of charge.

Name	Major Concerns/Comments
	SCOPING COMMENTS OCTOBER 2000
Dick and Betty Curry 5743 15th Avenue NE Olympia, WA 98516	• Noted property is available for sale.
Bob Jacobs 2101 4th Avenue E #101 Olympia, WA 98506-4729	• Concerned a plant with a maximum capacity of five million gallons per day would have to infiltrate about 30 inches of water daily over the infiltration area. This would probably not result in effective filtration, resulting in groundwater contamination. • The *SEIS* should address impacts on land use, traffic, compliance with the Growth Management Act, etc. on land devoted to infiltration structures.
Robert J. Terhune 5819 Sunview Court SE Lacey, WA 98513-4106	• Siting considerations should consider the location of significant facilities that generate wastewater and projected future discharges; consider location of existing facilities that may be adapted for use (i.e., Olympia Cheese Company/Sorrento Lactalis Cheese); locate site at lowest elevation. Site should complement the Lacey Sewer Master Plan. • Site 1 is unsuitable. The area is undergoing commercial modernization. Plant should not be located in the new commercial development. The highest and best use of this area is commercial retail; since it would not generate sales tax revenue, the City of Lacey would not allow the plant. • What criteria did LOTT use for Site 2? How does this compare to Site 1? What is the anticipated land cost? • The satellite reclamation plant would have an impact on where the Constructed Wetlands Polishing Ponds and Groundwater Recharge Basin is located. Need to select the most feasible, centrally located site. • Processed water could be used at the two nearby golf courses at Merriwood and Vicwood Links, the proposed Woodland Green golf course, schools, parks, and other public facilities.
Jensen Investments, Inc. Elvine L. Sandefur President 155 Shelly Lane Wheaton, Illinois 60187	• Concern with the proposed satellite reclamation Site 2 disrupting the air, ground, and water environment surrounded by single and multi-family homes and farms. • The proposed satellite reclamation Site 2 is located in an area where many of the residences depend on well water as their source of drinking water. • Concerned many young families live near the proposed reclamation Site 2. Effects may have future adverse impacts on young peoples' health.
Nicole Mercier and Donald Schelter 2110 Mark Street NE Olympia, WA 98156	• Concerned about the notification processes and EIS. • Concerned with impacts on wildlife and the environment. Increased water flow into Woodland Creek will disrupt the salmon spawning grounds. • Concerned with the potential odors from the plant. • Explore other treatment plant siting options such as Hogum Bay Road or the old Hawks Prairie landfill area.

Name	Major Concerns/Comments
	SCOPING COMMENTS OCTOBER 2000
Tom Brown 5528 15th Avenue NE Olympia, WA 98516	• Project should adhere to the State Environmental Policy Act, the Intergovernmental Agreement dated 8/94, and all applicable county and city codes and regulations. • Some areas near treatment plant site #2 have standing water for several months every year. • Concerned with odors from the plant, and the potential for the decline of livability and property values. • Surface water runoff may damage drain fields and septic systems. • Infiltration ponds endanger the natural resources in the Woodland Creek Watershed particularly near Site D. Appropriate permits from all governing agencies is a requirement. • Concerned with impacts to wildlife and spawning and rearing habitat in Woodland Creek (endangered with the construction of Site D or Site #2). • A wastewater treatment plant should be located in an industrial zone and not in a residential area.
Steve and Sue Butkus 1930 Woodland Creek Street NE Olympia, WA 98516	• All elements of the environment identified under WAC 197-11-444 should be analyzed. • An analysis should be conducted on indirect effects to local neighborhoods. • Assessment of benefits should be focused on the local neighborhoods so mitigation will benefit those impacted the most.
Nancy Brown	• LOTT should be financially responsible for any adverse impact on property values and quality of life as a result of the treatment plant. • Since the satellite treatment plant is a pilot project for the region, it should be located away from a residential area until the issue of neighborhood acceptability (i.e., odor, safety, and the environment) is determined.

Name	Major Concerns/Comments
	PUBLIC TESTIMONY FROM SEIS SCOPING MEETING October, 25 2000
John Lowder 7310 - 14th Avenue NE Olympia WA	• Site D is 200 yards and 50 feet down from Woodland Creek. Infiltration will run directly into the stream and not recharge groundwater. • A recharge area may have problems with the groundwater level being too high. • Concerned drainfields will be saturated with storm water and fail since the County is putting in a filtering system for groundwater down 14th Ave. The extra land along Interstate 5 has also added additional storm water.
Olympia Thurston County Chamber of Commerce Wayne Beckwith	• Commends LOTT in their effort to obtain public comments and have various plans made available. • Believes wastewater treatment facilities are required in Thurston County and the plan is an acceptable method for the County.
Steve Walkley 5505 - 17th Avenue NE Olympia WA	• Lives in proximity of the treatment plant and does not want it in his neighborhood. • Concern with increased nitrates pumped into the ground. • Has observed the odor from the pumping station near Top Foods. • Previous attempts to place wells into the existing aquifer were denied because permits were not administered near Woodland Creek, now LOTT is going to construct a facility where residents could not. • Concerned with bacteria in polishing pond at Site D.
Llewellyn Bird	• Not much credibility with LOTT since the community has been informed not to let oil or hazardous materials seep into drains because it may affect organisms in the watershed and the health of the community. Yet the original LOTT facility was constructed on back-filled intertidal flats in Puget Sound.
Dottie Ford 9304 Wykoff Avenue Olympia WA	• Why site the facility in an area that has not already been cleared? The summary states upland habitat loss will occur. • Should locate the facility in an area that is industrial. If it is park-like, it could be built near homes or land that has already been cleared. • Should involve those concerned with habitat loss such as the Audubon Society. • Concerned with the effect of the extra water on wells and drain fields. • Concerned with the impact on the temperature of the water will affect salmon and native fish.
Tom Brown 5528 - 15th Avenue NE Olympia WA	• Concerned that wildlife habitat will be reduced with the construction of the wastewater facilities. • Need to protect Woodland Creek.

Name	Major Concerns/Comments
	PUBLIC TESTIMONY FROM SEIS SCOPING MEETING October, 25 2000
J. Marlan Vella	• Would like parties involved in the project and agencies to give property owners signed notes payable if a violation were to occur that breaks promises. • The planning area has recently undergone changes in zoning and the area is now zoned high density and medium density housing. Now that LOTT proposes to install high rises and high density development, how does this fit into the zoning?
Glenn Brockett 1234 Hensley Street Olympia WA	• How is the placement of the proposed zone in Alternative 1 conducive to new flow since the new wastewater plants are to accommodate new construction to the east side of Marvin Way and north of the freeway? • Effect on property values may be significant. • How would placing the satellite treatment plants benefit the local communities? • Need to address the concept of odor between the new transfer station, Ostroms, and the proposed new site.
Nicole Mercier 2110 Mark Street NE Olympia WA	• Whose wastewater is going to be treated by the new facilities since local residents are on septic systems? • Concerned with the amount of water that will enter Woodland Creek in the winter. Has any research been done as to how much water will be put in the stream and impacts to salmon spawning areas? • Would like more information the project representative from LOTT mentioned; a 64-acre site for future storm water treatment.

1.5 SCOPE OF THIS SEIS AND FUTURE ENVIRONMENTAL REVIEW

This SEIS will evaluate alternatives for siting, construction, and operation of reclaimed water production and use facilities necessary to implement the Highly Managed Plan in the Hawks Prairie Resource Management Basin. A No Action Alternative will also be evaluated. Under the No Action Alternative, the provisions of the Highly Managed Plan, as identified in the LOTT Wastewater Resource Management Plan, concerning the implementation in Hawks Prairie Resource Management Basin would not be implemented.

Alternative locations have been identified for:

- A reclaimed water satellite plant (this site will only contain a treatment facility),
- A groundwater recharge basin and associated constructed wetland polishing ponds,
- Use areas (public and private sites where reclaimed water could be put to beneficial use), and
- Routes for conveyance systems necessary to transfer reclaimed water from the reclaimed water satellite plant to ponds, the groundwater recharge basin, and use areas.

In addition, a number of generic use areas are identified. These represent a broad range of potential beneficial uses for reclaimed water for which no site has currently been identified, but may be identified and implemented in the future.

The probable significant environmental impacts associated with the alternatives will be evaluated within the context of the concerns and comments received during scoping. Appropriate mitigation measures will be proposed, and cumulative impacts as well as significant unavoidable adverse impacts will be identified. Evaluation of the alternatives in this SEIS builds upon analyses presented in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement*. Consistent with WAC 197-11-620, detailed analyses of actions, alternatives, or impacts that were presented in the previously prepared EISs are not included in this document. Information from the previous EISs is summarized where necessary to provide proper context to facilitate comprehension of the planning process and evaluation of alternatives.

No additional analysis of the Hawks Prairie Reclaimed Water Project is anticipated beyond this SEIS. However, future environmental review will be conducted if there are significant changes to the proposed action or if new, more detailed information regarding probable adverse environmental impacts becomes available. All subsequent environmental review will be accomplished in accordance with the State Environmental Policy Act (SEPA), and may take the form of a checklist and a Mitigated Determination of Non-Significance (MDNS), an addendum to this SEIS, or a new SEIS.

1.6 SUMMARY OF MAJOR DRAFT SEIS CONCLUSIONS

Tables 1-2 through 1-7 summarized the environmental impacts and mitigation measures associated with the construction and operation of a reclaimed water satellite plant; constructed wetlands, a groundwater recharge basin, and associated conveyance pipelines; reclaimed water use areas; and the No Action Alternative.

1.7 TIMING OF IMPLEMENTATION

The project construction will be initiated in the summer of 2002. The capacity of the reclaimed water satellite plant will be expanded on an as needed basis to provide sewer utility services as demand from planned growth in the Urban Growth Management Area (UGMA) arises.

1.8 PHASING OF ENVIRONMENTAL REVIEW

The Highly Managed Plan divided the north Thurston County UGMA (LOTT's service area) into four semi-homogenous Resource Management Basins to balance the supply of reclaimed water with demand, and minimize the reclaimed water distribution system. The Highly Managed Plan proposes construction and operation of reclaimed water production and use facilities as well as other wastewater system improvements within each Resource Management Basin. The Hawks Prairie Reclaimed Water Project represents the first comprehensive implementation for a Resource Management Basin. A reclaimed water project is being initiated for the Budd Inlet Resource Management Basin, and future reclaimed water satellite projects are planned for the Chambers Creek Resource Management Basin and the Airport/West Resource Management Basin. The cumulative impacts of the four phases are addressed in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement*.

Table 1-2. Impacts Summary: Reclaimed Water Satellite Plant

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Earth Resources	• Disturbance of approximately 2-3 acres during construction. • 2,500 cy of material moved during excavation. • Minimal erosion and sedimentation from construction activities.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1. • This site is closest to Woodland Creek; highest potential for sediment from construction activities to reach stream.	• No impacts to earth resources have been identified.
Air Resources	• Dust, and vehicle and construction equipment emissions during construction. • Odors related to wastewater breakdown during operation.	• Similar to Site 1. • Operational odors would be more pronounced due to rural neighborhood and a greater number of residences near the site.	• Similar to Site 2 West.	• Similar to Site 2 West.	• No impacts to air resources have been identified.
Surface Water Resources	• Slight potential for construction-related sediments to enter surface waters. • Site is located approximately 1.5 miles east of Woodland Creek. • Operational impacts to surface waters are not anticipated.	• Similar to Site 1; however, potential for construction-related sediment to enter Woodland Creek is greater as Site 2 West is located approximately 0.6 mile west of the stream.	• Similar to Site 1; however, potential for construction-related sediment to enter Woodland Creek is greater as Site 2 Center is located approx. 0.4 mile west of the stream.	• Similar to Site 1; however, potential for construction-related sediment to enter Woodland Creek is greatest as Site 2 East is located approx. 0.2 mile west of the stream.	• Continued reliance on individual on-site sewage systems has the potential to result increased contaminant discharges to surface waters from improperly functioning systems.
Groundwater Resources	• No construction-related or operational impacts to groundwater resources have been identified.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• Similar to impacts described above for surface water resources.

Table 1-2. Impacts Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Biological Resources	• Loss of low-quality upland shrub habitat.	• Loss of Douglas fir forest and grass habitat. • Potential wetland on site. • Birds and larger mammals will move to adjacent habitat during construction. • Small mammals, amphibians, and reptiles may be lost during site clearing.	• Similar to Site 2 West.	• Loss of Douglas fir forest, upland shrubs, and grass. • Potential wetland on site.	• No impacts to biological resources have been identified.
Fish Resources	• Minor impacts to fish resources may occur as a result of sedimentation from construction activities.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts to fish resources have been identified.
Shellfish Resources	• No impacts to shellfish resources have been identified.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts to shellfish resources have been identified.
Noise	• Construction-related noise from vehicles, equipment, and associated activities, particularly during earthwork activities. • Vehicle and machinery noise, and voices during facility operation.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1. • A greater number of residences would be affected.	• No noise-related impacts have been identified.

Table 1-2. Impacts Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Land and Shoreline Use	• Neighboring properties would experience short-term construction-related air, noise, and traffic impacts. • Facility operation could adversely affect neighboring properties.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• Implementation of this alternative would result in inconsistencies with existing comprehensive land use plans. • Zoning densities would not be met.
Parks and Recreation	• No impacts to parks have been identified. • Temporary disruption to bike traffic on bikeways along Martin Way during construction.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts to parks and recreational facilities have been identified.
Aesthetics and Visual Resources	• Visual and aesthetic elements would include vehicles, equipment, dust, and a disrupted landscape during construction. • Site would change from undeveloped to a developed property containing structures.	• Construction impacts are as described for Site 1. • Site character would change from undeveloped in a rural residential neighborhood to more industrial in nature.	• Similar to Site 2 West.	• Similar to Site 2 West.	• No direct impacts have been identified. Future impacts would depend upon future development patterns.
Historic and Cultural Resources	• High probability for hunter-fisher-gatherer resources on site. • Low probability for historic period archaeological resources.	• Low probability for hunter-fisher-gatherer resources and historic period archaeological resources on site.	• Similar to Site 2 West.	• Similar to Site 2 West.	• No impacts to historical or cultural resources have been identified.

Table 1-2. Impacts Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Transportation	• Temporary increase in construction-related traffic; 850 truck trips over 15 to 18 months. • Safety concerns along construction haul routes. • Small numbers of vehicle trips would occur during operation of the plant.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts have been identified.
Public Services and Utilities	• Potential for temporary disruptions of utility services may occur during construction. • Temporary disruptions to traffic flow could impede emergency service vehicles.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• Growth inside each city's UGMA would be limited by existing sewer system capacity. If adequate sewer service is not available, growth inside each City's UGMA may not occur as planned.

Table 1-3. Mitigation Measures Summary: Reclaimed Water Satellite Plant

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Earth Resources	• Stringent erosion control measures will be employed at site boundaries to minimize off-site sediment transport.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Air Resources	• Construction dust and equipment will be minimized during construction. • Air from preliminary treatment building and batch reactor will be drawn off and treated via a two-stage odor control process. • Buildings will be located to maximize distance from closest receptor(s). • Odor generating processes will be fully enclosed.	• Similar to Site 1. • Several odor reducing processes to be located at Martin Way Pump Station.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Surface Water Resources	• Stringent erosion and sedimentation controls will be employed. • Construction will occur in accordance with Lacey *Development Guidelines*.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Groundwater Resources	• Site will be reviewed for presence of contamination prior to construction.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.

Table 1-3. Mitigation Measures Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	*No Action Alternative*
Biological Resources	• No impacts identified, therefore no mitigation measures have been developed.	• Areas that contain sensitive plant or wildlife species will be avoided whenever possible. • Disturbed wetlands would be restored following construction. • Erosion control BMPs will be followed. • Vegetated buffers will be maintained around plant to minimize noise, light, and visual impacts to wildlife.	• Similar to Site 2 West.	• Similar to Site 2 West.	• No impacts were identified; therefore, no mitigation measures have been developed.
Fish Resources	• No impacts identified, therefore no mitigation measures have been developed.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Shellfish Resources	• No impacts identified, therefore no mitigation measures have been developed.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Noise	• Construction noise will be mitigated through proper maintenance of equipment, use of proper tools and attenuation barriers, and adherence to approved hours. • Noisy operations will be housed inside insulated structures.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.

Table 1-3. Mitigation Measures Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Land and Shoreline Use	• Potentially affected residents will be notified. • Inconvenience to residences and businesses will be minimized. • Plant will be designed to be compatible with surrounding land uses; some structures will be placed below grade.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• Portions of the UGMA would be re-designated as rural where adequate wastewater utility services cannot be provided. • Urban growth would be restricted to low density land uses.
Parks and Recreation	• Minimize disruption of bike lanes during construction.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Aesthetics and Visual Resources	• Thoughtful facility placement, setbacks, vegetative screening or buffers. • Plant design would conform to surrounding structures in form, scale, and character.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts identified; therefore, no mitigation measures have been developed.
Historic and Cultural Resources	• Coordinate with Nisqually and Squaxin Island Tribes. • Conduct professional archaeological field reconnaissance. • Coordinate with Tribes and professional archaeologist if resources are found.	• Similar to Site 1; however, a field reconnaissance is not recommended.	• Similar to Site 2 West.	• Similar to Site 2 West.	• No impacts identified; therefore, no mitigation measures have been developed.

Table 1-3. Mitigation Measures Summary: Reclaimed Water Satellite Plant (contd.)

Element of the Environment	Site 1	Site 2 West	Site 2 Center	Site 2 East	No Action Alternative
Transportation	• Payment of City of Lacey "disruption fees." • Minimize safety hazards during construction.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• No impacts were identified; therefore, no mitigation measures have been developed.
Public Services and Utilities	• Coordinate with local utility and emergency service providers to minimize disruption.	• Similar to Site 1.	• Similar to Site 1.	• Similar to Site 1.	• Amend applicable city and county documents to redesignate urban lands to rural uses.

Table 1-4. Impacts Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Earth Resources	• Approximately 40 acres will be disturbed during construction.	• Similar to Site A.	• Similar to Site A. • Site is located near Eagle Creek; potential for sediment to enter stream during construction.	• Similar to Site A • Site is located near Woodland Creek; potential for sediment to enter stream during construction.	• Similar to Site A.	• Erosion and sedimentation of nearby water courses may occur.
Air Resources	• Dust, and vehicle and equipment emissions during construction. • No operational impacts identified; reclaimed water is considered odor-free.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A. • Disturbance of the existing site could release odors during construction.	• Generation of vehicle and equipment exhaust, and asphalt odors during construction.
Surface Water Resources	• Potential indirect impacts include groundwater discharges to Eagle Creek, Nisqually Reach and McAllister Creek.	• Similar to Site A.	• Similar to Site A.	• Site would not be used as a groundwater recharge basin due to proximity to Woodland Creek.	• Similar to Site A.	• Short-term sedimentation to nearby surface waters may occur during pipeline construction.
Groundwater Resources	• Potential for elevation of groundwater table near site. • Nearest well is approx. 2,500 feet away.	• Similar to Site A. • Nearest well is approx. 1,500 feet away.	• Similar to Site A. • Nearest well is approx. 2,000 feet away.	• Similar to Site A. • Nearest well is approx. 3,000 feet away.	• Similar to Site A. • Nearest well is approx. 1,500 feet away.	• No impacts to groundwater resources have been identified.

Table 1-4. Impacts Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Biological Resources	• Permanent loss of upland non-native shrub vegetation.	• Loss of third-growth Douglas fir forest, non-native shrub habitat, and small Garry oak trees. • Wetlands may be impacted.	• Loss of third-growth Douglas fir forest and non-native shrub habitat. • Permanent loss of ~~a small~~ forested/scrub shrub wetlands.	• Loss of clumps of native trees. • Wildlife could be affected by the loss of small patches of remnant trees.	• Permanent loss of non-native grass-dominated meadow habitat. • Possible loss of a small amount of wetland.	• Temporary loss of roadside vegetation. • Sedimentation resulting from construction activities.
Fish Resources	• Groundwater recharge may benefit stream flows.	• Similar to Site A.	• Similar to Site A.	• No impacts have been identified.	• Similar to Site A.	• Erosion and sedimentation to stream channel where streams are crossed by pipeline. • Suitability of spawning gravels may be compromised due to sedimentation.
Shellfish Resources	• Impacts to shellfish resources have not been identified.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Impacts to shellfish resources have not been identified.
Noise	• Construction-related noise would occur for approximately 9 months. • Splashing or flowing water into polishing ponds. • Facility maintenance activities.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Construction-related noise including asphalt removal, vehicle and heavy truck noise, and equipment noise.

Table 1-4. Impacts Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Land and Shoreline Use	• Neighboring properties would experience short-term construction-related air, noise, and traffic impacts. • Facility operation ~~could adversely affect~~may be viewed as a amenity by neighboring properties.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• No impacts have been identified associated with conveyance system construction or operation.
Parks and Recreation	• No construction-related or operational impacts to parks identified. • Temporary and intermittent disruption to bike lanes due to construction.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Disruption of bike lanes and biking activity during construction. • No operation-related impacts identified.
Aesthetics and Visual Resources	• Change from undeveloped, weedy property to developed and landscaped property.	• Changed from an undeveloped, wooded property to developed and landscaped property.	• Similar to Site B.	• Similar to Site B.	• Change from a waste-process water disposal area to a developed and landscaped property.	• No impacts have been identified.

Table 1-4. Impacts Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Historic and Cultural Resources	• High probability for hunter-fisher-gatherer resources. • Low probability of intact historic period archaeo-logical resources.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A; however, intact resources are not likely.	• Similar to Site A.	• Portions of pipelines cross areas of high probability of hunter-fisher-gatherer resources.
Transportation	• Temporary increase in vehicle and truck traffic on local roadways during construction. • Potential for conflicts between pedestrians and vehicles. • No operational impacts identified.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Temporary disruption of traffic patterns during construction. • No operational impacts have been identified.
Public Services and Utilities	• Potential for increased availability of groundwater resources.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Potential for service disruption during construction.

Table 1-5. Mitigation Measures Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Earth Resources	• Stringent erosion control measures will be employed at site boundaries to minimize off-site sediment transport.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A. • All stream crossings will be jack and bored to minimize disturbance.
Air Resources	• Wetting exposed surfaces and washing vehicles prior to leaving the construction site will control dust. • Facilities will be located to maximize distance from receptor(s).	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Wetting exposed surfaces and washing vehicles prior to leaving the construction site will control dust.
Surface Water Resources	• Erosion control BMPs will be followed during construction.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.
Groundwater Resources	• Treating water to Class A reclaimed water standards will maintain groundwater quality. • Monitoring network will be installed to measure quality and quantity.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Periodic monitoring will ensure integrity.

Table 1-5. Mitigation Measures Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Biological Resources	• Erosion control BMPs will be followed during construction. • Buffers will be planted with native species to increase habitat benefits.	• Similar to Site A.	• Similar to Site A. • Wetland areas temporarily impacted during construction will be restored.	• Similar to Site A. • Wetland areas temporarily impacted during construction will be restored.	• Similar to Site D.	• Pipelines will be routed to avoid wildlife corridor. • Roadsides will be hydroseeded; other areas will be planted with native plant species.
Fish Resources	• No mitigation is proposed as impacts are not anticipated. • Groundwater infiltration may enhance instream flows.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Adherence to all WDFW requirements. • Where pipeline crosses streams, minimize disturbance. • Use of corrosion-resistant materials.
Shellfish Resources	• No impacts identified, therefore no mitigation measures have been developed.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.
Noise	• Construction noise will be mitigated through proper maintenance of equipment, use of proper tools and attenuation barriers, and adherence to approved construction hours.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.

Table 1-5. Mitigation Measures Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Land and Shoreline Use	• Potentially affected residents will be notified. • Inconvenience to residences and businesses will be minimized. • Facilities will be designed to result in a visual amenity in the neighborhood.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• No mitigation is proposed as no impacts have been identified.
Parks and Recreation	• Provide detours for bike lanes at entrances to construction sites.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Provide detours for bike lanes or avoid where possible. • Phase construction.
Aesthetics and Visual Resources	• Native vegetation will be preserved where possible. • Landscape vegetation will blend with existing vegetation. • Facilities will be designed to result in a visual amenity in the neighborhood.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• No mitigation measures are proposed as no impacts have been identified.

Table 1-5. Mitigation Measures Summary: Constructed Wetlands Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance Systems (contd.)

Element of the Environment	Site A	Site B	Site C	Site D	Site E	Conveyance System
Historic and Cultural Resources	• Coordinate with Nisqually and Squaxin Island Tribes. • Professional archaeologist should conduct field reconnaissance.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A; however, field reconnaissance is not recommended.	• Similar to Site A.	• Similar to Site A.
Transportation	• Comply with applicable City of Lacey and Thurston County regulations and permits.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A. • Phase conveyance construction. • Tunnel under I-5 from Satellite Reclamation Plant Site 1.
Public Services and Utilities	• Potential for temporary disruptions of utility services may occur during construction. • Temporary disruptions to traffic flow could impede emergency service vehicles.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.	• Similar to Site A.

Table 1-6. Impacts Summary: Reclaimed Water Use Areas

Element of the Environment	Potential Use Areas	Generic Use Areas
Earth Resources	• Minor amounts of erosion and sedimentation may occur during reclaimed water pipeline construction.	• Similar to Potential Use Areas.
Air Resources	• No impacts have been identified.	• No impacts have been identified.
Surface Water Resources	• Because reclaimed water would be used in accordance with state regulations, no impacts are anticipated.	• Similar to Potential Use Areas.
Groundwater Resources	• Slight potential for increased nutrients in reclaimed water to reach groundwater.	• Similar to Potential Use Areas.
Biological Resources	• No impacts have been identified.	• No impacts have been identified.
Fish Resources	• No impacts have been identified. • Use of reclaimed water may result in an increase in base flows in area streams.	• Similar to Potential Use Areas.
Shellfish Resources	• No impacts have been identified.	• Similar to Potential Use Areas.
Noise	• No impacts have been identified.	• No impacts have been identified.
Land and Shoreline Use	• Temporary disruptions to use of facilities could occur during construction. • Signage will be installed.	• Similar to Potential Use Areas.
Parks and Recreation	• Short-term, localized disruption in use of golf courses during construction. • No operation-related impacts have been identified.	• Short-term localized disruption in use of these facilities.
Aesthetics and Visual Resources	• No impacts have been identified.	• No impacts have been identified.
Historic and Cultural Resources	• Ground disturbing activities have the potential to impact historic and/or cultural resources.	• Similar to Potential Use Areas.
Transportation	• Small amounts of construction-related traffic would be generated.	• Similar to Potential Use Areas.
Public Services and Utilities	• Seasonal reuse of reclaimed water for irrigation could supplement regional water supplies and offset future water demand.	• Similar to Potential Use Areas.

Table 1-7. Mitigation Measures Summary: Reclaimed Water Use Areas

Element of the Environment	~~Merriwood and Viewood Golf Courses~~Potential Use Areas [1]	Generic Use Areas[1]
Earth Resources	• Construction BMPs will be implemented to minimize erosion and sedimentation.	• Similar to Potential Use Areas.
Air Resources	• Public information campaign to educate the public about reclaimed water.	• Similar to Potential Use Areas.
Surface Water Resources	• Adherence to state regulations for reclaimed water use will minimize impacts to surface water bodies.	• Similar to Potential Use Areas.
Groundwater Resources	• Adherence to state regulations for reclaimed water use will minimize impacts to groundwater bodies.	• Similar to Potential Use Areas.
Biological Resources	• No mitigation measures are proposed as no impacts have been identified.	• Similar to Potential Use Areas.
Fish Resources	• No mitigation measures are proposed as no impacts have been identified.	• Similar to Potential Use Areas.
Shellfish Resources	• No mitigation measures are proposed as no impacts have been identified.	• Similar to Potential Use Areas.
Noise	• No mitigation measures are proposed as no impacts have been identified.	• Similar to Potential Use Areas.
Land and Shoreline Use	• Relevant mitigation has been incorporated into mitigation for other elements of the environment.	• Similar to Potential Use Areas.
Parks and Recreation	• Reclaimed water valves, storage facilities, and outlets will be identified. • Public and employees will be notified of the use of reclaimed water. • Water will not be sprayed on people or non- reuse facilities. • All applicable regulations regarding reclaimed water will be followed.	• Similar to Potential Use Areas.
Aesthetics and Visual Resources	• Signs will be designed to be comparable to other signage within use areas. • Careful placement of signs to avoid disrupting overall visual quality of use areas.	• Similar to Potential Use Areas.
Historic and Cultural Resources	• Professional archaeologist should conduct field reconnaissance prior to ground disturbing activities.	• Similar to Potential Use Areas.
Transportation	• Compliance with applicable City of Lacey and Thurston County regulations and permits regarding construction in road right-of-way. • Separate pedestrians and bicyclists from construction areas.	• Similar to Potential Use Areas.
Public Services and Utilities	• No mitigation measures are proposed as no impacts have been identified.	• Similar to Potential Use Areas.

[1] See Section 3.6.3 for description of use areas.

LOTT
Wastewater
Resource Management
Plan

CHAPTER TWO: BACKGROUND

2.1 EXISTING WASTEWATER TREATMENT SYSTEM

The following text briefly describes the existing LOTT Alliance and the City of Lacey wastewater infrastructure in the Hawks Prairie Resource Management Basin.

2.1.1 Regional Wastewater System

The LOTT Wastewater Alliance helps to preserve and protect public health, the environment, and water resources by providing wastewater management services for the urbanized area of north Thurston County. LOTT is comprised of four government partners, the cities of Lacey, Olympia, and Tumwater, and Thurston County. The LOTT service area is the Urban Growth Management Area for the cities of Lacey, Olympia, and Tumwater, established pursuant to the state Growth Management Act (Chapter 36.70A RCW). The current system serves an area of approximately 14,000 acres with a sewered population of about 78,000 people.

The LOTT partners jointly manage wastewater facilities within the service area. Their joint efforts currently include operating the Budd Inlet central treatment plant and major conveyance systems, providing flow management, and conducting long-range planning. The Budd Inlet treatment plant employs physical and biological treatment processes along with ultraviolet disinfection. Recently, wastewater flows exceeded the capacity of the treatment plant during wet weather months, even with measures being taken to reduce excess stormwater and wastewater flows.

LOTT provides wastewater treatment services on a wholesale basis to its three city partner governments, who provide the retail service to individual customers.

2.1.2 City of Lacey

The City of Lacey is the LOTT partner that is responsible for retail-level sewer service to customers in the Hawks Prairie area. Lacey maintains a local sewage system that collects and conveys wastewater to a LOTT interceptor located near the intersection of Martin Way and Desmond Drive. Lacey's local sewer system consists of approximately 100 miles of pipes, including side sewers that connect individual hookups with the city's system. Approximately 9,000 residents and business connections are being served by the sanitary sewer collection system.

2.2 LOTT WASTEWATER RESOURCE MANAGEMENT PLAN

2.2.1 Planning Need and Purpose

The LOTT Partners have spent more than four years and over $5 million conducting an extensive long-range planning process. The need was to develop a long-range program for managing wastewater flows within the Lacey-Olympia-Tumwater Urban Growth Management Area (UGMA) through the year 2020. The

planning effort was the result of studies that showed the existing LOTT wastewater treatment plant could be out of capacity during high rainfall periods as early as 2001. LOTT's permit to discharge treated water into Budd Inlet, issued by the Washington State Department of Ecology, requires planning to begin when the existing treatment plant reaches 85 percent of design capacity. LOTT faced the challenge of how to accommodate wastewater flow increases that will accompany projected population and employment growth within its service area. An Intergovernmental Contract for Inflow and Infiltration Management and New Capacity Planning was approved by all four LOTT government partners on March 27, 1995.

The resulting Wastewater Resource Management Plan explains how services will be provided to meet future wastewater needs, identifies the environmental consequences, indicates how these services will be paid for, and describes how LOTT will be managed. The plan is also intended to meet the planning requirements of its National Pollutant Discharge Elimination System (NPDES) Permit, requirements of the federal Clean Water Act, Washington State's water pollution control legislation, local environmental protection and land use management covenants and agreements, and the generally held values of the public LOTT serves. In initiating the planning, LOTT's Advisory Committee also expressed two planning process goals: 1) the planning process must achieve, to the highest degree possible, a community consensus on future wastewater management; and 2) the end product must be a combined and fully integrated plan and environmental evaluation, with environmental factors guiding the engineering.

The planning process, driven by environmental evaluations, was conducted in stages, starting with the broadest range of possible approaches, then getting progressively more specific as step-by-step decisions have been made. Full involvement of the community was critical to the planning, with an estimated $1.5 million of the total $5.2 planning cost devoted to public information and involvement efforts.

2.2.2 Public Values

Planning began in September 1995 with citizen and stakeholder surveying leading the way. As a result of the surveys, the following 10 key public values were identified.

1. As a first priority, **maximize utilization of LOTT's existing treatment capacity**. Manage demand to avoid or delay the need for new treatment capacity.
2. Prepare a plan that **meets current and future wastewater needs** throughout the LOTT service area. Accommodate planned growth consistent with LOTT's legal requirements.
3. Select wastewater facilities for the region's future that yield **maximum benefits to the environment**. Mitigate any potentially adverse impacts of new facilities.
4. Take all possible steps to **control facility costs**. Carefully consider the lowest cost and most cost-effective alternatives and evaluate the impact on LOTT ratepayers.
5. **Treasure LOTT's treated wastewater as a valuable, long-term resource** to be cleaned and restored, reused, then ultimately returned to the environment.
6. Clearly define, demonstrate, and document the value to the community of new facilities needed for the future. Design any new LOTT facilities to **produce multiple benefits for the community**.
7. **Conduct a pro-active and open facilities planning process** that informs and involves citizens in planning and decision-making.
8. **Assure an equitable distribution of costs** for any new facilities between current ratepayers and new development.
9. Establish an organizational structure to build and operate the region's future facilities effectively and efficiently, and that **assures equitable and accountable representation of the public**.

10. **Integrate LOTT's facilities plan with other related local issues, plans, and infrastructure programs** to maximize regional cooperation and avoid duplication of effort and cost.

The public values were used to guide the entire planning process. Particularly strong support for the concept of using wastewater as a resource led to the ultimate name of LOTT's plan – the Wastewater *Resource* Management Plan.

2.2.3 Stage 1 Evaluation: Comparing Nine Program Directions

During 1996, the next step of planning covered the spectrum of possible wastewater management approaches LOTT could consider. The possibilities were defined as nine "Program Directions" to aid public discussion and technical evaluations.

1. **Demand Management:** Delay the need for new wastewater treatment capacity by reducing wastewater flows through water conservation, graywater separation, on-site disposal and other measures.
2. **Reclamation:** Use highly treated wastewater for irrigation and commercial/industrial water supply.
3. **Groundwater Recharge:** Use highly treated wastewater to replenish groundwater.
4. **Discharge More in Budd Inlet:** Increase the capacity/quality of the current facilities.
5. **New Puget Sound Discharge in Thurston County:** Find a new marine discharge location in Thurston County.
6. **Puget Sound Discharge in Pierce County:** Use an existing Pierce County marine discharge (Tatsolo Point or Chambers Creek).
7. **Freshwater Discharge:** Find a suitable river discharge location (Deschutes, Black/Chehalis or Nisqually).
8. **Combination:** Use more than one program direction.
9. **No Action:** Initial public opinion surveys had also shown that environmental protection and cost were the top two issues of concern. With the priority of environmental protection in mind, evaluation of the nine Program Directions took the form of a *Draft Programmatic Environmental Impact Statement*, issued in September 1996. Following extensive public information and involvement activities, a *Final Programmatic EIS* was released in December 1996. As a program-level evaluation, it compared general environmental impacts of the nine Program Directions, without reference to specific sites.

As the result of the environmental review and public comment, the LOTT Advisory Committee voted in January 1997 (Resolution 970106) to discontinue evaluation of two unfavorable Program Directions -- Puget Sound Discharge in Pierce County and Freshwater Discharge (Numbers 6 and 7, respectively).

Although discharging more treated water into Budd Inlet (Program Direction 4) received a mixed public response, the public values guiding LOTT to control costs and maximize use of its existing facilities caused the LOTT Partners to decide that this option should be thoroughly evaluated, particularly as an option that might help manage peak wintertime flows. For that reason, the LOTT Advisory Committee approved Resolution 960805 in September 1996 authorizing a scientific study of Budd Inlet. The purpose of that $3.1 million study was to gain an understanding of the environmental influences continuing and/or increased LOTT discharge of treated water might have on the inlet.

With the strongest public support being voiced for Demand Management, it became apparent that would have to be part of any final solution. However, technical evaluations showed that Demand Management could not by itself solve more than a small portion of LOTT's capacity problem. Thus, a Combination of Program Directions (Number 8) seemed to be the direction needed.

2.2.4 Stage 2 Evaluation: Defining a Preferred Program

During 1997, planning efforts focused on fitting some combination from among the remaining action directions into a coordinated program to meet defined wastewater needs. This stage included a series of public workshops, agency and elected officials workshops, and a new round of public opinion surveying. Strongest support was indicated for a combination including moderate levels of the first four Program Directions -- Demand Management, Reclamation, Groundwater Recharge, and Discharge More Into Budd Inlet. As the result of this community involvement, the LOTT Advisory Committee took action on May 30, 1997 to define that combination as the "Preferred Program Direction."

Further, the Advisory Committee determined that these directions would also be combined in a very non-traditional way. The evolving plan would be an environmentally-based system for adding small units of capacity, responding just-in-time to actual measured conditions. New units of capacity would be gained by recycling of wastewater through Reclamation and Groundwater Recharge methods. Transitioning to these new methods would be supported through reserve capacity in Budd Inlet (if the scientific study demonstrated there would be no environmental harm) and demand management (or flow reduction) projects.

2.2.5 Stage 3 Evaluation: Comparing Three Program Alternatives

For the next several months, the preferred program was subjected to the next level of environmental and technical evaluation. Three alternatives were compared during this stage:

- Because of its complexity and "just in time" nature, the preferred program became known as "The Highly Managed Alternative."
- The "Traditional Facilities Alternative" would involve construction of a single, new large treatment plant discharging into marine waters (originally defined as Program Direction 5).
- The "No Action Alternative," would mean no major new capital facilities would be built for increasing wastewater collection, conveyance, or treatment capacity.

The three alternatives were described in detail in a *Draft Wastewater Resource Management Plan and Supplemental Environmental Impact Statement*, published in August 1998. Following another significant round of public information and comment, the combined Proposed Plan and Final Supplemental EIS (SEIS) was published in November 1998.

On November 25, 1998, the LOTT Advisory Committee voted to submit the proposed *Wastewater Resource Management Plan and Final Supplemental EIS* to the Department of Ecology in response to the NPDES Permit No. WA-003706-1 Condition S-4-B planning requirements.

2.2.6 Organizational Implementation: Finance and Governance

During 1999, the LOTT Partners focused their attention on implementing the Plan provisions regarding finance and governance.

On June 21, 1999 the LOTT Partners approved an increase in connection fees (the Capacity Development Charge) to take effect July 1, 1999. The increase raised connection fees from $882 to $3,000 to generate the bulk of funds (88 percent) that will be used to build new facilities, plus funding for growth-related portions of system improvement projects.

In December 1999, the three LOTT Partner cities authorized an increase in the LOTT monthly rates, effective on or before December 31, 1999. The monthly rate went from $21.00 to $25.50 per month per equivalent residential unit. These funds will primarily support improvements to the existing system plus a small percentage (12 percent) of the new facilities.

On November 5, 1999, the LOTT Advisory Committee approved Resolution 991101 recommending that the LOTT Partner governments approve the Wastewater Resource Management Plan's Highly Managed Alternative of November 1998. The resolution further recommended approval of a new LOTT Interlocal Cooperation Act Agreement for Wastewater Management by the LOTT Wastewater Alliance to govern implementation of that Plan. By January 24, 2000, all four LOTT Partner governments had approved the Plan and Interlocal Agreement.

Those approvals set the stage for LOTT to begin its transition from a contractual partnership to a non-profit organizational entity to be known as the LOTT Wastewater Alliance. On February 11, 2000 the LOTT Advisory Committee approved the first step in this transition – the filing of Articles of Incorporation with the Secretary of State. The Certificate of Incorporation was signed April 17, 2000.

2.2.7 Plan Implementation: A Phased Approach

Under the Highly Managed Plan, the north Thurston County Urban Growth Management Area (LOTT's service area) is divided into four semi-homogenous Resource Management Basins, small watersheds or basins with similar conditions and population characteristics. These include the Budd Inlet, Chambers Prairie, Airport/West, and Hawks Prairie Resource Management Basins. The Highly Managed Plan proposes construction and operation of reclaimed water facilities as well as other wastewater system improvements within each Resource Management Basin.

The Plan will be implemented in phases. Specific projects are identified through LOTT's five-year Capital Improvement Program (CIP), the first of which was produced in 2000 and approved by the LOTT Advisory Committee on January 7, 2000 (Resolution 991103). The CIP will be updated annually.

Demand Management efforts were implemented first, with a series of systemwide pilot Flow Reduction Programs starting in 1997. Three categories of programs were defined, with pilot projects implemented in each:

- **Wastewater Flow Reduction (Indoor Water Conservation Projects)** – Projects that reduce base wastewater flows
- **Inflow and Infiltration Removal** – Projects that reduce peak flows
- **Flow Diversion** – Projects that reduce flows and loadings (strength), including activities to help remove barriers for citizens who wish to assume more personal responsibility for managing their wastewater (including composting toilets and graywater separation).

In coordination with the Lacey, Olympia and Tumwater water utilities, a series of water conservation projects funded by LOTT has included toilet replacements, rebates on resource efficient washing machines, distribution of water saving kits (showerheads, faucet aerators, etc.) and other measures, recovering an estimated 300,000 gallons per day in treatment plant capacity.

Two demonstration inflow and infiltration removal projects have been offered. A Sidesewer Demonstration Project in Olympia resulted in estimated reductions of 270,000 gallons per day during a 10-year, 24-hour peak flow. A Community Infiltration Removal Demonstration Project in Lacey resulted in an estimated 16,902 gallon per day reduction.

To further maximize existing facilities and reduce the need for building new capacity, LOTT will continue to offer Flow Reduction Programs under the structure of the annual CIP.

Based on the approved Plan, new reclaimed water production and use projects will be implemented in small increments of approximately 1.0 million gallons per day. These increments will be triggered by actual measured conditions (actual wastewater flows, amount of reserve capacity remaining, rate of new

connections, projected population and employment growth, and other factors) that indicate the need for additional wastewater treatment and conveyance capacity within the LOTT system. Improvements will be timed to provide additional capacity at the time it is needed, rather than in advance.

New facilities will be located near potential users of reclaimed water, rather than where growth is occurring on the system. They must also be located in areas where existing wastewater flows are available and where groundwater recharge is environmentally feasible.

The reclaimed water satellite plants will treat to Class A Reclaimed Water standards, the highest quality of reclaimed water as defined by the Washington State Departments of Health and Ecology, so it can be productively used for irrigation, non-drinking commercial uses, and industrial purposes. Class A Reclaimed Water has nearly unrestricted uses, including public contact, but is not considered suitable for consumption.

New facilities in three of the Resource Management Basins – Hawks Prairie, Chambers Prairie, and Airport/West will include a reclaimed water satellite treatment plant, a series of constructed wetland polishing ponds, a groundwater recharge basin, and associated conveyance systems. In the Budd Inlet Resource Management Basin, a reclaimed water facility will be added to the existing Budd Inlet Treatment Plant. No ponds or groundwater recharge are planned in the Budd Inlet Basin.

Since water quality requirements of reclaimed water and drinking water supplies are different, a separate distribution system, built of purple-colored pipe, is needed to transport the reclaimed water to sites where it will be used.

Over the 20-year planning period, up to three satellite plants may be required. Initially, each reclaimed water satellite plant will be built to handle 1.0 mgd of wastewater flows, but can be expanded to as much as 5.0 mgd over time.

The Hawks Prairie Resource Management Basin was identified as the location for the first satellite facility in the representative Capital Improvement Program included in the Wastewater Resource Management Plan (Section 6.9.2). That selection was formalized when the LOTT Advisory Committee approved the Year 2000 CIP and was reaffirmed with approval of the 2001 CIP. The Hawks Prairie Basin was chosen for first implementation for four reasons:

- Presence of the largest potential users of reclaimed water for irrigation and industrial purposes (WRMP Section 6.5.3),
- Presence of sites with the greatest potential for groundwater recharge (WRMP Section 6.5.3),
- Available sources of existing wastewater flows, and
- Land at greatest risk of being acquired for development by other users

The Highly Managed Plan also calls for increased wintertime discharge into Budd Inlet from the existing Budd Inlet Treatment Plant; however, that action will be subject to approval by the Department of Ecology. The Budd Inlet Scientific Study was completed in August 1998 and summarized in the 1998 Final SEIS. Several months of additional computer modeling and testing followed at the request of the Department of Ecology. Based on the results of the Study and modeling, LOTT believes increased wintertime discharge is feasible without environmental harm. On February 9, 2001, the LOTT Alliance Board of Directors approved Resolution 01-001 authorizing staff to prepare and submit a permit modification to the Department of Ecology requesting an increase in LOTT's wintertime discharge limit to Budd Inlet. Increased wintertime discharge will help LOTT to gain maximum benefit from current facilities, and will serve as a buffer while transitioning to new recycling strategies and as new increments of reclaimed water production and use are added.

2.3 LOTT POLICY FRAMEWORK FOR RECLAIMED WATER PRODUCTION~~RECLAMATION~~ AND ~~RE~~USE

LOTT has developed the following policy framework for reclaimed water production and use intended to facilitate effective implementation of the Highly Managed Plan for wastewater resources.

Regulatory Compliance: LOTT's reclaimed water production and use program will be designed and operated in accordance with all applicable federal, state, and local rules, regulations, and standards.

Quality of Product: Reclaimed water produced by LOTT will meet state Class A treatment and disinfection requirements and will be safe and acceptable for the intended uses when delivered to end users.

Protection of Public Health: All reasonable steps will be taken to minimize risk to public health through ensuring proper treatment and monitoring of reclaimed water.

Contingency Plan: Reclaimed water production and use systems will be operated in such a manner that if quality of effluent cannot be assured due to equipment failure or malfunction, wastewater flows will be diverted to conventional treatment facilities and not conveyed to use areas or recharge facilities.

Coordination with Public Water System Plans: LOTT's reclaimed water production and use programs will be coordinated with water supply plans developed by municipal water systems.

Public Awareness: LOTT will continue to promote public awareness concerning the importance of reclaimed water production and use and the safeguards that have been incorporated into LOTT's program to protect public health and safety.

2.4 RELATIONSHIP OF DRAFT SUPPLEMENTAL EIS TO PRIOR PROGRAMMATIC EIS AND SUPPLEMENTAL EIS

The probable significant adverse environmental impacts, mitigation measures, cumulative impacts, and significant unavoidable adverse impacts associated with the Highly Managed Plan were evaluated and documented in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement* (SEIS). The 1998 Final SEIS expanded upon the previously prepared 1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement* (PEIS) and provided more focused evaluation of probable impacts.

The 1998 Final SEIS addressed provisions of the Highly Managed Plan relating to the Hawks Prairie Resource Management Basin. Those provisions are described as follows.

2.4.1 Reclaimed Water Satellite Plants

One reclaimed water satellite plant will be constructed in the Hawks Prairie Resource Management Basin with an ultimate capacity of up to five million gallons per day (mgd) of wastewater. Raw wastewater received at the reclaimed water satellite plant will be separated into liquid and solid fractions, with the solid fraction returned to a sewer pipe for conveyance to the existing Budd Inlet Wastewater Treatment Plant. **The reclaimed water plant site will not include constructed wetland polishing ponds nor groundwater recharge basins.**

The liquid fraction of the wastewater will be reclaimed through application of advanced secondary treatment processes with coagulation, filtration, disinfection, and nutrient removal. Pumps necessary to convey reclaimed water to use areas will be housed within the reclaimed water satellite plant. Three potential reclaimed water satellite plant locations were evaluated in the 1998 SEIS, designated as HP-C, HP-E, and

HP-F. HP-C is an approximately 46-acre area that straddles both the north and south sides of Martin Way just east of its intersection with Marvin Road. HP-E is an approximately 16-acre area located near the northwest corner of the intersection of Marvin Road and Martin Way. HP-F is an approximately 46-acre area located northeast of the Marvin Road interchange of Interstate 5.

2.4.2 Constructed Wetland Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance System Alternatives

A five- to 10-acre groundwater recharge basin will be constructed. The basin will be divided into cells to allow portions of the basin to be alternately flooded and dried. A maximum of 50 percent of the basin would be in use at any one time.

Up to 30 acres of constructed wetland polishing ponds will be constructed. These ponds have five purposes:

- Storage – Functioning much like a water tower, the ponds will hold the continuously produced supply of reclaimed water, from which users with varying volume demands can withdraw water as they need it; unused water will proceed to the Groundwater Recharge Basin.
- Polishing – Plants in the ponds will further enhance purification of reclaimed water prior to use or groundwater recharge.
- Public Visibility – Provide opportunities for public education, recognition and acceptance of reclaimed water.
- Multiple Benefits -- These ponds can be designed into attractive park-like settings and can serve as an amenity in conjunction with other industrial or residential development.
- Water Quality Monitoring – Provide a final opportunity to identify and hold back any water that does not meet reclaimed water standards due to plant upsets or other influences; such water would be returned to the plant for further treatment.

Two potential groundwater recharge and constructed wetland polishing pond locations were evaluated in the 1998 SEIS, designated as HP-A and HP-B. HP-A is an approximately 845-acre area that situated east of Marvin Road between about the 3000 block and the 4600 block. HP-B is an approximately 154-acre area located southwest of Marvin Road between about the 2400 block and 3000 block.

The 1998 SEIS also identified and evaluated potential conveyance pipeline routes for transporting reclaimed water from the satellite treatment plant locations to the constructed wetland polishing ponds and groundwater recharge basin locations. Diameters of conveyance pipelines would range from six to 24 inches.

2.4.3 Use Areas

The 1998 SEIS discussed several potential use areas within the Hawks Prairie Resource Management Basin. Use areas are public and private sites such as golf courses, parks, green belt areas, farms, and commercial/industrial establishments where reclaimed water could be put to beneficial use. Four potential use areas were evaluated, designated as HP-D, HP-F, HP-G, and HP-H. HP-D is an approximately 32-acre area west of Marvin Road and north of Steilacoom Road that is occupied by a junior high school. HP-F was also identified as a possible reclaimed water satellite plant location and is described above. HP-G and HP-H are the contiguous Merriwood and Vickwood Links golf courses located in the northeast corner of the City of Lacey, west of Meridian Road. Together, the two golf courses occupy 575 acres. The 1998 SEIS also identified conveyance pipeline routes for transporting reclaimed water from the satellite treatment plant locations to the identified potential use areas.

The current SEIS will build upon the 1996 PEIS and 1998 SEIS and will continue to narrow the

focus of environmental review to site specific impacts. WAC 197-11-620 states that an SEIS:

> ...should not include analysis of actions, alternatives, or impacts that is in the previously prepared EIS.

Accordingly, such information will not be presented in detail in this SEIS. However, analyses from the previous EISs are summarized where necessary to provide proper context to facilitate comprehension of the planning process and evaluation of alternatives.

2.5 DOCUMENTS INCORPORATED BY REFERENCE

The following documents are incorporated by reference into the Hawks Prairie Reclaimed Water Project Supplemental Environmental Impact Statement:

1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement*

Summary: This non-project EIS evaluated potential significant adverse environmental impacts associated with nine possible directions for managing wastewater within the urbanizing areas of north Thurston County over a 20-year planning horizon.

1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement.*

Summary: The SEIS chapter of this document (Chapter 9) was a supplement to the 1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement.* It evaluated potential significant adverse environmental impacts associated with three alternative management strategies for managing wastewater within the urbanizing areas of north Thurston County. It divided the LOTT service area into four Resource Management Basins, one of which is the Hawks Prairie Resource Management Basin. The alternatives evaluated consisted of The Highly Managed Alternative, the Traditional Facilities Alternative, and the No Action Alternative. The evaluation of alternatives was generally at a non-project level; however, where site-specific impacts could be identified, evaluations were conducted at a project level. Based upon the environmental analyses provided by this document, The Highly Managed Alternative was selected by LOTT to serve as its Wastewater Resource Management Plan.

LOTT
Wastewater
Resource Management
Plan

CHAPTER THREE: DESCRIPTION OF ALTERNATIVES

The State Environmental Policy Act (SEPA) requires that an Environmental Impact Statement (EIS) identify and discuss reasonable alternatives to a proposed action. Alternatives discussed need not be exhaustive, but must present sufficient information for reasoned choice of alternatives. The word "reasonable" is intended to limit the number and range of alternatives, as well as the amount of detailed analysis for each alternative. Reasonable alternatives include actions that feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation (WAC 197-11-440).

An EIS must examine all areas of probable significant adverse environmental impacts associated with the various alternatives, including the no action alternative. However, in accordance with WAC 197-11-620, a Supplemental EIS (SEIS) should not include analyses of actions, alternatives, or impacts that are contained in the previously prepared EIS.

In the following section, the project objective and criteria for selection of alternatives to meet the project needs are discussed. In addition, alternatives are presented for:

- Reclaimed water satellite plant sites,
- Constructed wetland polishing ponds and groundwater recharge basin sites as well as associated conveyance systems, and
- Use areas.

The alternatives identified below represent refinements of alternatives that were presented and evaluated in the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement* (1998 Final SEIS). This SEIS is intended to augment analyses that were previously documented in the 1998 document.

3.1 PROJECT PROPONENT

The LOTT (Lacey, Olympia, Tumwater, and Thurston County) Wastewater Alliance is the project proponent.

3.2 PROJECT LOCATION

The potential reclaimed water satellite plant sites, constructed wetland polishing pond sites, groundwater recharge basin sites, conveyance systems, and use areas are located in the Hawks Prairie Resource Management Basin in northeast Thurston County (see Figure 3-1). Potentially affected areas include portions of the City of Lacey and unincorporated Thurston County. Locations of specific sites and conveyance system alignments are presented below in Section 3.6.

3.3 PROJECT OBJECTIVE

LOTT's Wastewater Resource Management Plan is an environmentally-based system for adding small units of new wastewater treatment capacity, responding just-in-time to actual measured conditions. New units of wastewater treatment and discharge capacity will be gained through reclaimed water and groundwater recharge methods. The objective of the Hawks Prairie Reclaimed Water Project is to provide the first increment of new wastewater treatment capacity, to accommodate projected population and employment growth within the LOTT sewer

service area. Wastewater services provided through this project are intended to be consistent with adopted land use, water use, and wastewater plans, policies, and regulations; incorporate public values; and be cost effective over the long-term.

3.4 PURPOSE AND NEED FOR THE PROJECT

The purpose of the Hawks Prairie Reclaimed Water Project is to ensure provision of adequate wastewater facilities to accommodate projected wastewater flow increases that will accompany population and employment growth within the LOTT service area. The project is needed to achieve fulfillment of elements of the LOTT Wastewater Resource Management Plan that pertain to the Hawks Prairie Resource Management Basin (refer to Section 2.2 for a more thorough discussion).

The purpose and need for wastewater service improvements in the LOTT service area, including the Hawks Prairie Resource Management Basin, are described in Chapter 1 of the 1996 *LOTT Wastewater Resource Management Plan Final Programmatic Environmental Impact Statement* (Final PEIS) and are further defined in Chapter 9 of the 1998 *LOTT Wastewater Resource Management Plan and Final Supplemental Environmental Impact Statement* (1998 Final SEIS).

As the first of LOTT's Reclaimed Water Satellites, the Hawks Prairie Satellite is important for logistical and public education reasons. First, implementation of this project will demonstrate the length of time required to build these facilities. This information will be essential for ensuring "just in time" implementation of future increments of new capacity. Second, this project will provide the first satellite plant, pond and groundwater recharge facilities available for public viewing in the LOTT service area. Third, it will provide practical demonstrations of reclaimed water uses and groundwater recharge capability.

3.5 ALTERNATIVES EVALUATION CRITERIA

In identifying possible alternatives for site locations in the Hawks Prairie area, potential sites were measured against certain criteria in order to determine if they meet the objective of the project and if they appear to be practical and technically feasible. Those criteria are presented below for each of the reclaimed water components. These criteria were examined as part of the 1998 Final SEIS.

3.5.1 Reclaimed Water Satellite Plant Sites Alternatives

Reclaimed water satellite plants must be located in relatively close proximity to the existing Martin Way force main or pump station, which will provide a source of raw wastewater for the reclamation process. To meet the "just in time" objective, it is LOTT's intent to have the satellite plant fully utilized as soon as it begins operation. In this way, the plant provides immediate relief to the overall system by diverting and treating to its maximum capacity. Siting the reclaimed water satellite plant in close proximity to existing sewer lines will also minimize the residence time of raw wastewater in conveyance piping, which will reduce the potential for odor generation at the plant.

Properties considered for the reclaimed water satellite plant must be of sufficient size to allow for construction of the initial plant and future plant upgrades. A minimum of two to three acres would be required for the initial plant and buffer, with a total of at least four acres needed at full plant site buildout.

The configuration or location of potential sites should be such that operation of the reclaimed water satellite treatment plant could occur with minimal adverse impacts on adjacent properties.

Because the LOTT Wastewater Alliance itself lacks power of condemnation, acquisition of property would normally be through the open real estate market. Individual LOTT partner

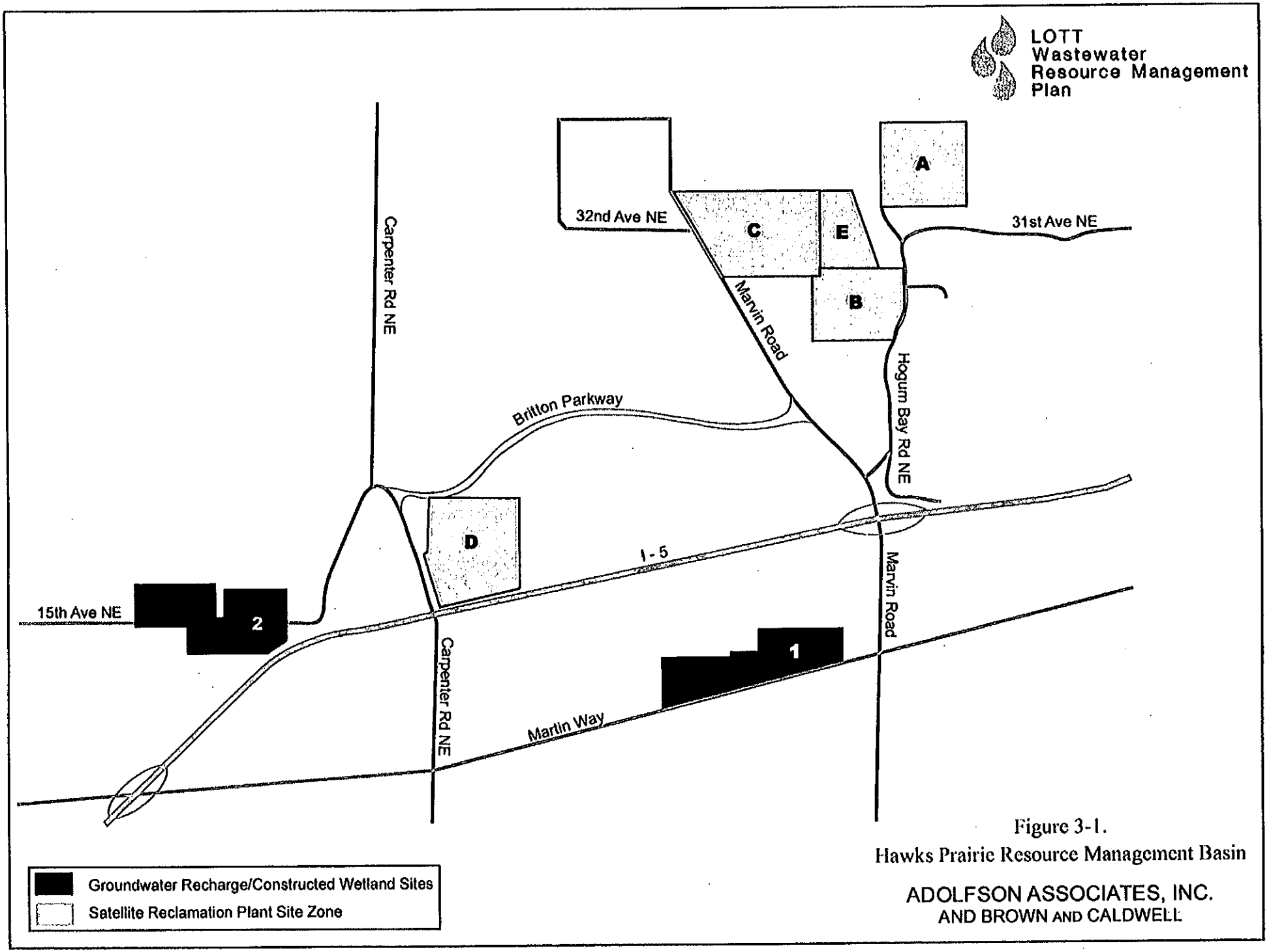

Figure 3-1.
Hawks Prairie Resource Management Basin

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municipalities could condemn property on behalf of LOTT; however, such an action would only occur if no other reasonable alternative exists. Thus, alternatives for the reclaimed water satellite plant sites will initially be limited to properties that are currently available for purchase. It is possible that one or more of the alternative reclaimed water satellite plant sites initially evaluated through this SEIS process could be purchased by another party prior to release of the Final SEIS and might be dropped from consideration. It is also possible that additional sites may become available for purchase during this SEIS process that meet LOTT's evaluation criteria. In that event, such sites may be added to the SEIS evaluation process and documented in the Final SEIS.

3.5.2 Constructed Wetland Polishing Ponds and Groundwater Recharge Basin Sites

Potential constructed wetland polishing ponds and groundwater recharge basin sites must be large enough to accommodate up to 30 acres of ponds and 5 to 10 acres of recharge basins that will need to be constructed. Thus, the identification of alternatives sites is focused on sites of about 40 acres or larger.

Potential sites must be relatively flat. They must also have hydrogeologic conditions that are conducive to near-surface infiltration, and would not create flooding or seepage problems in adjacent low areas. Even after LOTT identifies a preferred site for the recharge facilities, the preferred site will be subjected to extensive hydrogeologic investigations to ensure that it is appropriate for that purpose. It is possible that after thorough hydrogeologic investigations are completed, the initially preferred site could prove to be unacceptable, and another site would need to be selected. That site would then undergo hydrogeologic evaluations and the process would continue until a site with suitable characteristics for recharge is confirmed.

As noted above, LOTT is attempting to acquire sites through the open real estate market. Thus, alternatives for the constructed wetland polishing ponds and groundwater recharge basin sites will initially focus on properties that are currently available for purchase. It is possible that one or more of the alternative constructed wetland polishing ponds and groundwater recharge basin sites initially evaluated through this SEIS process could be purchased by another party prior to release of the Final SEIS and might be dropped from consideration. It is also possible that additional sites may become available for purchase during this SEIS process that meet LOTT's evaluation criteria. In that event, such sites may be added to the SEIS evaluation process and documented in the Final SEIS or in an addendum to the Final SEIS.

3.5.3 Use Areas

Potential "use areas" would include any land or water use activity where there is an opportunity for substituting potable water use with reclaimed water use in a manner that is consistent with the state's Water Reclamation and Reuse Standards (Washington State Departments of Health and Ecology, September 1997). Potential use areas would need to be in reasonable proximity of the reclaimed water satellite plant, recharge facilities, or the associated reclaimed water conveyance system.

3.6 ALTERNATIVES

The following text describes the alternative configurations for reclaimed water satellite treatment plants, wetland polishing ponds, groundwater recharge basins, and associated conveyance pipelines.

3.6.1 Reclaimed Water Satellite Plant Alternatives

To implement the Wastewater Resource Management Plan, LOTT will develop and operate a reclaimed water satellite plant within the Hawks Prairie Resource Management Basin. Initially, the site will be designed to treat 1.0 million gallons per day (mgd) of wastewater. As demand for wastewater services increases in the LOTT service area, capacity may be upgraded in

increments until it reaches an ultimate capacity of 5.0 mgd. Constructed wetlands polishing ponds and groundwater recharge basins will not be constructed at the reclaimed water plant sites.

Wastewater will be pumped in a new pipeline from the existing Martin Way force main or pump station to the reclaimed water satellite plant. The wastewater will first enter a preliminary treatment building that will house screening and vortex-type separator grit removal equipment. Some of these activities may be located at the Martin Way Pump Station. All screenings and grit will be transported to the Thurston County Transfer Station by truck for ultimate disposal.

The residual wastewater will undergo advanced biological treatment for nutrient removal in biomembrane reactors. The reactors will cycle through several mixing and aeration phases. A membrane filter will be installed inside each reactor. Following the biomembrane process, the treated effluent will be transferred for disinfection.

There are two alternative disinfection options for the wastewater. The first involves the exclusive use of sodium hypochlorite for primary disinfection as well as to provide a disinfection residual in the reclaimed water as it is pumped from the plant in route to the constructed wetland polishing ponds or use areas. Ultraviolet (UV) light could be used to provide primary disinfection; however, sodium hypochlorite would still be needed to provide disinfection residual in reclaimed water leaving the plant.

Residual solids from the reactors will be returned to the Martin Way force main or pump station via a new return pipeline. From there they will be conveyed to the Budd Inlet Treatment Plant for treatment and disposal.

The plant will be designed to treat wastewater to Class A reclaimed water standards. According to the state's Water Reclamation and Reuse Standards, Class A Reclaimed Water means:

> ...reclaimed water that, at a minimum, is at all times an oxidized, coagulated, filtered, disinfected wastewater. The wastewater shall be considered adequately disinfected if the median number of total coliform organisms in the wastewater after disinfection does not exceed 2.2 per 100 milliliters, as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of total coliform organisms does not exceed 240 per 100 milliliters in any sample (Washington State Departments of Health and Ecology, September 1997).

Infiltrated groundwater will meet the state primary and secondary maximum contaminant level at the point of compliance as modified for local groundwater quality as indicated in Chapter 246-290 WAC. Due to concerns over relatively high nitrate-nitrogen concentrations in local area groundwaters, the plant will be designed to reduce total nitrogen levels in the effluent to one-half or less of the drinking water standard for nitrate-nitrogen of 10 milligrams per liter.

The plant will be designed, constructed, and operated to be aesthetically pleasing and compatible with surrounding neighborhoods. This will include landscaping to provide effective visual screening. At 1.0 mgd, the plant and associated landscaping and access roads will occupy two to three acres. At 5.0 mgd, that area will increase to about four acres (see Figures 3-2 and 3-3, respectively).

Measures will be undertaken to control odors at the plant. The preliminary treatment buildings will be ventilated and the biological reactors covered. The air from inside the reactors will be drawn off and treated. Air from plant processes may need to be treated by a two-stage system to meet the odor level requirements at the fence line. The first system will consist of a chemical scrubber or a Phoenix carbon system. The chemical scrubber would require use of sodium

Figure 3-2.
1 MGD Satellite Reclamation Plant Schematic

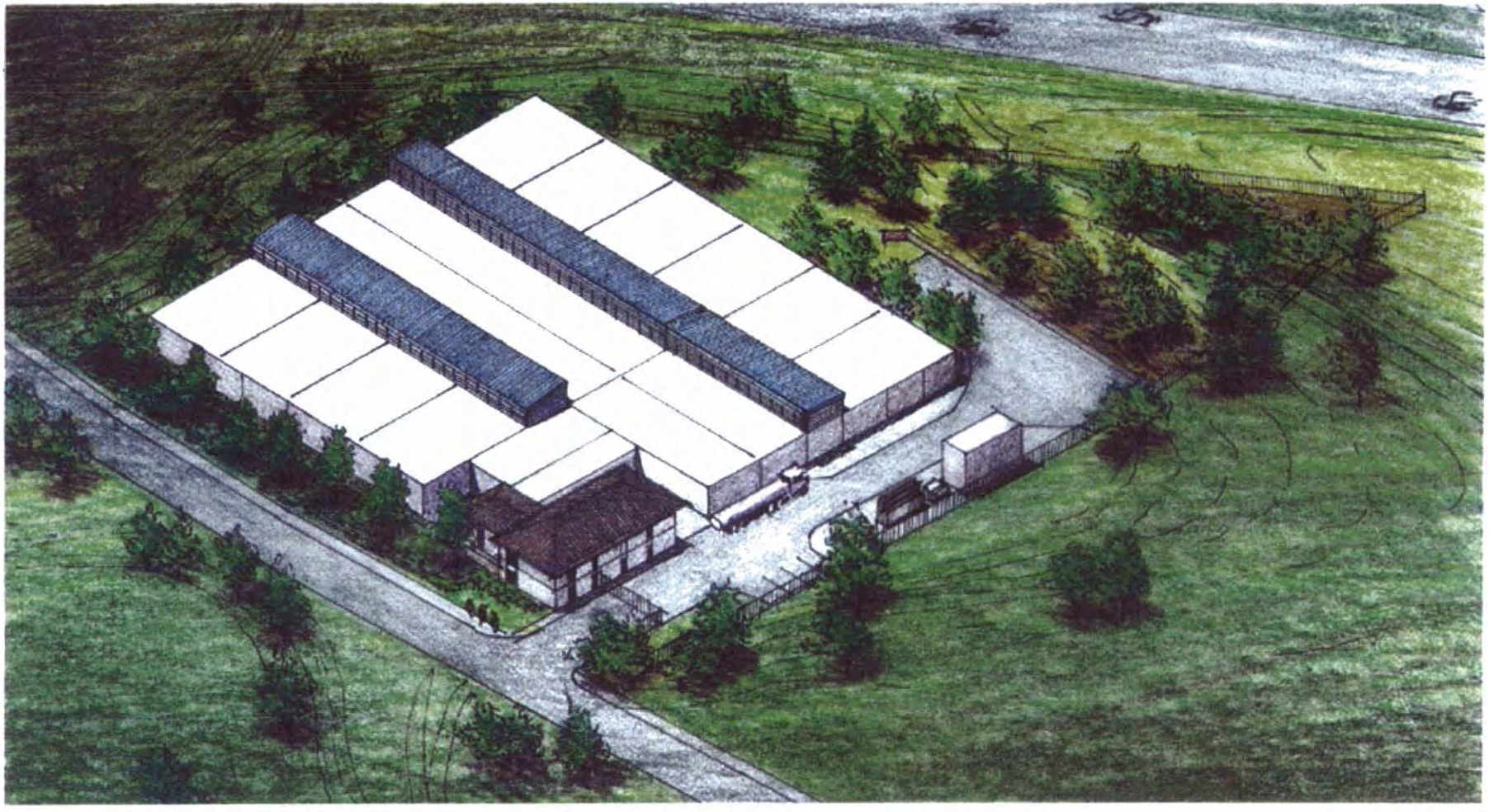

Figure 3-3.
5 MGD Satellite Reclamation Plant Schematic

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hypochlorite. The second stage would consist of either a biofilter or a virgin activated carbon filter.

Potential locations for the reclaimed water satellite plant have been identified within two general zones. Zone 1 is located south of Interstate 5 on the north side of E Martin Way west of its intersection with Marvin Road NE. It can be generally described as a portion of:

- The SW 1/4 and SE 1/4 of the SW 1/4 of Section 11, Township 18 North, and Range 1 East; and
- The SW 1/4 of the SE 1/4 of Section 11, Township 18 North, and Range 1 East.

Zone 2 is located on both sides of 15th Avenue NE west of Draham Street NE. It can be generally described as a portion of:

- The NE 1/4 and SE 1/4 of the SW 1/4 of Section 9, Township 18 North, and Range 1 East; and
- The NW 1/4 and SW 1/4 of the SE 1/4 of Section 9, Township 18 North, and Range 1 East, except those portions lying south of Interstate-5.

The two zones encompass areas close enough to the existing Martin Way force main or pump station to make construction of a reclaimed water satellite plant feasible. Each of the zones is approximately 60 to 80 acres in size and is comprised of numerous parcels of land. Zones 1 and 2 are demonstrated on Figure 3-1.

Currently, one potential reclaimed water satellite plant site has been identified within Zone 1 and three potential sites within Zone 2. These sites are individually designated as alternative sites, but are also considered to be representative of the range of alternatives that could potentially be available to LOTT within the two zones. Impacts and mitigation measures associated with the designated alternatives would be similar to those associated with other parcels within the zones that are not currently available for purchase and, thus, are not currently under consideration as alternative sites. According to SEPA, the final action chosen by decision-makers need not be identical to any single alternative in an EIS, but must be within the range of alternatives discussed (Ecology, 1998).

As noted previously, the LOTT Wastewater Alliance generally will try to acquire property through the open real estate market rather than through condemnation. Thus, alternatives for the reclaimed water satellite plant sites are limited in the initial stage to properties that are currently available for purchase. It is possible that additional sites within Zone 1 or Zone 2 that meet LOTT's evaluation criteria may become available for purchase either during this SEIS process or after the process is completed. If a site becomes available during the SEIS process, it can be analyzed in the Final SEIS. However, if a site becomes available after the process is completed, it would need to be evaluated within the context of this SEIS to determine if it falls within the range of alternatives.

Reclaimed Water Satellite Plant Zone 1 Site

The potential reclaimed water satellite plant site within Zone 1 is designated Site 1 for purposes of this SEIS. This site was evaluated in the 1998 Final SEIS as a portion of reclaimed water satellite plant site HP-E. Reclaimed water satellite plant Site 1 is a 13.65-acre parcel situated in the 7700~~500~~ block of E Martin Way in the City of Lacey. It is located in the SW 1/4 of the SW 1/4 of Section 11, Township 18 North, and Range 1 East (see Figures 3-1 and 3-4). The existing Martin Way pump station would supply raw wastewater to Site 1. New conveyance piping would need to be constructed to carry the raw wastewater to the reclaimed water satellite plant and to carry solids from the plant back to the pump station. These conveyance pipes would be force mains and would be installed in the same trench.

The approximately 9,000-foot raw wastewater and solids return pipeline alignment would follow E Martin Way to the site, crossing Woodland Creek at a point approximately 2,500 feet east of the pump station. It would enter the site on E Martin Way.

Reclaimed Water Satellite Plant Zone 2 Sites

The three potential reclaimed water satellite plant sites in Zone 2 are designated as Sites 2 East, 2 Center, and 2 West for purposes of this SEIS. These sites may be used separately or in combination to provide the necessary area for the facility.

Reclaimed water satellite plant Site 2 East is a 2.47-acre parcel situated in the 5600 block of 15th Avenue NE in the City of Lacey. It is located in the SW 1/4 of the SE 1/4 of Section 9, Township 18 North, and Range 1 East (see Figures 3-1 and 3-5).

Reclaimed water satellite plant Site 2 Center is a 4.57-acre parcel situated in the 5500 block of 15th Avenue NE in the City of Lacey. It is located in the SW 1/4 of the SE 1/4 of Section 9, Township 18 North, and Range 1 East (see Figures 3-1 and 3-5).

Reclaimed water satellite plant Site 2 West is a 19.54-acre parcel situated along 15th Avenue NE in the City of Lacey. It is located in the SE 1/4 of the SW 1/4 of Section 9, Township 18 North, and Range 1 East (see Figures 3-1 and 3-5).

Under each of the Zone 2 Alternatives, the existing Martin Way force main would provide a source of raw wastewater. As with Site 1, new conveyance piping would need to be constructed to carry the raw wastewater to the reclaimed water satellite plant and to carry solids from the plant back to the force main. The conveyance piping would be force mains and would be installed in the same trench. Raw wastewater would be diverted from the existing force main at a point where the existing forcemain crosses Interstate-5, northeast of the Martin Way interchange (Exit 109) of Interstate-5. From there, the force main alignment would parallel Interstate-5 to reclaimed water satellite plant Site 2 East, 2 Center, or 2 West along 15th Avenue NE. The total length of pipeline alignment differs for each of the Zone 2 alternatives. The Site 2 East alignment would be approximately 2,100 feet in length, Site 2 Center would be 2,500 feet, and Site 2 West would be 2,800 feet.

3.6.2 Constructed Wetland Polishing Ponds, Groundwater Recharge Basin, and Associated Conveyance System Alternatives

The LOTT Wastewater Resource Management Plan calls for a groundwater recharge basin with multiple cells to be constructed in the Hawks Prairie Resource Management Basin. A groundwater recharge basin is a dedicated site where surface infiltration of reclaimed water is encouraged as a means of promoting groundwater replenishment. The groundwater recharge basin is technically a "use area" as defined in the state Water Reclamation and Reuse Standards. However, because of the magnitude of the recharge basin, and because the facility will be the primary recipient of reclaimed water generated by the reclaimed water satellite plant during most of the year, it is addressed separately from the use areas discussed in Section 3.6.3 below.

The recharge basin will consist of approximately four cells of 1.5 to 2.5 acres each. About 30 acres of constructed wetland polishing ponds will be developed to further enhance opportunistic treatment of reclaimed water prior to discharge to the groundwater recharge basin. While it is most desirable to construct the recharge basin and polishing ponds together at a single location, they could be placed on separate parcels connected by a conveyance system.

The recharge basin would be divided into multiple cells to allow cells to be rested and rehabilitated while others are in operation. A maximum of 50 percent of the basin would be in use at any one time.

The constructed wetland polishing ponds and perimeter of the recharge basin will be landscaped with native vegetation. The landscaping will also provide a vegetated visual screen around the groundwater recharge basin (refer to Figure 3-6).

Five alternative groundwater recharge and constructed wetland polishing ponds sites are currently under consideration by LOTT;

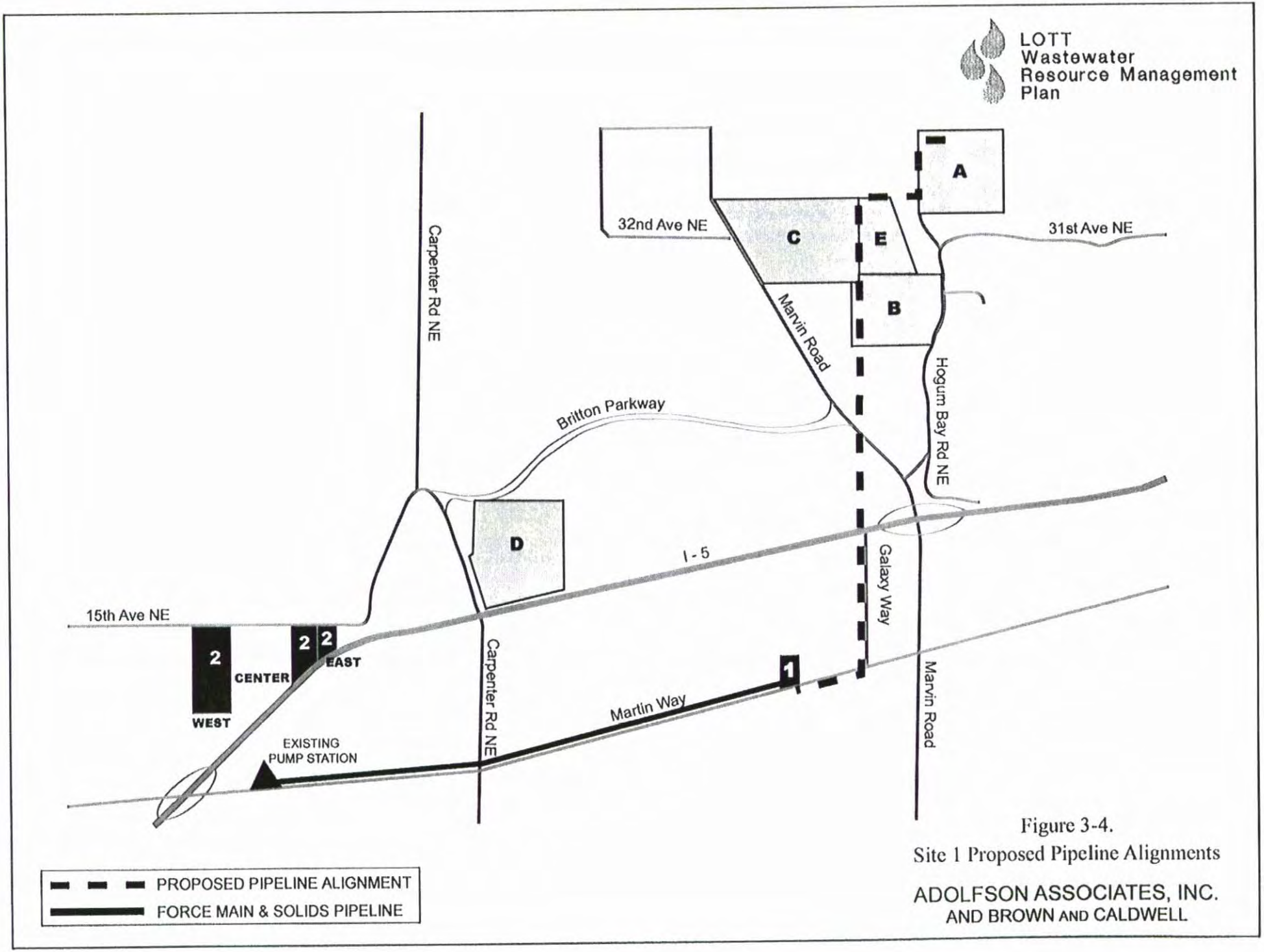

Figure 3-4.
Site 1 Proposed Pipeline Alignments

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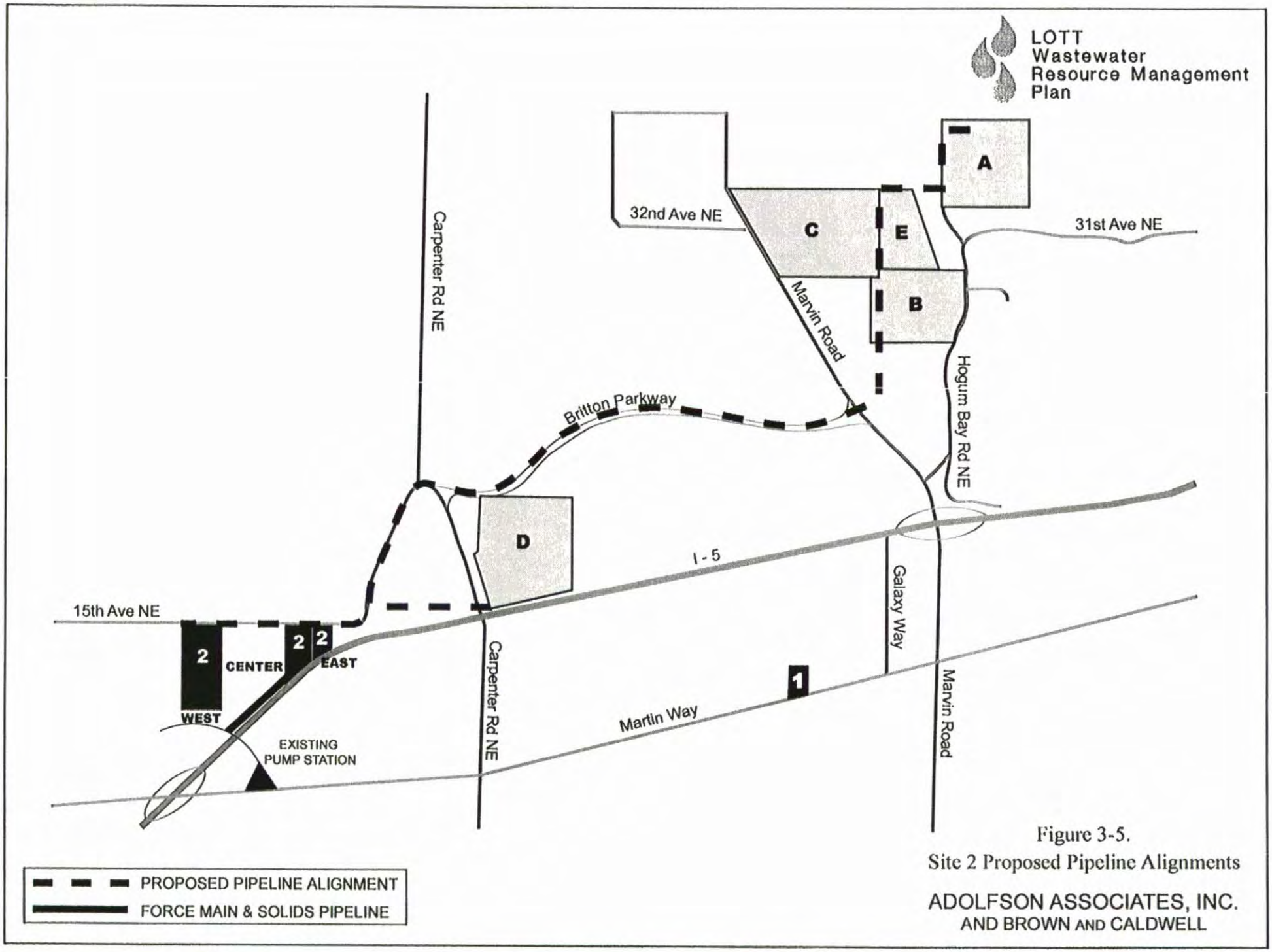

Figure 3-5.
Site 2 Proposed Pipeline Alignments

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Figure 3-6.
Constructed Wetlands Polishing Ponds and Groundwater Recharge Basins Schematic

although, only three are considered stand-alone sites.

Site A is a 40.68-acre site situated on the 3300 block of NE Hogum Bay Road in the City of Lacey. It is located in the NE 1/4 of Section 2, Township 18 North, and Range 1 West (see Figure 3-1). Site A was evaluated in the 1998 Final SEIS as part of the 845-acre Recharge and Reclamation Location HP-A.

Site B is a 40.91-acre site situated on the 3000 block of NE Hogum Bay Road in the City of Lacey. It is located in the SE 1/4 of Section 2, Township 18 North, and Range 1 West (see Figure 3-1). Site B is immediately adjacent to Recharge and Reclamation Location HP-A, which was evaluated in the 1998 Final SEIS.

Site C is a 64.78-acre site situated on the 2900 block of Marvin Road NE in the City of Lacey. It is located in the NW 1/4 of Section 2, Township 18 North, and Range 1 (see Figure 3-1). Site C was evaluated in the 1998 Final SEIS as part of Recharge and Reclamation Location HP-A.

Site D is a 67.25-acre site situated on the 1800 block of NE Carpenter Road. It occupies portions of both the NW 1/4 and SW 1/4 of Section 10, Township 18 North, and Range 1 West (see Figure 3-1). Due to logistical considerations, Site D can only be developed in conjunction with Zone 2 reclaimed water satellite plant alternatives. Additionally, Site D cannot be operated as a stand alone groundwater recharge basin because of site-specific hydrogeologic limitations. Site D was not evaluated in the 1998 Final SEIS.

Site E is a 30-acre site situated on the 3100 block of NE Hogum Bay Road in the City of Lacey. It is located in the NE 1/4 of Section 2, Township 18 North, and Range 1 West (see Figure 3-1). Portions of Site E are within Recharge and Reclamation Location HP-A, which was evaluated in the 1998 Final SEIS. Because the size of Site E is inadequate to support both the constructed wetlands polishing ponds and the recharge basin, the site would need to be supplemented with a 10 acre portion of adjacent Site B or Site C, or Site E would need to be operated in conjunction with Site D.

A conveyance system would need to be constructed to connect the reclaimed water satellite plant to the constructed wetland polishing ponds and groundwater recharge basin site or sites. The conveyance system would consist of a 12-inch pressure pipeline. The conveyance system would be installed in public road rights-of-way or City of Lacey sewer rights-of-way.

With multiple reclaimed water satellite plant alternatives and polishing ponds/recharge basin alternatives, a number of different conveyance system routing scenarios can be identified. Reclaimed water satellite plant Site 1 could potentially serve polishing ponds/recharge basin Sites A, B, C, or E. The conveyance system alternatives for connecting Site 1 with these polishing ponds/recharge basin sites are designated HP-1A, HP-1B, HP-1C, HP-E. Because all of the pipeline alignments are very similar, they have been evaluated as a single route for purposes of this SEIS (see Figure 3-4). The conveyance system alternatives share the same route for most of their length. From reclaimed water satellite plant Site 1, the common conveyance system alignment would proceed east on E Martin Way to Galaxy Drive NE, then north on Galaxy Drive NE and under Interstate-5. It would proceed north from Interstate-5 on City of Lacey sewer rights-of-way to Marvin Road NE. From there it would continue under Marvin Road NE north on the sewer rights-of-way to either polishing pond/recharge basin Sites A, B, C, or E. The approximate length of the Alternative HP-1A alignment would be 10,700 feet, while the Alternative HP-1B, Alternative HP-1C, and Alternative HP-1E alignments would be 7,500 feet. The common alignment described above follows approximately the same route as pipeline alignments HP-PD-1 and HP-PD-2, which were described and evaluated in the 1998 Final SEIS.

Reclaimed water satellite plant Sites 2 East, 2 Center, and 2 West could potentially serve polishing ponds/recharge basin Sites A, B, or C as stand-alone sites, and Site E if augmented with acreage from one of the aforementioned sites. The conveyance system alternatives for connecting the Site 2 alternatives with these polishing ponds/recharge basin sites are designated HP-2A, HP-2B, HP-2C, and HP-2E. Because all of the pipeline alignments are very similar, they have been evaluated as a single route for purposes of this SEIS (see Figure 3-5). All four of these conveyance alternatives would require boring or microtunneling under Woodland Creek at Draham Road.

The conveyance system alternatives share the same route for most of their length. The conveyance system alignments for all of Zone 2 reclaimed water satellite plant alternatives would originate on 15th Avenue NE and would proceed easterly to Draham Street NE in a common alignment. The alignment would continue north on Draham Street NE to its intersection with Britton Parkway, then follow Britton Parkway to Marvin Road NE. It would proceed under Marvin Road NE, and then turn north on City of Lacey sewer rights-of-way to either polishing pond/recharge basin Site A, B, C, or E. The HP-2A alignment would be approximately 18,500 feet, and the HP-2B, HP-2C, and HP-2E alignments would be about 15,500 feet.

Reclaimed water satellite plant Sites 2 East, 2 Center, and 2 West could potentially serve polishing ponds/recharge basin Site D in combination with Sites A, B, C, or E. As noted previously, Site D cannot be operated as a stand-alone site and, thus, must be used in conjunction with another site. The conveyance system alternatives for connecting the Site 2 alternatives with these polishing ponds/recharge basin sites are designated HP-2AD, HP-2BD, HP-2CD, and HP-2ED. This alignment has been evaluated as a single route for purposes of this SEIS (see Figure 3-5). The conveyance system alternatives share the same route for most of their length and are similar to those described previously for the HP-2A, HP-2B, and HP-2C Alternatives. All three of these conveyance alternatives would require boring or microtunneling under Woodland Creek.

The conveyance system alternatives would all originate on 15th Avenue NE and would proceed easterly to Woodland Creek Road NE in a common alignment. They would follow Woodland Creek Road NE to Site D, crossing Woodland Creek in the process. A portion of the reclaimed water would be polished and recharged at the Site D site; the remainder would be piped through and exit the north end of the site in route to the Site A, B, C, or E polishing pond/recharge basin sites. The alignment would continue east on Britton Parkway to its intersection with Marvin Road NE, proceed under Marvin Road NE, and then turn north on City of Lacey sewer rights-of-way to either polishing pond/recharge basin Site A, B, C, or E. HP-2AD alignment would be approximately 18,900 feet, and the HP-2BD, HP-2CD, and HP-2ED alignments would be about 15,900 feet. The portion of the common alignment from Marvin Road NE to the polishing pond/recharge basin sites follows the same route as pipeline alignments HP-PD-1 and HP-PD-2, which were described and evaluated in the 1998 Final SEIS.

3.6.3 Use Area Alternatives

The state Water Reclamation and Reuse Standards define Use Areas as:

> ...any, facility, building, or area approved for reuse and permitted by the Washington Departments of Health and Ecology (1997).

The state standards identify various types of facilities, buildings, and areas where beneficial use of reclaimed water would be appropriate, provided such use is in accordance with the state standards and a reclaimed water permit is issued jointly by the Departments of Health and Ecology.

All use areas will require a service connection to the main conveyance systems for reclaimed water described above in Section 3.6.2, or directly to the reclaimed water satellite plant.

The length of such service connections would be variable depending upon the distance from the main conveyance system or the reclaimed water satellite plant. Impacts and mitigation measures associated with service connections would be similar to those for the conveyance systems described above in Section 3.6.2.

Identified Potential Use Areas within Hawks Prairie Resource Management Basin

Existing potable water users within the Hawks Prairie Resource Management Basin were evaluated by LOTT to identify those that meet the criteria for use areas discussed above and that have expressed some interest in possibly obtaining reclaimed water. A number of such sites have been tentatively identified. Planned future private or public projects that may be suitable candidates for reclaimed water use areas have been also been identified and are generally shown on Figure 3-7. Planned future private or public projects that may be suitable candidates for reclaimed water use areas have been also identified. These potential use areas are described below as "identified potential use areas within Hawks Prairie Resource Management Basin."

Merriwood/Vicwood Golf Course. This site consists of a privately owned commercial golf course. It was evaluated in the 1998 Final SEIS as Reclamation Facility (Use Area) Location HP-G. The proposed use of the reclaimed water is for irrigation.

Meridian Campus Park. This site is a business park with landscaped areas. The proposed use of the reclaimed water is for irrigation.

Meridian Neighborhood Park. This is a proposed future City of Lacey park. The proposed use of the reclaimed water is for irrigation.

Meridian Campus Roadway. This site consists of roadway shoulders and a landscaped center median. The proposed use of the reclaimed water is for irrigation.

Britton Parkway. This site consists of roadway shoulders and landscaping. The proposed use of the reclaimed water is for irrigation.

Britton Parkway Park. This site consists of a planned future City of Lacey park. The proposed use of the reclaimed water is for irrigation.

Olympia Sand and Gravel. This site consists of a gravel mining and construction materials production facility. The proposed use is for industrial gravel washing.

Thurston County Waste and Recovery Center. This site consists of a solid waste handling facility and former landfill. It was evaluated in the 1998 Final SEIS as a potential reclaimed water satellite plant and reclamation facility (Use Area) Location HP-F. The proposed use of the reclaimed water is for irrigation and wash-down purposes.

Generic Use Area Sites

During and after construction of the reclaimed water production and use facilities, additional use areas may be identified. These may consist of existing properties or facilities whose owners have not currently expressed an interest in purchasing reclaimed water, or currently unplanned or undocumented private or public projects that might be developed in the future. In order to facilitate an efficient process for providing reclaimed water service to such future users, a set of generic use areas is discussed in this document. All of the generic use areas discussed are recognized in the state Water Reclamation and Reuse Standards as being potentially suitable for the purpose of reuse, provided such reuse is in accordance with the standards. These generic use areas are identified below. Site specific evaluations would be needed at the time that a specific future use area is proposed to determine whether this document adequately addresses the probable adverse environmental impacts and necessary mitigation measures.

Use areas involving **irrigation** of:

- Open access areas such as parks, golf courses, green belt areas, schoolyards, residential landscaping, nonresidential landscaping, and commons.
- Sod or ornamental plants for commercial sale.
- Pasture lands to which milking cows or goats have access.
- Food crops with direct contact between irrigation water and food crops.
- Food crops with no direct contact between irrigation water and food crops.

Use areas with **surface impoundments** including:

- Landscaping impoundments.
- Recreational impoundments (excluding recreational impoundments used for swimming).
- Constructed beneficial use wetlands and constructed treatment wetlands.

Use areas involving **groundwater recharge** by surface percolation.

Use areas involving **commercial or industrial use** of reclaimed water as a source of supply for:

- Basins at fish hatcheries.
- Decorative fountains.
- Flushing of sanitary sewers.
- Street cleanings.
- Washing of yards, lots, sidewalks on business/industry grounds.
- Dust control.
- Dampening for soil compaction.
- Water jetting for consolidation of backfill around pipelines.
- Fire fighting/fire protection.
- Toilet and urinal flushing.
- Industrial boiler feed.
- Industrial cooling.
- Industrial process water.
- Washing aggregate and making concrete.

Use of reclaimed water for **surface water augmentation** including:

- Streamflow augmentation.
- Natural wetlands augmentation.

3.6.4 No Action Alternative

Under the No Action Alternative, no major capital facilities would be constructed to increase the LOTT wastewater collection, conveyance, or treatment capacity. The provisions of the LOTT Wastewater Resource Management Plan concerning implementation of the Highly Managed Plan in the Hawks Prairie Resource Management Basin would not be implemented. A reclaimed water satellite plant would not be constructed, obviating the need for conveyance systems, constructed wetlands polishing ponds, recharge facilities, or conveyance systems. Since no source of reclaimed water would be available for reuse, no use areas could be established. Increased use of on-site sewage systems to serve new development within each city's UGMA would be anticipated due to development activity beyond the capacity of the existing LOTT system.

Implementation of this alternative would not fulfill the LOTT partner's decisions to manage wastewater in Thurston County according to the Highly Managed Plan.

3.7 PROJECT PHASING AND SCHEDULE

The project will be initiated in the fall of 2002. The capacity of the reclaimed water satellite plant will be increased on an as needed basis to provide adequate sewer utility services as demand from planned growth in the UGMA arises.

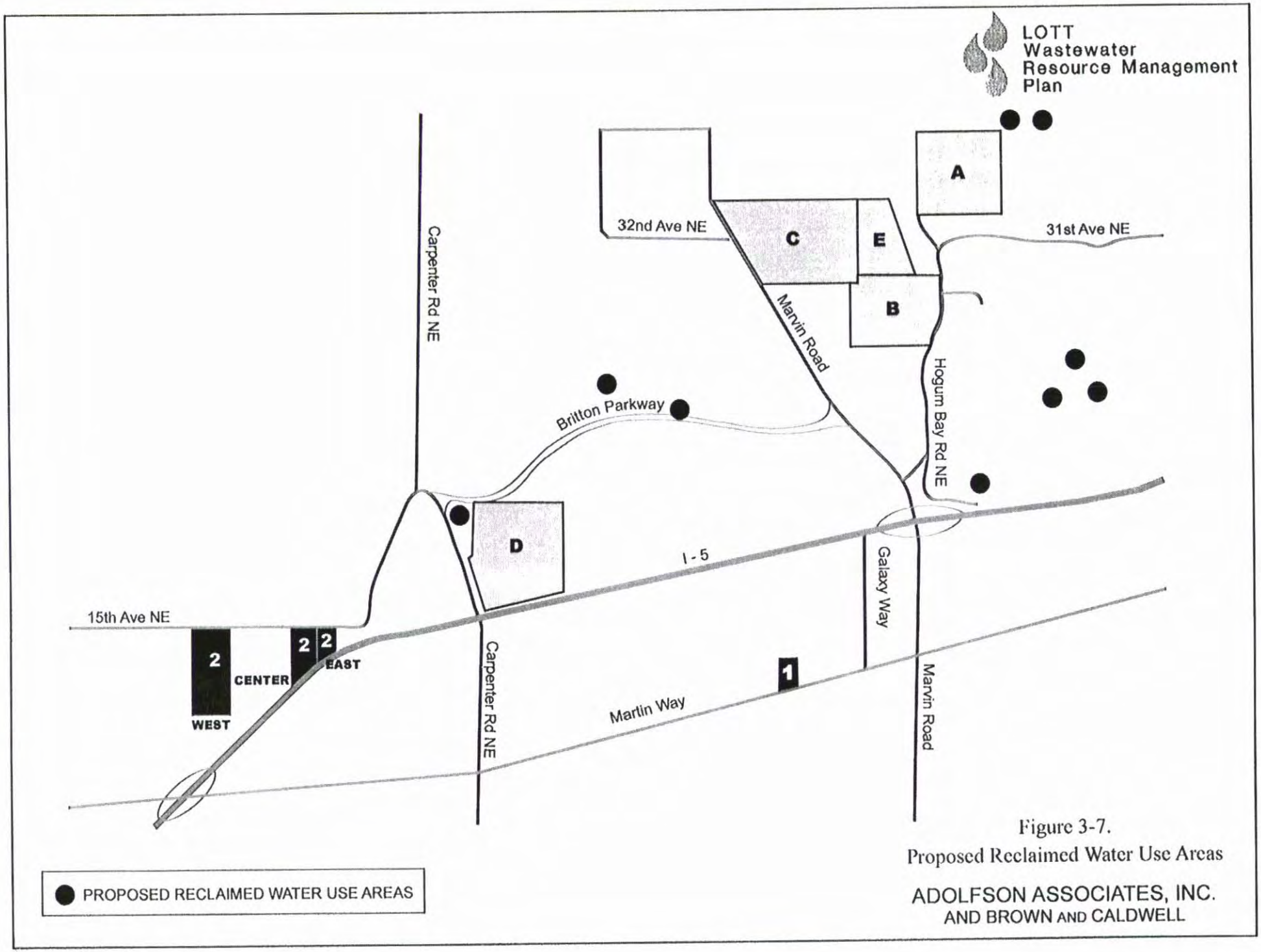

Figure 3-7.
Proposed Reclaimed Water Use Areas

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CHAPTER FOUR: AFFECTED ENVIRONMENT

4.1 EARTH RESOURCES

The section describes the earth resources in the Hawks Prairie implementation area.

4.1.1 Summary of 1998 Final SEIS

The 1998 Final SEIS summarized the soils in the Hawks Prairie Resource Management Basin (RMB) as mapped by the US Department of Agriculture Soil Conservation Service (1990). The characteristics necessary for a location to be suitable for the application of reclaimed water and/or groundwater recharge were also described. A suitable groundwater recharge site should have soils and surficial and subsurface geology that are permeable enough to accept the projected maximum hydraulic loading. The treatment capacity of the soils is not a significant concern due to the high level of treatment applied to the reclaimed water prior to discharge. Additional factors include the slope of the site and the depth to groundwater. Wetland ponds will be lined to minimize percolation to groundwater.

4.1.2 New Information

Described below is new earth-related information obtained since the publication of the 1998 Final SEIS.

Soils

Soils at the specific sites under consideration for the implementation project are listed in Table 4-1.

Table 4-1. Soil Types and Characteristics

Facility Location	Major Soil Type	Percent Slope	Runoff Rate	Erosion Hazard	Permeability
Site 1	Spanaway gravelly sandy loam	0 to 3	slow	slight	moderately rapid
Site 2 East	Indianola loamy sand	3 to 15	slow	slight	rapid
Site 2 Center	Indianola loamy sand	3 to 15	slow	slight	rapid
Site 2 West	Giles silt loam Skipopa silt loam	3 to 15 3 to 15	slow slow	slight slight	moderate moderate
Site A	Everett very gravelly sandy loam Indianola loamy sand	3 to 15 0 to 3	slow very slow	slight slight	rapid rapid
Site B	Everett very gravelly sandy loam Spanaway gravelly sandy loam	3 to 15 0 to 3	slow slow	slight slight	rapid moderately rapid
Site C	Alderwood gravelly sandy loam Everett very gravelly sandy loam	3 to 15 3 to 15	slow slow	slight slight	moderately rapid rapid
Site D	Everett very gravelly sandy loam Pits, gravel	3 to 15 N/A	slow	slight	rapid
Site E	Everett very gravelly sandy loam	3 to 15	slow	slight	rapid

Hydrogeologic Setting

As part of on-going investigations in the Hawks Prairie area, Robinson & Noble Inc. has investigated several properties to determine their viability for accepting large amounts of infiltrated water (July 2000). These investigations included test pits, construction of monitoring wells, and mapping of the soil stratigraphy. These investigations were completed at each site using existing and new field data, and computer modeling. The hydrogeologic setting in the Hawks Prairie area appears to be favorable because of the following conditions:

- Permeable Vashon recessional gravel outwash is present at or near the surface,
- Impermeable Vashon till appears to be very thin (less than 10 feet) or absent,
- A thick sequence of permeable sediments appears to exist between the surface and the water table, and
- Well records indicate that the water table is 60 to 80 feet below the ground surface in the area.

Further in-depth investigations will be conducted once a site is selected and purchased. The six to 12 month pilot test investigation will determine the extent or absence of permeable soils, and model infiltration rates to determine the vertical and horizontal extent of groundwater mounding, and the maximum sustainable surface application rates. This detailed pilot test will include preparation of full scale groundwater recharge basins, installation of additional monitoring wells and preparation of a piezometric flux map. These results will be used to confirm regional groundwater migration patterns and establish a monitoring program to inventory recharged water.

4.2 AIR RESOURCES

Described below are the air-related resources present in the Hawks Prairie implementation area.

4.2.1 Summary of 1998 Final SEIS

The Lacey-Olympia-Tumwater area is characterized by a relatively mild climate; warm, generally dry summers, and wet, mild winters. Daily maximum temperatures are highest during late spring and summer.

Odor regulations and a description of odors associated with wastewater facilities was provided in the 1998 Final SEIS.

4.2.2 New Information

The greater Thurston County area was previously rated as non-attainment for Particulate Matter (PM_{10}). PM_{10} is defined as airborne finely divided solid or liquid material with an aerodynamic diameter less than or equal to a nominal 10 micrometers (Chapter 173-400 WAC—p. 6). Thurston County received reclassification to attainment status of PM_{10} from the Environmental Protection Agency (EPA) on December 4, 2000. Thurston County is currently unclassified for all other EPA attainment criteria. Thurston County monitors Fine Particulate Matter ($PM_{2.5}$), PM_{10}, carbon monoxide (CO), and ozone (Moody, personal communication, 2000).

The proposed reclaimed water satellite plant, recharge basin, and reuse sites would fall under the jurisdiction of the Olympic Air Pollution Control Authority (OAPCA). OAPCA is responsible for enforcing federal, state, and local air pollution standards and governing air pollutant emissions from new and existing sources (OAPCA, 2001). In addition to enforcing air quality standards within their jurisdiction, OAPCA has also established an Odor Enforcement Policy. Enforcement actions are initiated following five or more formal complaints from several individuals in one 12-

month period that cannot be attributed to malfunction, emergency, or startup/shutdown operations (OAPCA, 1996).

The Thurston County Waste and Recovery Center is currently a source of odors in the City of Lacey area. This facility is located at 2420 Hogum Bay Road NE. Approximately 170 odor complaints have been received by OAPCA in the past 10 years regarding the landfill facility. Odor complaints have been reported and documented by OAPCA up to 3/4 mile from the facility. The landfill facility ceased accepting solid waste in May of 2000. The landfill is currently covered with a layer of soil; permanent capping of the landfill area is anticipated to occur in the summer of 2001. Odor complaints have continued to occur following closure of the landfill (approximately 2 complaints per month) and the transition to a transfer station and recycling facility. A mushroom farm is located within approximately 1 mile of the Waste and Recovery Center and odors from their composting activities are frequently reported as emanating from the landfill site. OAPCA is able to discern between the two odor sources (Moody, personal communication, 2001).

All proposed sites are located within the jurisdiction of the City of Lacey.

Site 1

Alternative reclaimed water satellite plant Site 1 is located along Martin Way. This site is currently undeveloped and covered in weedy vegetation and is not a source of odors or air pollutants at this time (Figure 4-1). Off-site sources of odor are primarily attributable to vehicle traffic on nearby roadways.

Receiving properties are located within 1/4 mile from Site 1. To the east, **south, and west** of Site 1 are commercial properties ~~including a grocery store, retail outlets, and eating establishments~~.

Approximately 5~~0~~ single-family residences are located **within** 1/4 **mile** to the **north**~~west~~ of Site 1. **Martin Way lies adjacent to the site's southern boundary.**~~and an automobile wrecking yard is located immediately to the south.~~

Sites 2 Center and 2 East

Alternative reclaimed water satellite plant Sites 2 Center and 2 East are located along 15th Avenue NE (Figure 4-2). These sites are located in a currently rural residential area consisting of large lots with single family residences. Sources of odor from these sites are currently limited to wood smoke or vehicle exhaust and are not significant. Off-site sources of odor are primarily attributable to vehicle traffic on nearby roadways and Interstate-5 or wood smoke from other residences in the vicinity. Residents in the vicinity of Sites 2 Center and East have reported odors from the wastewater pump station located **south** across Interstate-5 from these sites and near the Top Foods grocery store located at 5600 Martin Way East.

Approximately 70 single-family residences are located within 1/4 mile of Sites 2 Center and 2 East. No receptors, such as hospitals, schools, daycare centers, or retirement centers, currently exist in the vicinity of these sites, and no other types of receiving properties (e.g., restaurants, retail outlets) are located in the area.

Site 2 West

Alternative reclaimed water satellite plant Site 2 West is located along 15th Avenue NE (Figure 4-3). This site is currently undeveloped and is not a source of odors or air pollutants. Off-site sources of odor are primarily attributable to vehicle traffic on nearby roadways or wood smoke from other residences in the vicinity. Residents in the area of Site 2 West have reported odors from the pump station located south across Interstate-5 from these sites and near the Top Foods grocery store located at 5600 Martin Way East.

Site 2 West is bordered on both the east and west by single-family homes; 21 properties are directly adjacent to this site. Approximately 65 single-family residences are located within 1/4 mile to the west of the site and approximately 30 single-family residences are located to the east. To the north of Site 2 West are 4 single-family residences on large lots. No residences or other receptors are located to the south of Site 2 West.

Sites A, B, C, and E

Sites A, B, and C are currently undeveloped and do not contain any odor-producing sources (Figure 4-4). The dominant off-site source of odors is from vehicle traffic on nearby roadways, and from the former Olympia Cheese processing facility as further described below.

Site E is the location of the former waste process water disposal area for the Olympia Cheese processing facility (Figure 4-4).

The former Olympia Cheese processing facility is located within 1/4 mile of Sites A, B, and C. This facility has ceased cheese production and is currently under consideration as a site for polishing ponds and groundwater recharge basin as Site E.

There have been approximately 12 odor complaints about the cheese facility over the past 20 years; the most recent complaint occurred in 1998. Complaints were filed during the months of June through August. Cheese processing activities have ceased at this site and the facility is not currently a source of odors. The dominant off-site source of odors is from vehicle traffic on nearby roadways.

No other receiving properties are located within 1/4 mile of Site A. Commercial and industrial facilities are located within 1/4 mile to the east of Site B and within 1/4 mile west and south of Site C.

Site D

Site D is currently an active gravel mine and produces various types of odors and air pollutants (Figure 4-2). These include vehicle emissions, engine emissions from mining equipment, emissions from an on-site fueling station, and dust. The dominant off-site source of odors is from vehicle traffic on nearby roadways.

Within 1/4 mile of Site D, approximately 10 single-family residences are located to the north and northeast, and approximately 10 single-family residences are located to the east of Site D. No residences are immediately adjacent to the site. Buildings/offices associated with the gravel mine are located to the south and east of the site.

4.3 SURFACE WATER RESOURCES

The section describes the surface water resources present in the Hawks Prairie implementation area.

4.3.1 Summary of 1998 Final SEIS

The surface water resources characterized in the 1998 Final SEIS primarily focused on marine water resources in the Thurston County area, and in particular Budd Inlet. The Hawks Prairie Reclaimed Water Project does not include a new marine discharge location.

4.3.2 New Information

The following information has been obtained since the publication of the 1998 Final SEIS. Because groundwater recharge may indirectly affect marine water resources, brief descriptions are provided for Henderson Inlet, and Nisqually Reach.

Marine Environment

Marine surface water resources in the Hawks Prairie Resource Management Basin include Henderson Inlet and the Nisqually Reach of south Puget Sound. These resources are briefly described below.

Henderson Inlet. Henderson Inlet is located to the northeast of the Hawks Prairie implementation area (refer to Figure 4-5). It is approximately five miles in length. Circulation is dominated by tidal fluxes, with only small freshwater inputs. Woodland Creek represents the largest freshwater input in the lower portion of the inlet. Both surface water and groundwater from the Hawks Prairie area contribute to the waters of Henderson Inlet.

Nisqually Reach. The Nisqually Reach of Puget Sound forms the northeastern border of

Figure 4-1.
Property Boundaries, Site 1

Figure 4-2.
Property Boundaries, Sites 2 Center, 2 East, and D

Figure 4-3.
Property Boundaries, Site 2 West

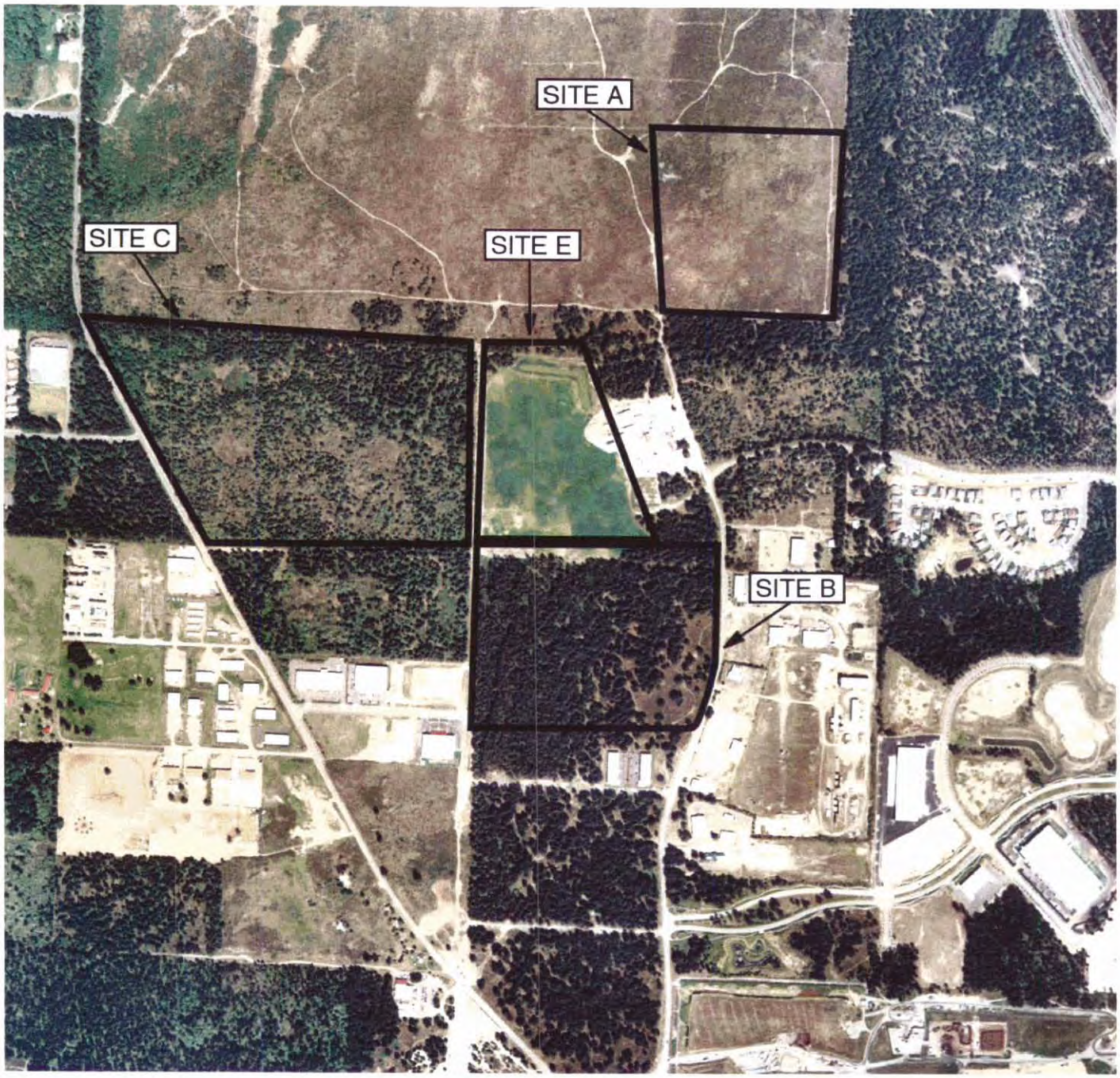

Figure 4-4.
Property Boundaries, Sites A, B, C, and E

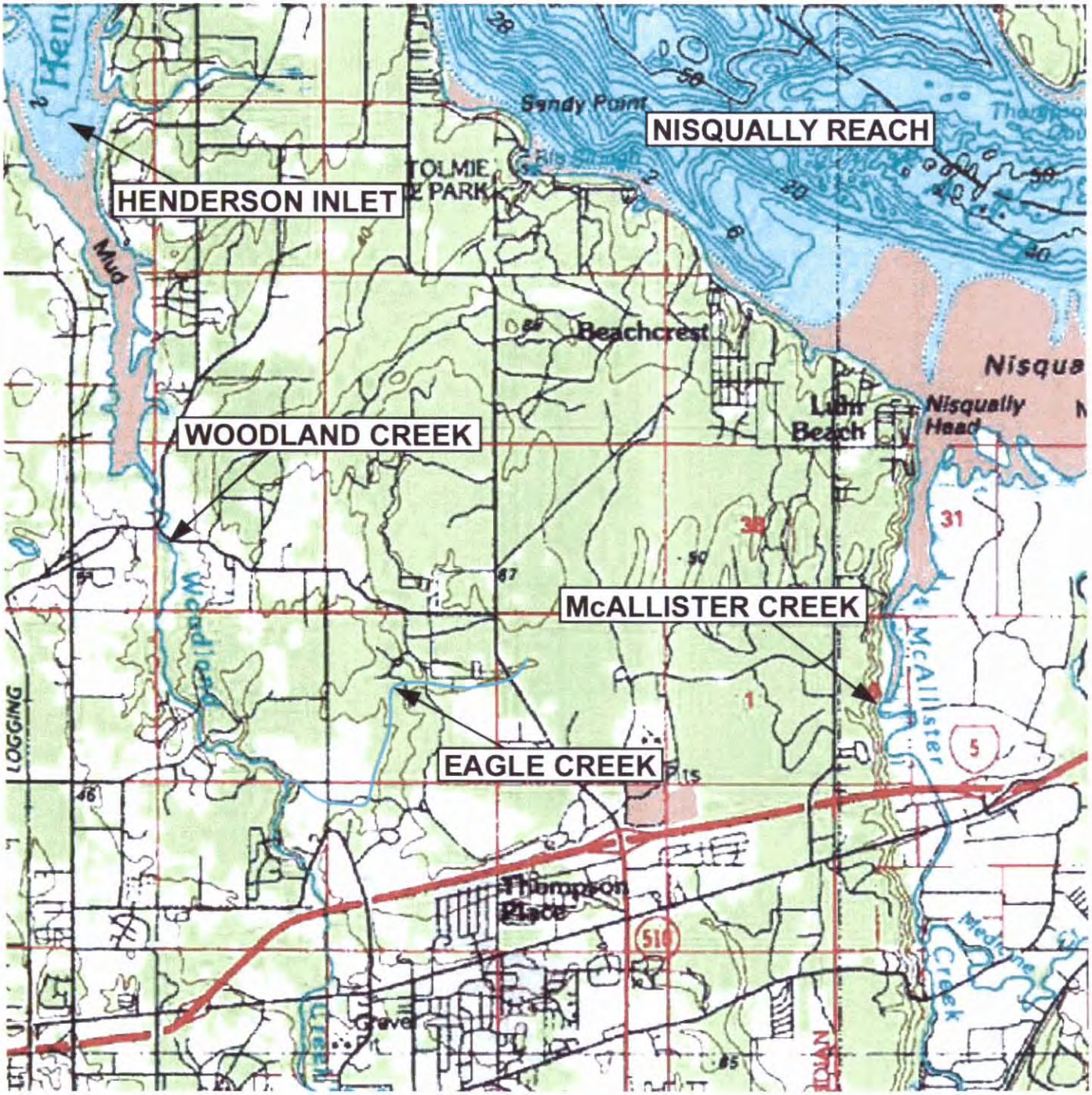

Figure 4-5.
Surface Water Bodies

the Hawks Prairie Resource Management Basin and potentially receives groundwater contributions via springs from the Hawks Prairie implementation area. The hydraulic influence of springs is minimal for this reach. The Nisqually Reach is dominated by Puget Sound tidal cycles. The Nisqually River is a substantial freshwater input to this portion of Puget Sound. It dominates the near surface circulation (top several meters) in the Nisqually Reach. McAllister Creek also influences the top several meters of the Reach in the vicinity of its confluence with Puget Sound.

Fresh Water Environment

Surface water resources in the Hawks Prairie implementation area include McAllister Creek, Woodland Creek, and Eagle Creek. These resources are briefly described below.

McAllister Creek. McAllister Creek forms the eastern hydrologic boundary for the Hawks Prairie implementation area. The lower portion of McAllister Creek is tidally influenced and forms a small estuary with a generally consistent freshwater flow from McAllister Springs. The estuary is shallow and composed of narrow channels in the Nisqually National Wildlife Refuge. Tidal fluxes replace nearly 100 percent of estuary water daily below the Interstate-5/ McAllister Creek Bridge.

Groundwater from Hawks Prairie may reach the creek via springs and seasonal drainage from the bluffs above the stream. There are significant direct surface water inflows to McAllister Creek. In addition, several springs exist along the bluff on the west side of the stream.

Woodland Creek. Woodland Creek is one of the largest tributaries to Henderson Inlet (see Figure 4-5). Most of Woodland Creek is designated as conservancy environment by the City of Lacey's shoreline Management Plan. Woodland Creek is also subject to the provisions of the state Shoreline Management Act.

In 1990, the Washington Department of Ecology identified Woodland Creek as being "water quality limited" under section 303(d) of the federal Clean Water Act in that it does not support two or more of its designated uses (Thurston County et. al., 1995). All sites being evaluated under this supplemental review are completely or partially within the Woodland Creek drainage area.
Several studies have been completed for the area including the Woodland and Woodard Creek Comprehensive Drainage Basin Plan (Thurston County et. al., 1995) and the Woodland and Woodard Creek Basins Stormwater Quality Survey (Thurston County, 1989). These studies summarize existing storm-related water quality concerns and document the state of land development in the basin. Water resource characteristics in the basin have the potential to be affected by changes in surface runoff and groundwater recharge. Urban stormwater runoff in Woodland Creek contributes a significant bacterial load to Henderson Inlet (Thurston County et al., 1995, and Washington State Department of Health, 2000).

The 1989 Stormwater Quality Survey identified a number of toxic organic contaminants in stormwater discharging to the creek. Previous studies have identified areas of elevated nitrate and pesticide levels in groundwater to the south of the implementation sites. The impacts of these sources of groundwater contamination on Woodland Creek have not been directly studied; however, it is thought that the contamination generally occurs at depths greater than those that influence Woodland Creek quality.

Eagle Creek. Eagle Creek is a small tributary that joins Woodland Creek approximately 2.5 miles upstream of the discharge to Henderson Inlet (see Figure 4-5). Eagle Creek is approximately 2 miles long and is roughly one-tenth the size of Woodland Creek (observations in December 2000). It originates on the western edge of Site C, and crosses both Marvin and Carpenter Roads before discharging to Woodland Creek. It forms the largest tributary to Woodland Creek north of Interstate-5. Based on observations of the stream channel characteristics, portions of Eagle Creek may be ephemeral. There is no known water quality information available.

4.4 GROUNDWATER RESOURCES

The following section describes groundwater resources in the Hawks Prairie implementation area.

4.4.1 Summary of 1998 Final SEIS

The 1998 Final SEIS summarized the laws and policies governing the treatment of reclaimed water and groundwater recharge. The characteristics necessary for suitable recharge sites were described, in addition to areas of known groundwater contamination.
Soil conditions that might be encountered, and their hydraulic characteristics, are described in previous technical memoranda (Technical Memoranda, Robinson & Noble, 1997 and 2000). This information provides a characterization of the predominant subsurface geologic conditions and their suitability for accepting groundwater recharge. Preliminary modeling was conducted as part of the 1998 Final SEIS for one area in the Hawks Prairie basin. This modeling indicated a highly permeable surface geology (Vashon recessional outwash) with minor perching and occurrence of groundwater at 100 feet or greater below surface. Recharged groundwater is expected to move radially from the application sites. Based on these evaluations, many sites with suitable soil porosities and depths to groundwater are to be expected in the Hawks Prairie implementation area. The studies also point out that site conditions can be highly variable and site specific studies will be necessary to design recharge systems.

Areas of known and potential groundwater contamination, primarily nitrogen and phosphorous from individual waste disposal systems, and potentially residual levels of agricultural chemicals (EDB) have been an historical problem to the south of the Hawks Prairie implementation area and may extend to Site 1.

4.4.2 New Information

LOTT has conducted preliminary site-specific hydrogeological investigations for the candidate groundwater recharge sites in the Hawks Prairie Basin (Robinson and Noble, technical memoranda, 1999 and 2000). These one-month long investigations, including test pits, monitoring well installation, piezometric mapping, and soil classifications, confirmed the presence of anticipated conditions. The depth to groundwater at Sites A, B, C, and E is approximately 80 feet below the ground surface. However, Site C may contain a perching layer at approximately 40 feet below the surface. Depth to groundwater at Site D is less than 80 feet, and is variable due to the current gravel mining activities.

Once a groundwater recharge property has been secured, LOTT will conduct a six to 12 month pilot test to verify the hydrogeologic characteristics of the application site. The site specific pilot testing will define the long-term sustainable groundwater recharge rates (using reclaimed water), and define the area of influence to minimize the potential groundwater impacts. The potential impacts include localized flooding, erosion, and the influence of domestic and public well production.

4.5 BIOLOGICAL RESOURCES

The following section describes the biological resources present at the alternative site locations proposed in the Hawks Prairie implementation area.

4.5.1 Summary of 1998 Final SEIS

Sensitive habitats, general vegetation types, and wetlands in the Hawks Prairie Resource Management Basin were described in the 1998 SEIS.

4.5.2 New Information

There are four potential reclaimed water satellite plant sites and five potential groundwater recharge basin/constructed wetland polishing

sites under evaluation. The affected environments of these sites are described below:

Site 1

Reclaimed water satellite plant Site 1 is located on the north side of Martin Way in the City of Lacey, Washington. The parcel is bounded on the north and west sides by residential development. The site is bounded on the south by Martin Way, and on the east by vacant land. The site has been cleared, graded, and possibly filled in the past.

The site is mostly free of vegetation except for a sparse, discontinuous cover of Scot's broom and non-native grasses. No wetlands, streams, or high-quality native plant communities were observed on the site. The land surrounding the site has been developed for roads and commercial uses and supports no native plant communities, wetlands, streams, or other important habitats.

The Thurston County Critical Areas Inventory and the National Wetland Inventory maps for the area do not identify wetlands on or in the immediate vicinity of Site 1.

Site 2 East

Site 2 East is the easternmost of the three sites in this area. Topographically, the site is several feet lower than 15th Avenue NE and slopes generally to the south. The northern half of the site contains a house, residential yard, greenhouse, other outbuildings and a large, actively grazed pasture. Vegetation in the pasture consists of a mixture of native and non-native grasses, and creeping buttercup. A planted row of large trees borders the southern edge of the pasture. South of the pasture the site is forested. Tree species that were visible from 15th Avenue NE include black cottonwood and western hemlock. Additional plant species are likely to occur in the forested area, but individual species were not discernable from the road. A small, lined pond located immediately south of the house was created by the current property owner. The pond contains assorted native and non-native aquatic species.

The Thurston County Critical Areas Inventory and the National Wetland Inventory maps for the area do not identify wetlands on or in the immediate vicinity of Site 2 East.

Site 2 Center

Site 2 Center is located immediately adjacent to and west of Site 2 East. Like Site 2 East, Site 2 Center slopes generally to the south. The northern one-third of the site contains a house, residential lawn, and an intact, native second growth forest community. South of the residence and the associated lawn, the site supports a mixture of large ornamental trees and shrubs. It was not possible to determine site conditions beyond this lawn area. Recent aerial photographs show this area of lawn interspersed with trees and shrubs extending to the south property boundary.

Vegetation in the native second growth forest community located along the eastern property line (dividing Site 2 Center from Site 2 East) consists of Douglas fir, big-leaf maple, ocean spray, western hazel, western crabapple, and creeping blackberry.

The Thurston County Critical Areas Inventory and the National Wetland Inventory maps for the area do not identify wetlands on or in the immediate vicinity of Site 2 Center.

Site 2 West

Site 2 West is located along the south side of 15th Avenue NE, west of Sites 2 East and 2 Center, in the City of Lacey.

The Thurston County Critical Areas Inventory and the National Wetland Inventory maps for the area do not identify wetlands on Site 2 West.

Site A

Site A is situated at the terminus of Hogum Bay Road in the City of Lacey. The site is topographically flat and appears to have been logged, cleared, and possibly graded in the past. No trees or herbaceous vegetation are visible on the site. Vegetation consists of a monotypic stand of Scot's broom. No streams or wetlands were visible on the site. Neither the Thurston

County Critical Areas Inventory nor the National Wetlands Inventory (NWI) identified wetlands on Site A. North and west of Site A, conditions are identical.

East of Site A is a band of Douglas fir forest that has been designated as a Wildlife Corridor by the City of Lacey. South of Site A is a mixed third growth forested area containing a mixture of Douglas fir and Scot's broom.

Few wildlife species would be expected to use Site A.

Site B

Site B is located on the west side of Hogum Bay Road NE in the City of Olympia. The parcel is located immediately south of the former Olympia Cheese Factory facility (Site E). The site is topographically flat and supports a second or third-growth mixed forest. Tree species in the forest include Douglas fir in the overstory and small Garry oak scattered in the understory. No streams or wetlands were observed on the site. Neither the Thurston County Critical Areas Inventory nor the National Wetlands Inventory (NWI) identified wetlands on the site. These inventories do indicate the presence of a large wetland located north of the site.

Wildlife species likely to use this site are common suburban species including squirrels, raccoons, robins, sparrows, jays, and crows.

Site C

Site C is located along the northeast side of Marvin Road. The site is generally flat. One small topographic depression was identified along the west edge of the parcel along Marvin Road. The site has been logged in the past. Vegetation has regenerated un-evenly on the site. Within approximately 50 feet of the road, vegetation consists mainly of Douglas fir with an understory of red alder, salal, and bracken fern. East of this narrow band of forest the site appears to support a much more sparse plant community consisting mainly of red alder, thimbleberry, and bracken fern, interspersed with taller Douglas fir.

A forested/scrub-shrub wetland occupies the topographic depression located adjacent to Marvin Road. The wetland appears to be seasonally flooded; however, surface water was not visible in the wetland in October 2000. Vegetation in the wetland consists of red alder and salmonberry. A wetland study conducted by the current property owners indicates that several wetlands are present on the site. In addition, ~~T~~the Thurston County Critical Areas Inventory identifies a small wetland on, or immediately east of Site C.

A small drainage feature/Class 4 stream (Eagle Creek) connects the wetland on Site C with property on the west side of Marvin road, apparently through a culvert. Water was not present in the channel in October 2000.

Wildlife species likely to use this site are common suburban species including squirrels, raccoons, robins, sparrows, jays, and crows.

Site D

Site D is located on the east side of Carpenter Road between Britton Parkway and Interstate-5. The site is an active gravel mine and, as such has undergone extensive surface modification. Little native vegetation exists on the site, with the exception of scattered clumps of remnant trees. Trees in these clumps include black cottonwood, red alder, Sitka spruce, and Douglas fir. The southwest approximately 1/3 of the site supports a stand of second or third growth mixed deciduous/coniferous forest.

A number of settling ponds/wetlands exist on the site, presumably created to treat surface water runoff generated by the gravel mining operations. Britton Parkway, a new road, borders a portion of the northern edge of Site D. A series of stormwater treatment swales have recently been installed along the edges of Britton Parkway adjacent to the site. The Thurston County Critical Areas Inventory identifies two wetlands on or in the immediate vicinity of Site D. The first is a small wetland, located on Site D immediately south of Britton Parkway and possibly constructed as a settling pond associated with the gravel mine. The second is a

larger wetland located south of Site D. The NWI identifies this larger wetland as a palustrine, open water, permanently flooded, excavated wetland.

Wildlife species likely to use this site are common suburban species including squirrels, raccoons, robins, sparrows, jays, and crows.

Site E

Site E is located west of Hogum Bay Road in the City of Lacey. The site is bounded on the north by Site A, on the west by Site C and on the south by Site B. Site E is bounded on the east by operations buildings for the former Olympia Cheese factory. The site recently served as a land-application disposal site for Olympia Cheese's process wastewater.

The site is generally flat and vegetation on the site consists entirely of infrequently-mown grasses.

No wetlands, streams, or high-quality native plant communities were observed on the site. The Thurston County Critical Areas Inventory indicates the presence of wetlands near the extreme southeast corner of Site E.

4.6 FISH RESOURCES

The following discussion focuses on fresh water resources as impacts to marine species are not anticipated.

4.6.1 Summary of 1998 Final SEIS

The 1998 Final SEIS described both marine and fresh water fisheries resources.

Existing Fresh Water Fish Habitat

Woodland Creek is the only major stream located within the project area.

Woodland Creek. Woodland Creek originates from small wetlands and lakes, and drain into the southern tip of Henderson Inlet. The creek contains gentle to moderate gradients throughout its length, with stream widths averaging two to five yards. The lower reaches of Woodland Creek provides good spawning and rearing habitat for salmonids and have suitable pool-to-riffle ratios and good quality gravel stream bottoms (Thurston County et al., 1995). The creek also contains considerable fine material and sand as it approaches its outlet, taking on a slough-like condition. Stream banks in the lower reach consists of open farmland and rural residences, interspersed with patches of forest. However, rapid population growth is occurring in the area and altering stream habitats (Thurston County et al. 1995).

Thurston County, in cooperation with the cities of Lacey and Olympia, completed a final draft *Comprehensive Drainage Basin Plan* for both Woodland and Woodard Creeks in 1995. The plan found that fish habitat has been degraded in both creeks resulting from removal of riparian vegetation, widening fluctuations in peak and low flows, clearing of large woody debris, and inadequately sized culverts for fish passage (Thurston County et al. 1995). Long reaches of Woodland Creek contain little woody debris and few pools. The existing level of development in the basins of both creeks has also caused peak stream flows to nearly double compared to their natural condition. These peak flows contribute to flooding, erosion, turbidity, sedimentation, and degradation of habitat.

Summer low flows have also been identified as a problem in Woodland Creek. Summer low flows that accompany urbanization can reduce habitat by limiting the ability of smolts to migrate to the sound, and can prevent summer-run salmon from migrating upstream. In recent years, Woodland Creek has dried up completely between Lake Lois and Martin Way for up to six months, reducing habitat and productivity (Thurston County 1995; Baranski, personal communication 1998). Woodland Creek is closed year-round to additional consumptive surface water appropriations, in accordance with the *Instream Resource Protection Program for the Deschutes River Basin* (Chapter 173-513 WAC) (Ecology, 1995).

Approximately 5.6 miles of Woodland Creek is accessible to anadromous fish when flows are sufficient. In Woodland Creek, chum, coho, and

chinook salmon spawn primarily below river mile (RM) 3.3. Juveniles may use the entire length of the stream for rearing habitat. Declines in fish populations have been reported in the creek (Thurston County et al. 1995).

Existing Fresh Water Fish Populations

Fish populations likely to be present in Woodland Creek are discussed below.

Chinook (Oncorhynchus tshawytscha). Use of Woodland Creek by chinook is minimal since the stream exhibits very low flows during normal chinook migration periods. Although sustained natural production does occur in some streams, the status of this stock depends largely on hatchery production.

Coho (O. kisutch). South Puget Sound coho inhabit streams draining into the inlets and passages throughout Thurston County. County streams have been heavily planted with hatchery coho. As a result of uncertainties regarding the distinctions between distributions of native and introduced stocks, the stock in this area has been designated as a probable mixture of native and non-native stocks. Although the stock was considered healthy at the time of the 1992 Washington State Salmon and Steelhead Stock Inventory (SASSI report), timber harvesting, agriculture, and urban development activities are affecting coho, and there is widespread evidence of habitat degradation. Since the release of the SASSI report, the status of coho stocks in south Puget Sound has been changed from "healthy" to "depressed."

Chum (*O. keta*). Woodland Creek is one of the primary chum spawning tributaries to Henderson Inlet and throughout Thurston County. Hatchery chum have been planted in the creek, resulting in a mixed stock; however, Woodland Creek may still support a native run. Only a few chum spawner surveys have been conducted since 1980. Adult chum enter the stream from October through November. Following incubation and fry emergence, juveniles outmigrate from mid- to late February into May.

Resident Fish. Other species of fish of concern that are found in Thurston County fresh waters include Dolly Varden/Bull trout, Olympic mudminnow, prickly sculpin, pygmy whitefish, and sea-run cutthroat. These species are present in suitable habitat in streams throughout the basin, and are not precluded from Woodland Creek.

Sensitive/Unique Species

Three salmonid species potentially affected by the project, chinook salmon, bull trout, and coho salmon, are listed or are candidates for listing under the Endangered Species Act (ESA). These species may or may not be present in Woodland Creek. Chinook salmon are "threatened" and impacts to the species are regulated by NMFS. Bull trout are also "threatened" but impacts to this species are regulated by USFWS. Coho salmon are candidates for listing (under NMFS). Critical Habitat has been designated for chinook salmon and determined "unwarranted" for bull trout.

4.6.2 New Information

New information relating to fish resources has not been identified

4.7 SHELLFISH RESOURCES

Described below are the shellfish resources present in the Hawks Prairie area.

4.7.1 Summary of 1998 Final SEIS

The 1998 Final SEIS summarized shellfish resources in four marine zones: Budd Inlet, Dana Passage, Devil's Head, and Nisqually Reach. Henderson Inlet and the Nisqually Reach have the greatest potential to be impacted by the Hawk's Prairie Reclaimed Water Project; therefore, only those areas will be described in this section. Shellfish regulations, factors affecting public health, and tribal rights were described in the 1996 Final PEIS.

Potentially harvestable shellfish in Henderson Inlet include clams, mussels, scallops, and/or oysters. Areas of aquaculture operations are

also identified in the inlet. The Devil's Head/Nisqually Reach regions contain abundant shellfish populations including: crab and shrimp; sea cucumbers and/or urchins; geoducks; and limited areas of clams, mussels, scallops, and/or oysters. Commercial shellfish harvest in the Devil's Head/Nisqually Reach zone primarily involves Pacific oyster, Manila clam, and geoduck species. Tribal harvest of geoducks in this area has increased in the past several years following judicial delineation of tribal shellfishing rights in 1994.

Recreational shellfishing in the area occurs at a number of public shellfishing beaches along the shoreline. Beaches in the Nisqually Wildlife Refuge are unclassified. This area is reportedly experiencing contamination from failing on-site sewage systems in the adjacent development.

The 1998 Puget Sound Ambient Monitoring Program results indicated gradually increasing levels of fecal coliform bacteria in the waters of south Puget Sound, particularly in Henderson Inlet.

4.7.2 New Information

Fecal contaminants are degrading the quality of water in Henderson Inlet and Nisqually Reach, prompting the state Department of Health (DOH) to close commercial shellfish harvesting in two areas. In October and November 2000, nine acres in Henderson Inlet and 74 acres in Nisqually Reach were closed to shellfish harvesting (Thurston County Environmental Health Division, January 2001). Washington state law requires counties to address shellfish harvesting closures by forming "Shellfish Protection Districts." As noted in Section 4.3.2, urban stormwater runoff in Woodland and Woodard Creeks contributes significant bacterial loads to Henderson Inlet (Thurston County et al., 1995).

4.8 NOISE RESOURCES

The following section describes noise resources in the Hawks Prairie implementation area.

4.8.1 Summary of 1998 Final SEIS

Thurston County regulates noise in accordance with Washington State standards (Chapter 173-60 WAC). The City of Lacey has developed its own noise standards which are consistent with Washington State standards. Construction noise within the City of Lacey is limited to the hours between 7 a.m. and 9 p.m. Limits on operational noise will be determined by the receiving property's Environmental Designation for Noise Abatement (EDNA). All sites fall within the jurisdiction of the City of Lacey.

4.8.2 New Information

Proposed facility locations and pipeline routes traverse various types of land uses including residential, commercial, light industrial, and open spaces. Noise receptors are similarly varied and include local residents, workers in commercial establishments, and users of institutional and recreational facilities.

Site 1

Site 1 is zoned Mixed Use High Density Corridor (MHDC). This site is currently undeveloped and is not a source of noise in the area. Off-site sources of noise in the vicinity of Site 1 are predominantly traffic-related, as this site is adjacent to Martin Way and in close proximity to Marvin Road and Interstate-5.

Receptors are located to the north of the site. Thirteen single-family homes are located adjacent to the north property line of Site 1. Intermittent noise sources from these homes include vehicles, lawn mowers, power tools, human voices, and other typical residential noises. Other potential receptors are located to the east of the site. No sensitive receptors (e.g., hospitals, nursing homes, day-care centers) exist within approximately one-half mile of Site 1.

Sites 2 Center and 2 East

Sites 2 Center and 2 East are zoned Moderate Density (MD) Residential. These sites contain single-family residences on large lots. Intermittent noise sources from these homes include vehicles, lawn mowers, power tools,

human voices, and other typical residential noises. Off-site sources of noise are generally similar to on-site sources, and also include vehicle noise from nearby roadways including 15th Avenue NE to the north and Interstate-5 to the south.

Receptors are located near Sites 2 Center and 2 East. One single family home is located within approximately 300 feet of Site 2 Center to the west; no homes are located within 200 to 300 feet to the north or south. The home on Site 2 Center is located within approximately 300 feet of Site 2 East to the west; no homes are located within 200 to 300 feet to the north, east, or south. No sensitive receptors exist within approximately one-half mile of Site 2 Center and 2 East.

Site 2 West

Site 2 West lies within the jurisdiction of the City of Lacey and is covered by two different zoning designations. The west portion of the property is zoned Open Space/Institutional, while the east portion of the property is zoned Low Density (LD) Residential. The property is currently undeveloped and is not a source of noise in the area. Off-site sources of noise include vehicle noise from nearby roadways including 15th Avenue NE and Interstate-5, and typical residential noises such as lawn mowers, power tools, and voices.

Receptors are located within 200 to 300 feet of the Site 2 West property boundaries. There are approximately 25 single-family residences to the east of the site and 17 single-family residences to the west. No residences or other receptors are located to the south of the site.

Sites A, B, and C

Sites A, B, and C are currently undeveloped and are not a source of noise in the area. Off-site sources of noise in the vicinity of these sites include vehicle noise from nearby roadways, including Hogum Bay Road (Sites A and B), and Marvin Road (Site C).

No receptors are located within approximately 200 feet of Site A. Commercial/industrial buildings are located within 200 feet of the east and south property lines and the southwest corner of Site B. Two commercial/industrial buildings are located to the west of Site C; one at the northwest corner and one at the southwest corner. No sensitive receptors exist within approximately one-half mile of Sites A, B, or C.

Site D

Site D is an active gravel mine. Noise sources from this site include gravel extraction, hauling equipment, heavy trucks, and personal vehicles. No sensitive or other receptors are currently located within approximately one-half mile of this site. Off-site sources of noise in the vicinity of Site D consist predominantly of vehicle noise from nearby roadways including Carpenter Road and Britton Parkway.

Site E

Site E is the location of the former waste process water disposal area of the Olympia Cheese processing facility. This facility is currently not actively processing cheese. Noise from this site is currently limited to vehicle and truck traffic into and out of the site. Off-site sources of noise in the vicinity of Site E consist predominantly of vehicle noise from Hogum Bay Road NE. No sensitive receptors are currently located within 200 feet of Site E.

4.9 LAND AND SHORELINE USE

The following section describes land and shoreline use in the Hawks Prairie implementation area.

4.9.1 Summary of 1998 Final SEIS

Described below is a summary of the land and shoreline use information presented in the 1998 Final SEIS.

Land Use

In October 1994, the City of Lacey and Thurston County jointly prepared the *Land Use Plan for the Lacey Urban Growth Area*. Goal Q1 of the plan addresses the siting of essential public

facilities and indicates that the city will maintain consistency with countywide planning policies for the siting of essential public facilities. These policies are codified in the city's zoning code, Title 16 of the Lacey Municipal Code.

Chapter 16.66 of the zoning code identifies permitted uses and establishes performance standards and design standards for special uses, including wastewater treatment facilities and wastewater transmission systems. Special uses are considered a conditional use in all zones and require a public hearing and a permit.

Within unincorporated portions of the Lacey Urban Growth Management Area (UGMA), zoning is regulated under the *Thurston County Lacey Urban Growth Area Zoning Ordinance*, Chapter 21.66 of the Thurston County Code. That code also classifies wastewater treatment facilities and transmission systems as special uses, which are considered a conditional use in all zones.

The 1998 Final SEIS described a number of "locations" that were being considered for use as reclaimed water satellite plants, groundwater recharge facilities and associated constructed wetlands polishing ponds, and use areas. Among the locations was an 845-acre area designated as HP-A that was evaluated for potential use as a site for groundwater recharge facilities and associated constructed wetlands polishing ponds. The HP-A location, north and west of Marvin Road NW on the north side of Interstate-5, was largely vacant with areas of Scot's broom and some areas of second growth coniferous forest. HP-E was a 16-acre parcel located west of Marvin Road between Interstate-5 and Martin Way NE. This site was considered for siting of a reclaimed water satellite plant. HP-F, the former Hawk's Prairie landfill, was evaluated as both a potential reclaimed water satellite plant location and a use area. HP-G and HP-H are the contiguous Merriwood and Vicwood Links golf courses, west of Meridian Road NE. These sites were evaluated as possible use areas.

Shorelines

All shorelines in Thurston County, including those in incorporated cities, are regulated by the *Shoreline Master Program for the Thurston Region*, which implements the Washington State Shoreline Management Act of 1971. Wastewater facilities, including reclaimed water satellite plants, pipelines, constructed wetlands polishing ponds, and recharge basins are classified as utilities under the *Shoreline Master Program*.

4.9.2 New Information

Described below is new information obtained since the publication of the 1998 Final SEIS.

Planning Areas

The *Land Use Plan for the Lacey Urban Growth Area* was amended subsequent to the 1998 Final SEIS with the most recent modifications adopted January 2000. Under the plan, the City of Lacey and Lacey's Growth Management Area are divided into eight planning areas. Alternative project components are located within four of these planning areas: Pleasant Glade, Hawks Prairie, Central, and Tanglewilde/Thompson Place.

Pleasant Glade Planning Area

The Pleasant Glade Planning Area is bounded on the north by the Lacey's Urban Growth Area, on the west by Sleater-Kinney Road and Chehalis Trail, on the south by Interstate-5, and on the east by Carpenter Road and Draham Road. Only about one-third of the area is within the City of Lacey; the remainder is unincorporated.

The Pleasant Glade Planning Area is almost exclusively residential, with the exception of 102 acres that is zoned Central Business District. There are no other designated commercial uses within the planning area. Residential development consists of single family and multifamily residences and one large mobile home park.

Hawks Prairie Planning Area

The Hawks Prairie Planning Area includes the extreme northeast portion of the Lacey Urban Growth Area. It is bounded by Puget Sound on the north, Carpenter Road and Draham Street on the west, Interstate-5 on the south, and Meridian Road on the west. The majority of the Hawks Prairie Planning Area is within the existing municipal boundaries of the City of Lacey; however, a portion of the area is within unincorporated Thurston County.

The City of Lacey considers the Hawks Prairie Planning Area has the greatest potential for development. It has extensive vacant land resources and has historically served a wide range of land uses, such as industrial development, commercial development, and single family residential development including the Beachcrest and Nisqually Crest developments. Under the comprehensive plan, the emphasis for future growth in the Hawks Prairie Planning Area will be placed on residential uses; however, additional commercial and light industrial uses will also be encouraged.

Central Planning Area

The Central Planning Area is located in the central, older portion of the City of Lacey. It is bounded by Interstate-5 on the north, Weyerhaeuser railroad right-of-way on the west, 39th and 37th Avenues to the south, and Carpenter Road to Alanna Drive to Rudeell Road on the east. All of the Central Planning Area is located within the incorporated limits of the City of Lacey.

The Central Planning Area is the oldest area of the city. It contains the majority of the city's commercial land base and contains the majority of the Central Business District. The oldest residential neighborhood in Lacey, Lacey Villa, is located within the Central Planning Area, which is considered the city's historic district.

The primary purpose of the Central Planning Area is to serve regional commercial needs. The area also has an extensive residential base, including a significant amount of affordable housing in the form of older housing units.

Tanglewilde/Thompson Place Planning Area

The Tanglewilde/Thompson Place Planning Area is bordered by Interstate-5 on the north, Carpenter Road on the west, the Burlington Northern Santa Fe right-of-way and Union Mill Road on the south, and Marvin Road on the east. Most of the planning area is located outside of the City of Lacey in unincorporated Thurston County.

The Tanglewilde/Thompson Place Planning Area is comprised primarily of two older established neighborhoods dating from the 1950s and 1960s, the Tanglewilde Planned Unit Development and Thompson Place. The planning area also includes sections along Martin Way and the intersection of Marvin Road and Interstate-5. The purpose of this planning area is to promote both residential development and commercial development.

Land Use Designations

The *Land Use Plan for the Lacey Urban Growth Area* contains land use designations for properties in each of the planning areas. Properties that would potentially be affected by alternative project components have the following land use designations.

Business Park (BP). This designation is intended to provide an environment exclusively for and conducive to the development and protection of a broad range of business park activities, including modern administrative facilities, research institutions, and specialized manufacturing organizations.

Central Business District (CBD). This designation covers the financial and business hub of the Lacey Community. It is a designation intended to attract regional retail shopping facilities and major office complexes, along with specialty retail business, support services, urban residential, hotel, and institutional uses. It is designed for intensive use while promoting a pedestrian friendly and aesthetically attractive commercial environment.

General Commercial (GC). This is a commercial designation to provide for a full range of commercial uses and particularly those uses dependent more heavily on vehicle access rather than pedestrian access. This designation serves commercial uses that do not require location in more specialized commercial districts, or that would be inappropriate in such other districts.

High Density Residential (HD). This is an urban residential classification to be applied to areas intended to accommodate the highest intensity of residential uses at a range of between six to 20 units per acre. It is applied in areas having a full range of urban services, utilities, and mass transit options capable of serving the needs of intensive residential use.

Low Density Residential 0-4 (LD 0-4). This is an urban residential classification with the lowest urban density intended for areas located adjacent to existing single family subdivisions with lots of 7,000 square feet or greater, and those areas with wetlands or other known environmental sensitivities. The designation is intended for single family use at a density range of up to four units per acre.

Low Density Residential 3-6 (LD 3-6). This is an urban residential classification that is applied in areas intended primarily for single family residential use at a range of between three to six units per acre.

Light Industry (LI). This is an industrial designation designed to provide for light industrial activities protected from other uses that may interfere with the purpose and efficient functioning of an industrial area.

Moderate Density Residential (MD). This is an urban residential designation that is applied to areas intended for mixed residential uses at a range of between six and 12 units per acre. It is applied to areas that have necessary levels of urban services and utilities as well as mass transit options.

Mineral Extraction District (ME). This is a resource designation designed to provide for mineral extraction activities of local significance over the short term. This designation implements mineral resource policies of the Environmental Protection and Resource Conservation element of the Comprehensive Plan.

Mixed Use High Density Corridor (MHDC). This designation is applied to Martin Way strip commercial area where Lacey intends for the strip to evolve into a mixed commercial high density residential corridor.

Open Space Institutional District (OS-I). This designation provides for the social needs of the community relating to public services, open space, and institutions, whether publicly or privately sponsored. It designates land devoted to existing or future use for cultural, education, or other similar activities, and is used to designate parks, open space, and other natural and physical assets of the community.

Existing Land Use by Alternative

Summarized below is the existing land use at the proposed facility locations in the Hawks Prairie implementation area.

Reclaimed Water Satellite Plant Sites. All alternative reclaimed water satellite plant sites are located within the land use jurisdiction of the City of Lacey. Existing land use at the alternative reclaimed water satellite plant sites is summarized in Table 4-2.

The raw wastewater supply pipeline and solids return pipeline for Site 1 would extend from the Martin Way Pump Station to Site 1. The pipelines would be constructed in existing Martin Way right-of-way. The alignment of the pipelines would be essentially the same as that of the raw wastewater supply pipeline and solids return pipeline identified in the 1998 Final SEIS as HP-FM-1 and HP-SL-2. The pump station is located in a portion of the Central Planning area with a land use designation of Central Business District. The pipelines would also pass through areas designated as Open Space-Institutional and Mixed Use High Density Corridor.

Table 4-2. Reclaimed Water Satellite Plant Sites Existing Land Use

SITE	PLANNING AREA	LAND USE DESIGNATION	DESCRIPTION
Site 1	Tanglewilde/Thompson Place	MHDC	Currently undeveloped. Located in area of commercial strip development fronting Martin Way NE. Property abuts residential development on the north.
Site 2 East	Pleasant Glade	MD	Currently occupied by one single family residence. Surrounding area is characterized by low density single family residential development.
Site 2 Center	Pleasant Glade	MD	Same as Site 2 East. Site 2 Center is adjacent to Site 2 East.
Site 2 West	Pleasant Glade	LD 0-4, OS-I	Currently undeveloped with mixture of wooded and cleared areas. Surrounding area is characterized by low density single family residential development. Twenty-one single family residences are adjacent to property.

The raw wastewater supply pipeline and solids return pipeline for Sites 2 East, Central, and West would extend from the Martin Way force main to the Zone 2 sites. The pipelines would be constructed in existing road rights-of-way along Interstate-5 and easements for the Martin Way Pump Station force main. The force main would be accessed in a portion of the Pleasant Glade Planning area with a land use designation of Central Business District. The pipelines would also pass through areas designated as Open Space-Institutional, High Density Residential, Moderate Density Residential, Low Density Residential (0-4).

Groundwater Recharge Basin/Constructed Wetland Polishing Pond Sites and Associated Conveyance Systems. All alternative groundwater recharge basin/constructed wetland polishing pond sites are located within the land use jurisdiction of the City of Lacey. Existing land use at the alternative groundwater recharge basin/constructed wetland polishing pond sites is summarized in Table 4-3.

All of the conveyance system alternatives would be constructed in existing road rights-of-way and/or City of Lacey utility rights-of-way.

Conveyance system alternatives 1A, 1B, 1C, and 1E would share a common alignment except for the northerly most portion. From the reclaimed water satellite plant alternative Site 1, the conveyance system alignments would pass through commercial areas in the Tanglewilde/ Thompson Place Planning Area designated as Mixed Use High Density Corridor and General Commercial. They would follow an existing City of Lacey utilities right-of-way north under Interstate-5 into the Hawks Prairie Planning area passing though areas designated as Central (Hawks Prairie) Business District, Light Industry, and Open Space-Institutional.

Conveyance systems 2A, 2B, 2C, 2E, 2AD, 2BD, 2CD, and 2CE have similar alignments. From the Zone 2 reclaimed water satellite plant sites in the Pleasant Glade Planning Area, the conveyance systems would pass through areas designated as Low Density Residential 0-4, Medium Density Residential, High Density Residential, and Open Space-Institutional. The conveyance system alignments then proceed through the Hawks Prairie Planning Area en route to the alternative groundwater recharge basin/constructed wetland polishing pond sites passing by or through areas designated as Low

Density Residential 3-6, Mineral Extraction, Central (Hawks Prairie) Business District, Business Park, Light Industry, and Open Space-Institutional.

Use Areas. All use areas currently under consideration are in the Hawks Prairie Planning Area. The use areas described in Table 4-4.

Table 4-3. Groundwater Recharge Basin/Constructed Wetland Polishing Pond Sites Existing Land Use

SITE	PLANNING AREA	LAND USE DESIGNATION	DESCRIPTION
Site A	Hawks Prairie	LI with OS-I on eastern boundary	Currently undeveloped and clear-cut. No residential development within 0.5 miles of site.
Site B	Hawks Prairie	LI with OS-I in northwest corner	Currently undeveloped and forested. No residential development within one-half mile of site. Commercial development located north, east, and south of property.
Site C	Hawks Prairie	LI with OS-I in middle and south part of property and along eastern border.	Currently undeveloped. Some forested areas and a small wetland on property. Two residential developments are located within 0.25 miles of site.
Site D	Hawks Prairie	BP with OS-1 in southwestern portion of property	Site currently developed as an active gravel mine.
Site E	Hawks Prairie	OS-I with LI on northern and eastern fringe	Site currently developed as process wastewater disposal area for the Olympia Cheese facility. A residential development exists approximately 0.4 miles to the east.

Table 4-4. Identified Potential Use Areas

USE AREA	LAND USE DESIGNATION	DESCRIPTION OF USE
Meridian Campus Roadway	OS-I	Irrigation for roadway landscaping.
Meridian Neighborhood Park	OS-I	Irrigation of landscaping within City of Lacey planned future public park; site of park not yet identified.
Meridian Campus Park	BP	Irrigation of landscaping within business park.
Britton Parkway	HPBD, BP	Irrigation of roadway landscaping to be planted after Britton Parkway widening project.
Britton Parkway Park	OS-I	Irrigation of landscaping within City of Lacey planned future public park
Thurston County Waste and Recovery Center Use Area	LI	Irrigation of landfill cap and washing of vehicle and equipment at solid waste handling facility.
Merriwood/Vicwood Golf Courses	LD, HD, OS-I	Irrigation of fairways, greens, and other landscaping at existing golf courses. May also involve storage of reclaimed water in open impoundments.

4.10 PARKS AND RECREATION

Described below is a summary of the recreational facilities present in the Hawks Prairie area.

4.10.1 Summary of Previous EIS

The 1998 Final SEIS noted that there are several parks and recreational facilities in the general project area owned and maintained by Thurston County and the City of Lacey. These facilities are managed under applicable City and County park and recreation plans, including the City of Lacey's 1997 *Comprehensive Plan for Outdoor Recreation* and the *Thurston County Comprehensive Parks, Recreation, Preserve, and Trails Plan 2015* (1996). These plans establish goals and policies targeted at managing park and recreation facilities, and they address existing facilities, identify future park and recreation needs, and establish plans for future park land acquisition.

The 1998 Final SEIS disclosed that the City of Lacey had identified the need for acquisition of a 100-acre site for a community park in north Lacey; a site had not been identified as of winter 2000. Recreational facilities identified in the Hawks Prairie RMB in the 1998 Final SEIS included the following:

- Merriwood Golf Course/Vicwood Links;
- Tanglewild Park, a private community park associated with a residential subdivision;
- Tolmic State Park;
- The proposed Lacey/Interstate-5 Trail from the Martin Way/Interstate-5 interchange west to the vicinity of Lilly Road along the south side of Interstate-5; and
- An east-west wildlife corridor with an informal walking path, located in the vicinity of Merriwood Golf Course/Vicwood Links.

Other existing and planned future park and recreation facilities located at a greater distance from the project area include the Woodland Creek Trail along the Woodland Creek corridor, and Woodland Creek and Lake Lois Parks, along Woodland Creek in the vicinity of Steilacoom Road.

Refer to page 9-107 and Figure 9-27 in the 1998 Final SEIS for additional information.

4.10.2 New Information

The January 1997 City of Lacey *Comprehensive Plan for Outdoor Recreation,* as identified in the 1998 Final SEIS, remains the City's most current parks and recreation planning document. The project area is located in portions of planning areas 1, 2, 8, and 10 as defined by this Plan. According to City staff, there have been no new park and recreation facilities constructed since 1998 (Sheler, personal communication, 2000). Since 1998, however, there has been one additional facility planned in the project area. This facility is a new athletic complex at the corner of Marvin Road NE and Steilacoom Road. The facility is proposed to include 67 acres with 6 soccer fields and 5 baseball/softball fields. Phase 1 construction is scheduled to begin in 2001 (Sheler, personal communication, 2000).

In addition to the previously discussed park facilities, there are 7 schools in the project area that provide some recreational amenities (City of Lacey, 1997). These include the following:

- Chinook Middle School (4301 6th St. NE),
- North Thurston High School (600 Sleater Kinney Rd. NE),
- Nisqually Middle School (8100 Steilacoom Road),
- Olympic View Elementary School (1330 Horne Avenue NE),
- Lydia Hawk Elementary School (7600 5th St. SE),
- River Ridge High School (8929 Martin Way E), and

- New Century High School (5900 54th Ave. SE).

These schools have a variety of athletic fields, gymnasiums, running tracks, playgrounds, and multi-purpose courts that are open to the public during non-school hours.

The future parks identified in the City of Lacey's 1997 Plan for Planning Area 10 are Meridian Campus Park North and South (Meridian Park and Meridian Neighborhood Park) with a combined total acreage of over 29 acres. While the City has identified sites and the land has been dedicated for these parks, they have not been developed (Sheler, personal communication, 2000). These two parks are in addition to a 100-acre park the City of Lacey has identified as a need in north Lacey as disclosed in the 1998 Final SEIS, and discussed above.

Other potential park and recreation amenities in the project area include a walking path through a designated 49-acre east-west wildlife corridor located in the vicinity of the Meridian Campus development. According to City of Lacey staff, this walking trail is not publicly owned or maintained by the City (Sheler, personal communication, 2000). The establishment of Britton Parkway Park, another proposed 20-acre park in the vicinity of the recently-constructed Britton Parkway, is uncertain at this time as land has not been dedicated to the City for this facility (Sheler, personal communication, 2000).

The City of Lacey has designated a number of roadways in the project area as Class 2 bikeways. Most major arterials are included in this designation. Class 2 bikeways are defined as roads with an existing or proposed 5-foot bike lane with a delineated stripe (McGuin, personal communication, 2000). These roads include most major arterials in the project area: Britton Parkway, Hogum Bay Road NE, West Mall Drive S (now Galaxy Drive), portions of Marvin Road NE, portions of Martin Way E, Carpenter Road SE, and 15th Avenue NE. Currently, there are improved bike lanes on portions of Hogum Bay Road NE, Marvin Road NE, Martin Way E, Britton Parkway, and Galaxy Drive.

4.11 AESTHETICS AND VISUAL RESOURCES

Described below are the aesthetic resources present in the Hawks Prairie area.

4.11.1 Summary of 1998 Final SEIS

Visual resources and aesthetics related to the project and surrounding properties were described in the 1998 Final SEIS in terms of scenic quality and viewer sensitivity.

4.11.2 New Information

Visual resources at sites proposed for the new reclaimed water satellite plant and groundwater recharge basin vary depending upon location and existing land uses on and around the project site.

Site 1

Alternative reclaimed water satellite plant Site 1 is located along Martin Way within the jurisdiction of the City of Lacey. This site is located in a primarily commercial/retail area near an interchange of Interstate-5 (Figure 4-1). No views of natural or man-made landmarks are available from this site. Due to its flat topography and cleared condition, no views are available from surrounding areas when looking toward and across this site. The aesthetic character of the neighborhood is urbanized commercial.

This site is currently undeveloped and contains only weedy vegetation. It is bounded to the south along its south border by Martin Way. south of Martin Way are commercial/industrial businesses. The site is bounded to the east by undeveloped land and commercial businesses, to the west by commercial/industrial businesses; and to the north by a residential development. Approximately 13 homes are adjacent to the north boundary of Site 1.

Site 2 East

Alternative reclaimed water satellite plant Site 2 East is located along 15th Avenue NE within the

jurisdiction of the City of Lacey. This site is more rural in character than Site 1 and currently contains a single private residence. The Site 2 East property is lower in elevation than the surrounding lots and is also wooded along its east, west, and south borders. This site is located in a residential area consisting of large lots with single family homes (Figure 4-2). The aesthetic character of the neighborhood is rural residential.

Site 2 Center

Alternative reclaimed water satellite plant Site 2 Center is located along 15th Avenue NE within the jurisdiction of the City of Lacey. This site currently contains a single private residence. The Site 2 Center property is upslope to the west of Site 2 East and is wooded on its east, west, and south borders. This site is located in a residential area consisting of large lots with single family homes (Figure 4-2). The aesthetic character of the neighborhood is rural residential.

Site 2 West

Alternative reclaimed water satellite plant Site 2 West is located along 15th Avenue NE within the jurisdiction of the City of Lacey. This site is wooded along its east border to approximately the midpoint of the property; the eastern portion of the property is zoned open space/institutional. The west side is partially cleared and is zoned for residential uses. Site 2 West is currently undeveloped (Figure 4-3). Single-family housing developments are located adjacent to this site to the west and east; 21 residences are directly adjacent to the property line. The south property line is bordered by an undeveloped, vegetated parcel. The aesthetic character of the immediate neighborhood is suburban residential surrounded by rural residential.

Site A

Groundwater recharge basin/wetland polishing pond Site A is an approximately 41-acre site located at the terminus of Hogum Bay Road NE in the City of Lacey. This site has been logged and is currently covered with weedy vegetation and shrubs (Scot's Broom is a dominant species). The southern portion of this site is also heavily littered with household debris including appliances and furniture. No structures currently exist on this site. There is no residential development within 1/2 mile of this location and the site is not currently visible from any public roadway. Approximately 1/8 mile south of this site is the former Olympia Cheese manufacturing facility. The aesthetic character of the neighborhood is generally rural and undeveloped (Figure 4-4).

Site B

Groundwater recharge basin/wetland polishing pond Site B is an approximately 41-acre site that contains second growth forest including significant stands of Garry oak. No structures currently exist on this site. This site is isolated from residential developments; the eastern boundary is adjacent to Hogum Bay Road. Light industrial development exists to the east and south of this site, and the former Olympia Cheese processing facility is located to the north. The aesthetic character of the neighborhood is industrial/commercial interspersed with undeveloped wooded lots (Figure 4-4).

Site C

Groundwater recharge basin/wetland polishing pond Site C is an approximately 65-acre site that contains third growth forest and a small wetland area. No structures currently exist on this site. Industrial/commercial development exists to the north and west of Site C. Two residential developments are located within 1/4 mile to the west of Site C but are buffered visually from the site by a wooded area between the developments and Marvin Road. The aesthetic character of the neighborhood is rural and undeveloped (Figure 4-4).

Site D

Groundwater recharge basin/wetland polishing pond Site D is an approximately 67-acre site that contains a forested area along the west edge, and an active gravel mine and associated operations on the remainder of the site. The north edge of the site is bordered by Britton Parkway and the east edge of the site is bordered by Carpenter Road NE. Across Britton Parkway is a private

driveway leading to a residential area. To the south is industrial development including Central Reddi-Mix Concrete and Olympia Sand and Gravel. The aesthetic character of the neighborhood is generally industrial surrounded by rural residential (Figure 4-2).

Site E

Site E is an approximately 30-acre site that contains the waste process water disposal area for the former Olympia Cheese processing facility. No structures are present on the property proposed for the recharge basin and polishing ponds. Several industrial-style buildings and other structures associated with Olympia Cheese are present to the east of the site (Figure 4-4). Commercial/industrial buildings exist opposite the southeast corner of Site E and a residential development exists approximately 3/8 mile to the east. Both the commercial/ industrial buildings to the southwest and the residential area are buffered from Site E by vegetation and/or distance. The aesthetic character of the neighborhood is industrial/commercial interspersed with undeveloped wooded lots.

4.12 HISTORIC AND CULTURAL PRESERVATION

4.12.1 Summary of 1998 Final SEIS

During preparation of the 1998 Final SEIS, the Washington State Office of Archaeology and Historic Preservation (OAHP) was consulted concerning possible historic and cultural resources in the project area. This analysis included a review of the National Historic Landmarks register, National Register of Historic Places Determined Eligible for the National Register, and Washington State Register of Historic Places. A review of known cultural resource sites was also conducted.

The Final SEIS also summarized applicable cultural and historic resource regulations, including Section 106 of the National Historic Preservation Act of 1966 and implementing regulations as well as Washington State regulations, which require and monitor implementation of federal regulations.

As noted in the Final SEIS, no historic or cultural resources were recorded within the direct activity areas identified for the Hawks Prairie RMB. One site approximately 0.75 miles northeast the project site, on the Nisqually Reach of Puget Sound, was identified in the Final SEIS and consisted of shell deposits on the soil surface.

4.12.2 New Information

A historic and cultural resources overview was performed for the two proposed satellite reclamation plant zones, the five proposed polishing pond and recharge facility sites, as well as the conveyance line routes. A literature review and records search was conducted along with consultation with the potentially-affected Squaxin Island and Nisqually Tribes.

The Hawks Prairie Reclaimed Water Project falls mainly within an area used by hunter-fisher-gatherer groups for hunting and plant collecting as long ago as 12,000 to 7,000 years. It is believed that hunter-fisher-gatherer groups actively managed the prairie grasslands in this area over the past 5,000 to 6,000 years. Nisqually and Squaxin Island peoples continued to use the Hawks Prairie area through the mid-1800s. Most tribal members eventually moved to and settled on either the Nisqually Tribe or Squaxin Island Tribe reservation lands. The first Euroamerican settlers in this area arrived in 1833 as part of the Hudson's Bay Company operations; the first euroamerican to settle within the project area, Freeman W. Tyrell, settled in the area in 1849 (Figure 4-6).

Sites 2 West, 2 Center, and 2 East are located on a glacial outwash terrace that slopes up from the Woodland Creek floodplain to an elevation approximately 40 feet above the floodplain. A small active spring is recorded 2,900 feet east of Woodland Creek. Hunter-fisher-gatherers may have utilized Woodland Creek to trap salmon

and may have used the small spring as a source of potable water (Figure 4-6).

Potential hunter-fisher-gatherer archaeological resources could include deposits such as isolated artifacts, very low density lithic scatters, and artifacts associated with hunting and plant collecting camps that could include hearths, postmolds, cobble pavements, burned animal bone, and stone tools. Historic period archaeological resources could include foundations or refuse dumps that may contain such items as ceramics, bottles, nails, window glass, buttons, and beads.

No hunter-fisher-gatherer or historic period archaeological resources probably eligible for listing in the National Register of Historic Places are recorded for the Hawks Prairie Reclaimed Water Project area. In addition, no structures eligible for listing in the National Register of Historic Places were located within or adjacent to the project boundaries. Examination of the historic inventory forms identified 14 intact structures near or adjacent to proposed project sites (Figure 4-7).

Site 1

Site 1 is entirely within the historic 1854 boundaries of Hawks Prairie and has a high probability for hunter-fisher-gatherer archeological resources. Site 1 is within an area of recent road construction and modern residential development and has a low probability for historic period archaeological resources. One unevaluated historic structure exists within 0.25 mile of Site 1 (Figures 4-6 and 4-7).

Sites 2 West, 2 Center, and 2 East

Sites 2 West, 2 Center, and 2 East are located on a broad terrace above the Woodland Creek floodplain and have a low probability for hunter-fisher-gatherer archaeological resources. There is also a low probability for historic period archaeological resources associated with agriculture and logging due to modern residential construction and road building. No historic structures have been recorded within the project area. Three extant, unevaluated structures have been recorded within 0.25 mile of these sites (Figures 4-6 and 4-7).

Site A

Site A is adjacent to the pre-1854 margin of Hawks Prairie and has a high probability for intact hunter-fisher-gatherer archaeological resources. Site A is within the former Atlas Powder Company property and has a low probability for intact historic period archaeological resources. No historic structures have been recorded on or within 0.25 mile of Site A and no structures are evident in 1999 aerial photographs (Figures 4-6 and 4-7).

Site B

Site B is partially within the pre-1854 boundary of Hawks Prairie and the remainder is adjacent to the pre-1854 and 1854 margin of Hawks Prairie. Site B has a high probability for intact hunter-fisher-gatherer archaeological resources. No probably significant historic structures have been recorded on or within 0.25 mile of Site B and no structures are evident in 1999 aerial photographs (Figures 4-6 and 4-7).

Site C

Site C is adjacent to and within the pre-1854 margin of Hawks Prairie. Site C has a high probability for intact hunter-fisher-gatherer archaeological resources. No probably significant historic structures have been recorded on or within 0.25 mile of Site C and no structures are evident in 1999 aerial photographs (Figures 4-6 and 4-7).

Site D

Site D is adjacent to the margin of the pre-1854 Hawks Prairie and has a high probability for hunter-fisher-gatherer archaeological resources. Site D has a low probability for historic period archaeological resources associated with agricultural or logging activities. Extensive land disturbance related to gravel pit operations have likely destroyed any formerly extant hunter-fisher-gatherer or historic period archaeological resources. No probably significant historic structures have been recorded within Site D; nine extant, unevaluated structures have been

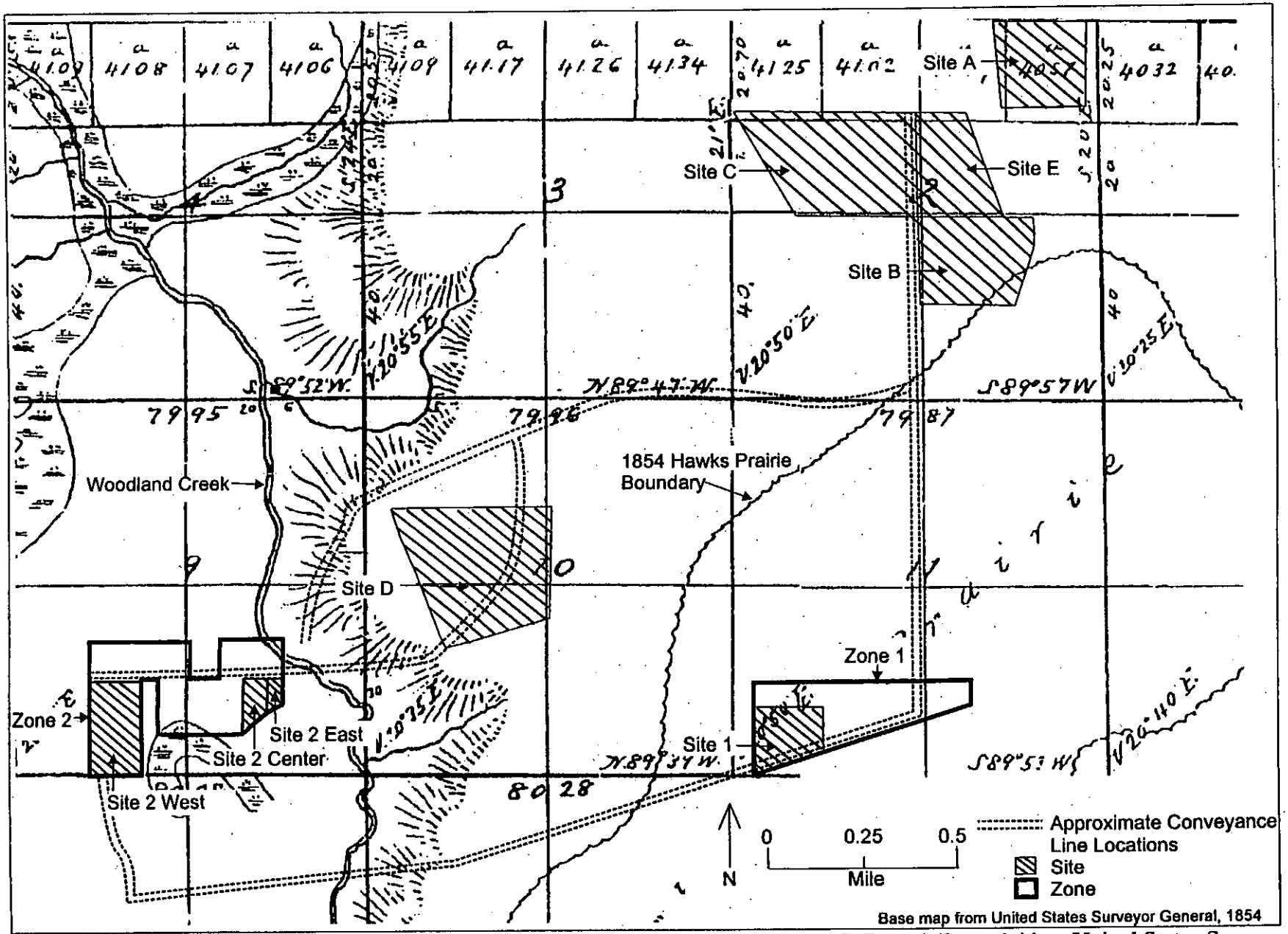

Figure 4-6. Zone 1, Site 1; Zone 2, Site 2 West; Site 2 Center; Site 2 East; and Sites A, B, C, D, and E overlaid on United States Surveyor General map (1854). Also, approximate locations of conveyance lines.

Source: LAAS, 2001

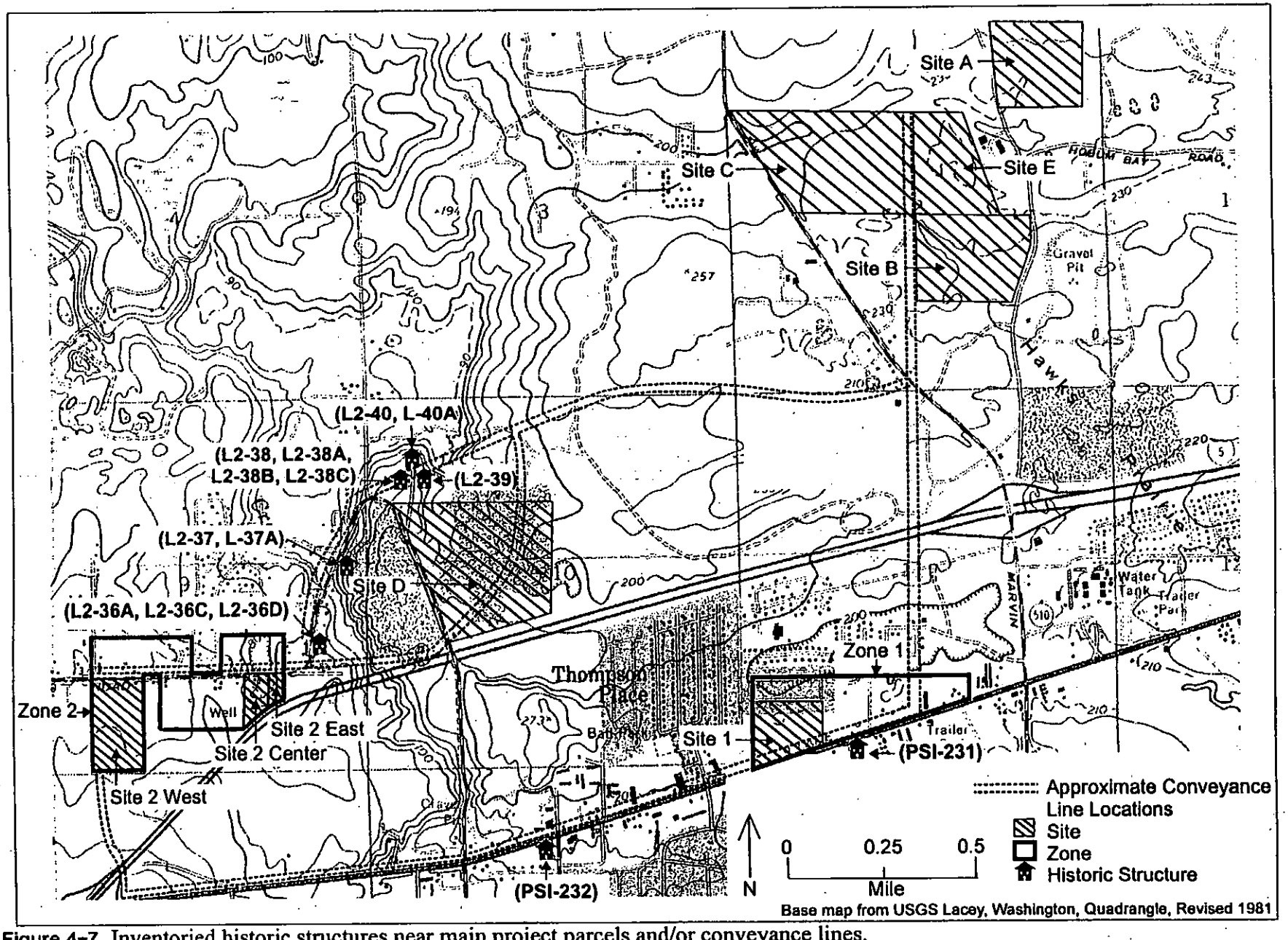

Figure 4-7. Inventoried historic structures near main project parcels and/or conveyance lines.

Source: LAAS, 2001

recorded within 0.25 mile of the site (Figures 4-6 and 4-7).

Site E

Site E is adjacent to the margin of the pre-1854 Hawks Prairie and has a high probability for hunter-fisher-gatherer archaeological resources. Site E has a low probability for historic period archaeological resources associated with logging and commercial activity. No probably significant structures have been recorded on or within 0.25 mile of Site E (Figures 4-6 and 4-7).

Conveyance System

Proposed conveyance lines within or adjacent to the historic 1854 and the larger pre-1854 Hawks Prairie boundaries and the Woodland Creek floodplain would have a high probability for hunter-fisher-gatherer archaeological resources. The majority of the proposed conveyance routes fall within this high probability area (Figure 4-6).

Conveyance line routes in the vicinity of Sites 2 West, 2 Center, and 2 East have a low probability for hunter-fisher-gatherer archaeological resources, while a small portion of the conveyance route along Martin Way has a moderate probability for these resources (Figure 4-6). There is a low probability for historic period archaeological resources along all of the proposed conveyance line routes. Five extant, recorded, unevaluated historic structures are adjacent to the Draham Street Northeast conveyance line; seven extant, recorded, unevaluated historic structures are adjacent to the Britton Parkway conveyance line; and two extant, recorded, unevaluated historic structures are adjacent to the Martin Way Southeast conveyance line (Figure 4-7).

4.13 TRANSPORTATION

Transportation resources in the Hawks Prairie area are described below.

4.13.1 Summary of 1998 Final SEIS

Roads in the project area are largely within the jurisdiction of the City of Lacey, although a small portion of the area along Martin Way is located in Thurston County. The 1998 Final SEIS identified two primary governing transportation plans in the Hawks Prairie RMB; Thurston County's *Transaction 2020* (1997) and the *City of Lacey Transportation Plan* and *Plan Update* (1994 and 1998). These plans are a component of growth management and address issues such as travel demand management, road classification, roadway capacity improvement needs, roadway level of service (LOS), public transportation, and bicycle and pedestrian facilities.

The Final SEIS identified a number of roadways in the Hawks Prairie RMB that could potentially be affected by construction of reclaimed water satellite plants, groundwater recharge facilities, and/or conveyance lines. Among the roadways identified were the following:

- Martin Way SE, a 5-lane major arterial;
- Marvin Road (NE), a 3-lane state route/major arterial; and
- Hogum Bay Rd. NE, a 2-lane major arterial.

The Final 1998 SEIS identified a number of planned transportation improvements by the City of Lacey in the Hawks Prairie RMB, including the following:

- Improvements to the Interstate-5 interchange from Marvin Way to Quinault Road, due to be completed in 2002;
- Improvements to West Mall Drive (now called Galaxy Drive) from Martin Way to Interstate-5, were completed in 1999; and
- Construction of Britton Parkway from Carpenter to Hogum Bay, due to be completed 1999-2004.

The 1998 Final SEIS also noted that Lacey and Thurston County have enacted development guidelines that relate to projects affecting roadways. The City of Lacey imposes "disruption fees" to discourage construction in right-of-ways that have been built or improved in the last 5 years (12.16.055, Lacey Municipal Code). Thurston County requires complete lane

overlay following in-road construction, and no open cuts are allowed at intersections.

4.13.2 New Information

Both Thurston County's *Transaction 2020* (1997) and the *City of Lacey Transportation Plan* and *Plan Update* (1994 and 1998) remain the current transportation planning documents for roadways in the project area. However, there have been some updates to traffic counts in the 1998 City of Lacey Plan, and in Thurston County. Updated traffic counts are shown in Table 4-5.

According to City of Lacey staff, with the many improvements that have taken place in the project area, including the completion of Britton Parkway and Galaxy Drive, and improvements to Marvin Road north of the Interstate-5 interchange, there are no major traffic problems on any area roadways (McGuin, personal communication, 2000). All major roadways and intersections in the project area are operating at acceptable levels of service.

According to Thurston County staff, there are no major planned improvements to Draham Street or NE 15th Avenue and traffic volumes are relatively low, although traffic volumes are expected to increase with the completion of Britton Parkway (Aust, personal communication, 2000).

Table 4-5. 1999 Traffic Volumes Major Project Area Roadways

Road Segment	Classification	Lanes/Shoulders	1999 Traffic Count (Average Daily Traffic)
Hogum Bay Road east of Marvin Road	Arterial	2 lanes, bike lane on east side of Hogum Bay Road, shoulder on west side	4,961
Marvin Road north of Interstate-5	State Route/ Arterial	3 lanes, bike lane in both directions from Interstate-5 to Britton Parkway; 6-foot shoulders north of Britton Parkway	7,147
Marvin Road north of Martin Way	Arterial	3 lanes, limited shoulder on east side, wider shoulder on west side	19,281
Martin Way west of Marvin Road	Arterial	5 lanes, limited paved/gravel shoulder	21,049
Carpenter Road north of Martin Way	Major Arterial	2 lanes, shoulder very limited (less than one foot wide)	1,985
Draham Street[1]	Minor Arterial	2 lanes, limited paved/gravel shoulder	1,468[1]
NE 15th Avenue east of Sleater-Kinney Road	Minor Arterial	2 lanes, limited paved/gravel shoulder	2,649
Martin Way east of Carpenter Road	Arterial	5 lanes, limited paved/gravel shoulder	25,285

[1] Last counts taken in 1993.
Source: City of Lacey, 1999; Aust, personal communication, 2000.

Much of the information on planned transportation improvement projects contained in the 1998 Final SEIS remains current, although some proposed roadway projects have been completed, while others have been proposed to address more recently identified needs (McGuin, personal communication, 2000). Roadway improvements since 1998 include the following:

- In 1999, the Interstate-5 interchange from Marvin Road to Quinault Road was improved;
- West Mall Drive from Martin Way to Interstate-5 has been improved;
- Improvements to Marvin Road between Quinault and Britton Parkway were recently completed; and
- Britton Parkway from Carpenter Road to Hogum Bay Road has been completed.

Potential future roadway projects include the following (City of Lacey, 1999):

- Capacity improvements to Marvin Road south of Interstate-5; and
- Re-alignment of the Carpenter Road intersection with Draham Road.

4.14 PUBLIC SERVICES AND UTILITIES

Described below are the public services and utilities present in the Hawks Prairie area.

~~4.13.1~~4.14.1 Summary of 1998 Final SEIS

Described below is a summary of the public services and utilities discussed in the 1998 Final SEIS.

Wastewater Disposal

Local sewer service and connections to the LOTT system are provided by each local jurisdiction, the cities of Lacey, Olympia, and Tumwater. In compliance with the state Growth Management Act (Chapter 36.70A RCW), each city has adopted policies and procedures in their respective comprehensive land use plans and municipal codes to ensure that local sewer capacity will be available to serve proposed new development.

The City of Lacey maintains a local sewage system that collects and conveys wastewater to a LOTT interceptor located near the intersection of 6th Avenue NE and Sleater-Kinney Road NE. In addition to ensuring availability of adequate sewer capacity concurrent with planned growth, the city's wastewater policies encourage and promote sewering of properties in the McAllister Springs Geologically Sensitive Area to protect the regional drinking water supply it overlies.

Water Supply

Issues such as water service areas, design standards, and service priority for new development are addressed in the North Thurston County Coordinated Waster System Plan (CWSP). The CWSP was adopted in 1986 and updated in 1996.

The City of Lacey provides public water supplies to approximately 38,000 customers in its service area. Lacey operates 17 wells distributed throughout its service area. The City of Olympia also provides public water supplies in portions of the Lacey area. Olympia has a contractual agreement with the City of Lacey to wholesale a maximum of two million gallons per day from McAllister Springs. This water could be used to augment Lacey's water supplies, if needed.

Fire Protection and Emergency Medical Services

Thurston County Fire District #3 provides fire protection and emergency medical services (Medic 1) in the City of Lacey and the Lacey UGMA. Fire District #3 has a total of seven stations within the city and five stations outside of the city limits. Response time varies from four to eight minutes depending on proximity of a call for assistance to a station.

Electricity and Gas

Puget Sound Energy provides electrical and natural gas service to Thurston County, including the Lacey UGMA.

4.14.2 New Information

Listed below are the utilities currently present along the potential conveyance routes.

Britton Parkway. Sewer pipelines, cable, and electrical lines run along the south side of the roadway. Water lines are located along the north side of the roadway.

Draham Street. Water, cable, and electrical lines are located along the south side of the street.

NE 15th Avenue. Water, cable, and electrical lines are located along the south side of the street.

Galaxy Drive. Water and sewer lines are located along this roadway.

LOTT
Wastewater
Resource Management
Plan

CHAPTER FIVE: RECLAIMED WATER SATELLITE PLANT

5.1 IMPACTS

This section discusses the potential impacts associated with the construction and operation of a reclaimed water satellite plant, and the No Action Alternative.

5.1.1 Earth Resources

This section summarized the potential impacts to earth resources.

Summary of 1998 Final SEIS

The majority of earth-related impacts associated with the reclaimed water satellite plant alternatives are associated with construction activities. The extent of the impacts relates to the size of the facility, the area that must be cleared and graded, and the duration of construction.

New Information

Described below is information obtained sine the publication of the 1998 Final SEIS.

Site 1

Construction of a 1 mgd reclaimed water satellite plant will disturb approximately two to three acres during construction. Excavation volumes are estimated to be 2,500 cubic yards, and construction activities are anticipated to last 15 to 18 months. Because this site is located in somewhat of a depression, erosion and sedimentation from the site is anticipated to be minimal.

Operational impacts to earth-resources are not anticipated.

Site 2 East

Impacts resulting from the construction of a reclaimed water satellite plant on this site would be similar to those described for Site 1.

Erosion and minor sedimentation resulting from construction activities is more likely to impact Woodland Creek from this site than from the other proposed locations as it is located approximately 0.2 mile from Woodland Creek. Site 2 East topographically slopes slightly toward the stream.

Site 2 Center

Impacts resulting from the construction of a reclaimed water satellite plant on this site would be similar to those described for Site 2 East. This site is located approximately 0.4 mile from Woodland Creek; however, the site is topographically flatter than Site 2 East and has a lesser potential for sediment to reach the stream.

Site 2 West

Impacts resulting from the construction of a reclaimed water satellite plant on this site would be similar to those described for Site 2 East. This site is located approximately 0.6 mile from Woodland Creek, and would therefore have a lesser potential for sediment to reach the stream than the other Site 2 locations.

No Action Alternative

Impacts to earth resources are not anticipated associated with the No Action Alternative.

5.1.2 Air Resources

Summarized below are the potential impacts to air resources associated with a reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Dust, equipment and vehicle emissions, and asphalt emissions during paving operations would occur during construction. Odor emissions are likely to occur during operation of the treatment plant and associated facilities (e.g., pump stations). Solids handling, the process most likely to produce odors, will be conducted at the Budd Inlet Treatment Plant. Solids would not be processed at reclaimed water satellite plant facilities. Impacts associated with both construction and operation will be greatest where facilities are sited near or next to sensitive receptors (e.g., residential areas).

Odor-causing substances that commonly occur in wastewater consist of both organic and inorganic compounds. The compounds usually arise from biological activity in the wastewater collection and treatment system. The odor-causing compounds generally associated with wastewater collection and treatment systems are hydrogen sulfide (H_2S), ammonia mercaptans, organosulfides, amines and small amounts of phenols, cresols, and esters.

The precise mechanisms that contribute to odor are not well established. However, it has been determined that the olfactory process requires that the compounds be in gaseous form and be in a reduced or unoxidized state. The gaseous concentration is a function of the dissolved concentration, temperature, and pressure.

Most odor-causing compounds form as a result of anaerobic decomposition of organic material containing sulfur and nitrogen. Most sulfides (reduced form of sulfur) are formed by bacteria living in a matrix of filamentous microbes and gelatinous material coating the submerged walls of interceptor pipes, often referred to as the slime layer. The bacteria producing sulfide are strict anaerobes and consequently, live beneath the water surface in gravity sewers and on the pipe walls in forcemains. The bacteria also thrive in sludge and grit deposits found along the bottom of pipes and in unmixed tanks. In order to produce sulfide compounds, the bacteria require a source of sulfur and a food supply. Sulfate, generally abundant in wastewater, is the common sulfur source. Dissolved organic material prevalent in wastewater provides the food supply for the bacteria to flourish.

New Information

Air-related impacts associated with the identified reclaimed water satellite plant sites are described below.

Site 1

During construction, dust, vehicle emissions, and construction equipment emissions will occur at this site. Passing motorists, patrons of nearby commercial facilities, and some residences to the west of the site may detect odors at intermittent points during the construction period. Because these impacts would occur intermittently during allowable construction hours (between 7 a.m. and 9 p.m.) and for the period of construction only (approximately 15 to 18 months), they are not anticipated to be significant.

Impacts to air quality following construction may include odors related to sewage breakdown and facility vehicle emissions. The reclaimed water satellite plant on Site 1 would be designed to handle only the liquid portion of the wastewater stream. Solids would continue to be handled at the Budd Inlet Treatment Plant.

Odor emissions are most likely to occur during periods of increased ambient temperature and at points of turbulence within the collection and treatment processes. Impacts during periods of maximum odor production could negatively affect surrounding residents. The presence and direction of prevailing breezes and the proximity of homes to the reclaimed water satellite plant would influence the degree of impact, and could vary as weather patterns change throughout the year.

Odors may also occur associated with the screenings and grit handling and transport. These

impacts are anticipated to be minor as the screenings and grit will be placed in enclosed containers prior to transport to a landfill facility.

Sites 2 West, 2 Center, and 2 East

Construction impacts related to air quality and odors would be the same as for Site 1. Operational impacts would be slightly different given the rural residential nature of the surrounding properties.

In addition to the operation-related impacts discussed for Site 1, impacts from reclaimed water satellite plant operation at Sites 2 West, 2 Center, and 2 East would likely be more substantial given the larger number of single-family residential properties that are located within 1/4 mile of these sites. Site 2 West is likely to have a greater level of impact to nearby residents than Site 2 East and Site 2 Center because of the 21 properties immediately adjacent to its east and west borders.

No Action Alternative

No impacts to air resources have been identified.

5.1.3 Surface Water Resources

Described below are the potential impacts to surface water resources associated with the reclaimed water satellite plant and the No Action alternative.

Summary of 1998 Final SEIS

Minor sedimentation and erosion will occur during construction. Increased turbidity and reduced dissolved oxygen levels in water bodies can be detrimental to fish habitat. Construction-related impacts are anticipated to be minor and short-term in nature. Operational impacts to surface waters are not anticipated. In the event of a power failure, flows would be temporarily stored or diverted to the Budd Inlet Treatment Plant for treatment and disposal.

Site 1

Site 1 is located approximately 1.5 miles east of Woodland Creek. Runoff to Woodland Creek is unlikely as most runoff originating from the site would enter a topographic depression along the northern boundary of the site. Due to distance and the relatively flat topography at the site, increases in turbidity and sediment, or spill related releases of petroleum products or other construction related contaminants are not anticipated to reach Woodland Creek. Minor sedimentation may enter Woodland Creek during construction of the wastewater pipeline to the site and the solids return pipeline from the site. These pipelines would cross Woodland Creek along Martin Way, and would be jack and bored under the stream to minimize impacts.

No construction-related impacts to marine waters are anticipated.

The potential for long-term impacts to surface waters from development of a reclaimed water satellite plant at Site 1 is limited to increased runoff from impervious surfaces, and potential spills of treatment chemicals used on-site. Treated reclaimed water will be transported to one of the groundwater recharge/wetland polishing sites; reclaimed water will not be discharged at the site. Runoff from impervious surfaces associated with a new reclaimed water satellite plant will be controlled by a site specific runoff control plan which will be designed to reduce the peak volumes and control contaminants in surface runoff. The *Woodard and Woodland Creek Comprehensive Drainage Basin Plan* (Thurston County et. al., 1995) provides guidance regarding control of peak flows, flood protection, and enhancement of fish habitats. Release and cleanup of on-site chemicals will be managed under a site-specific spill response and control plan.

Site 2 West

Construction-related impacts for Site 2 West are generally similar to those described for Site 1, above. Site 2 West is located approximately 0.6 mile west of Woodland Creek. The potential for short-term sedimentation in Woodland Creek is somewhat greater than Site 1 due to the closer proximity. No work will occur in or immediately adjacent to Woodland Creek.

No impacts to marine waters are anticipated.

Long-term impacts associated with Site 2 West are the same as described for Site 1.

Site 2 Center

Construction-related impacts from Site 2 Center are generally the same as for Site 2 West. This site is located approximately 0.4 mile from Woodland Creek. Because of proximity, there is a greater potential for sediment to enter Woodland Creek than from Site 2 West. No work in or immediately adjacent to Woodland Creek will occur.

No impacts to marine waters are anticipated.

Long-term impacts associated with Site 2 Center are the same as described for Site 1.

Site 2 East

Construction-related impacts associated with Site 2 East are generally the same as those described for Site 2 West, above. This site is approximately 0.2 mile from Woodland Creek. Because of proximity, this site has the greatest potential for sediment to enter Woodland Creek; however, construction best management practices (BMPs) will minimize this potential. No work in or immediately adjacent to Woodland Creek or associated wetlands will occur.

No impacts to marine waters are anticipated.

Long-term impacts associated with Site 2 East are the same as those described for Site 1.

No Action Alternative

Continued reliance on individual waste disposal systems could lead to increases in surface water contamination related to both construction (increased sediment) and operation (increased nutrients, bacteria, viruses, and endocrine disruptors) of individual on-site systems. The potential of endocrine disrupting chemicals is also relevant to the continued use of individual waste disposal systems (refer to Section 6.1.3 for further discussion). As research continues, the potential role of groundwater transport of these chemicals is expected to be made clearer; however, there may be little opportunity for mitigation of impacts resulting from on-site systems.

5.1.4 Groundwater Resources

Described below are the potential impacts to groundwater resources associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

The Final SEIS identified that construction impacts to groundwater would largely be related to the need for dewatering. Dewatering is not anticipated at any of the proposed reclaimed water satellite plant facilities because in general the groundwater is quite deep, and the locations are not particularly prone to ponding. There may be some shallow perching zones. Therefore, additional evaluation will be required prior to making the final determination. Should dewatering be required, it would be conducted in accordance with Department of Ecology requirements.

Site 1

Construction of a reclaimed water satellite plant at Site 1 will have limited impact on groundwater resources in the immediate vicinity. Because reclaimed water will be conveyed to a groundwater recharge area or reuse site, there will be no operational impacts to groundwater at this site.

Site 2 West

Construction of a reclaimed water satellite plant at Site 2 West will have little impact on groundwater resources in the immediate vicinity; impacts would be similar to those described for Site 1 above.

Site 2 Center

Construction of a reclaimed water satellite plant at Site 2 Center will have little impact on groundwater resources in the immediate vicinity. The conditions at this site are similar to those at Site 2 West.

Site 2 East

Construction of a reclaimed water satellite plant at Site 2 East will have little impact on groundwater resources in the immediate vicinity. The conditions at this site are similar to those described for Site 2 West.

No Action Alternative

It is likely that the No Action Alternative will impact groundwater quality. Reliance on individual on-site sewage disposal systems will continue and/or increase throughout the LOTT service area, resulting in the potential contamination of the shallow aquifer from failing systems or systems that are providing inadequate treatment. These systems contribute nutrients, bacteria, and other chemicals to the shallow groundwater system throughout the Hawks Prairie basin.

5.1.5 Biological Resources

Described below are potential impacts to biological resources associated with a reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Impacts to plants resulting from construction of the reclaimed water satellite plant consists primarily of vegetation removal during site preparation. The majority of the sites proposed for construction are vegetated with second-growth Douglas fir forest or grass.

Long-term impacts to vegetation are tied to permanent loss of vegetation, primarily second-growth Douglas fir forest and grass, in areas where facilities and pipelines are constructed. If wetland areas are lost due to construction, mitigation will be designed in accordance with local, state, and federal regulations to replace lost wetland functions, resulting in no net loss of wetlands due to operation of the project.

The long-term effect of the project on wildlife is expected to be minimal because the sites under consideration are each less than five acres in size and are located in urban areas.

New Information

This section discusses potential impacts to biological resources at the alternative reclaimed water satellite plant locations and associated with the No Action Alternative.

Site 1

The impacts to plants would be the loss of low quality upland shrub habitat if a reclaimed water satellite plant were constructed at Site 1.

Site 2 West

Impacts to plants resulting from construction of a reclaimed water satellite plant at Site 2 West would consist of loss of Douglas fir forest and grass. Wetlands may be present on the site; however, the site has not been surveyed for the presence of wetlands. Prior to construction, the site will be surveyed for the presence of wetlands.

Wildlife will be affected by loss of habitat and by noise due to vegetation clearing. Birds and larger species of mammals (e.g., raccoon; black-tailed deer) will move to areas of adjacent habitat for the duration of construction. Small mammals, amphibians, and reptiles may be lost during site clearing.

Site 2 Center

Impacts to plants resulting from construction of a reclaimed water satellite plant at Site 2 Center would consist of loss of Douglas fir forest and grass. Wetlands may be present on the site; however, the site has not been surveyed for the presence of wetlands. Prior to construction, the site will be surveyed for the presence of wetlands.

Wildlife will be affected by loss of habitat and by noise due to vegetation clearing. Birds and larger species of mammals (e.g., raccoon; black-tailed deer) will move to areas of adjacent habitat for the duration of construction. Small mammals, amphibians, and reptiles may be lost during site clearing.

Site 2 East

Impacts to plants would consist of loss of Douglas fir forest, upland shrubs, and grass.

Wetlands may be present on the site; however, the site has not been surveyed for the presence of wetlands.

No Action Alternative

No impacts to biological resources have been identified.

5.1.6 Fish Resources

Described below are the potential impacts to fish resources associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Potential impacts to fish resources are associated with erosion and sedimentation resulting from construction activities, particularly from pipeline construction crossing streams.

New Information

Impacts to fish resources resulting from construction of a reclaimed water satellite plant on the proposed site locations are anticipated to be minor. Sediment may enter Woodland Creek during construction of the pipeline to the reclaimed water plant site. No impacts to fish resources have been identified associated with the No Action Alternative.

5.1.7 Shellfish Resources

Described below are the potential impacts to shellfish resources associated with a reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Impacts described in the 1998 Final SEIS focused upon construction of a new outfall associated with the Traditional Facilities Plan, and increased flows in Budd Inlet associated with the existing Budd Inlet Treatment Plant. The Hawks Prairie Reclaimed Water Project does not involve increasing flows at the Budd Inlet Treatment Plant, or the construction of a new marine outfall.

Sites 1, 2 West, 2 Center, and 2 East

Construction and/or operation of a reclaimed water satellite plant will not impact shellfish resources in Henderson Inlet or the Nisqually Reach.

No Action Alternative

Impacts resulting from implementation of the No Action Alternative may include the potential for continued and/or increase decertification of shellfish beds in problem areas throughout Thurston County, including Henderson Inlet, from non-point pollution generated by a potentially higher incidence of on-site sewage system failures, as well as from other sources (e.g., runoff).

5.1.8 Noise Resources

Described below are potential noise-related impacts associated with a reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

During construction, noise levels in the project vicinity would increase temporarily beyond current levels for all action alternatives. Noise impacts would be most significant for receptors adjacent to construction activities. However, construction activities will not exceed City of Lacey noise standards during the allowable construction hours between 7 a.m. to 9 p.m. The duration of construction activity would vary by type of facility as would the types of noises produced. Operation of the reclaimed water satellite plant would produce more noise than the groundwater recharge site, as more machinery/ equipment is required for reclaimed water satellite plant operation (e.g., pumps, aerators, odor control). Table 5-1 shows ranges of noise levels for various types of construction activity and associated equipment.

New Information

Table 5-2 lists common construction equipment as well as some common household appliances for comparison along with their associated noise levels.

Noise levels decrease with distance from their source. For every doubling of distance from a source, such as an engine, noise levels decrease by 6 dBA. As an example, an engine producing a noise level of 85 dBA at 50 feet produces about 79 dBA at 100 feet, 73 dBA at 200 feet, and 67 dBA at 400 feet. A reduction of 10 dBA is generally perceived as a 50 percent reduction in loudness. Thus, a source of noise such as an engine heard at a distance of 200 feet is less than half as loud as the same engine heard at a distance of 50 feet. Noise levels at a receiving property are also affected by wind direction, weather conditions, and ambient noise levels.

Table 5-1. Typical Construction Noise Levels

Activity	Types of Equipment	Range of Noise Levels at 50 feet in dB(A)
Clearing	Bulldozer Dump Truck	77-96 82-94
Grading	Scraper Bulldozer	82-93 77-96
Paving	Paver Dump Truck	86-88 82-94

Table 5-2. Common Household Noise Levels

Type of Equipment	Typical Noise Levels in dB(A)
Soft whisper	30
Conversational speech	60
Freeway Traffic (outdoor)	60-80
Hair dryer	80
Pneumatic tools	85
Concrete mixer	85
Scraper	88
Jack hammer	88
Paver	89
Heavy truck	91

Source: National Technical Information Service, 1971

Site 1

Reclaimed water satellite plant construction and operation would increase noise levels at receiving properties in the vicinity of Site 1. Construction-related noise impacts would include construction vehicles and equipment, clearing and grading, equipment and supply movement within the site, and voices from workers. The 13 single-family residences to the north of the site may experience some noise-related disturbance during the allowable construction hours between 7 a.m. and 9 p.m. for the 15 to 18 month duration of the project.

The earthwork portion of these construction activities would likely be the most disturbing in terms of noise and is anticipated to last approximately 3 to 4 weeks. During this period, dump trucks and backhoes would be the most common equipment. Active dump trucks typically produce noise in the 91 dB(A) range, and backhoes in the 85 dB(A) range. Other noises associated with earthwork activities will

be back-up signals on the dump trucks and noise produced by the dumping of soil into dump truck beds. Noise levels at the receiving properties located approximately 300 feet from the west boundary of the site, could be in the range of 59 to 75 dB(A) and 78 to 84 dB(A) during construction hours. Due to the temporary nature of these activities and their restriction to daytime hours, impacts are not anticipated to be significant.

Following construction, noise related to the general operation of the reclaimed water satellite plant would include equipment and machinery, facility vehicles, and human voices. Residents of the six single-family homes located to the west of the site may be able to hear some of these operational noises. The most noticeable noise source is likely to be heavy trucks that would transport washed material from the reclaimed water satellite plant's screens and grit chambers to the Thurston County Waste and Recovery Center. Up to two truck trips per week are anticipated. Heavy truck noise (91 dB(A) at 50 feet) for the residents in the 13 single-family units approximately 300 feet to the east of the site would be approximately 73 to 79 dB(A). The impact of this noise would be mediated by the ambient traffic noise in the area (Martin Way, Marvin Road and Interstate-5). Due to the high level of commercial and personal vehicle traffic currently present in this predominantly commercial/industrial area, noise impacts related to operation are not anticipated to be significant.

Sites 2 Center and 2 East

Reclaimed water satellite plant construction and operation will increase noise levels at receiving properties in the vicinity of Sites 2 Center and 2 East. Construction impacts would be similar to those described for Site 1. Nearby residents may notice increased noise levels during construction hours. The most noise-intensive period will be during earthwork activities, which are expected to last approximately 3 to 4 weeks. The City of Lacey limits construction activities to the hours between 7 a.m. and 9 p.m. Construction noise will be temporary and impacts are therefore not anticipated to be significant.

Operational noise sources would be as described for Site 1. Residents in the vicinity of the reclaimed water satellite plant may experience on-going noise from operation of the reclaimed water satellite plant. These noise sources would include machinery, equipment, facility vehicles, and human voices. Due to the proximity of the site to Interstate-5, the intermittent occurrence of heavy truck noise, and the distance from these sites to receptors, impacts are not anticipated to be significant.

Site 2 West

Noise impacts to adjacent receiving properties would be the same as those described above for Sites 2 Center and 2 East for both construction and operation of the reclaimed water satellite plant, but would affect a greater number of residences due to the location of the single-family developments immediately adjacent to the west and east of this site. The residences immediately adjacent to Site 2 West would likely experience the greatest impacts, as noise would dissipate with distance from the source as described above.

No Action Alternative

No noise-related impacts have been identified.

5.1.9 Land and Shoreline Use

Described below are the potential land use impacts associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Construction impacts to adjacent land uses would generally include temporary dust, noise, and construction traffic. More specific evaluation of construction related impacts were provided in the Air, Noise, and Transportation sections of the 1998 Final SEIS.

Adjacent neighborhoods would be likely to voice concerns about long-term visual impacts of facilities, potential odors from reclaimed water satellite plants, and the potential effects of facilities on neighboring properties.

To develop facilities, LOTT will need to acquire private property as well as secure permits for construction within public rights-of-way. If LOTT and a property owner cannot agree on the fair market value for a property, then a government partner in LOTT may be requested to condemn the property under the governments statutory or charter powers, including Chapters 8.08, 8.12, and 8.25 RCW.

All three north county cities as well as Thurston County have developed comprehensive plans to comply with the state's Growth Management Act (GMA)(Chapter 36.70A RCW). Policies in all of these comprehensive plans support development of reclaimed water production and use facilities. Development of reclaimed water production and use facilities would provide additional sewer capacity needed to serve planned growth within the UGMA. Any proposed reclaimed water satellite plant or groundwater recharge basin would be classified as an Essential Public Facility consistent with GMA, specifically a Type II Essential Public Facility since they would serve multiple jurisdictions. Such facilities are typically processed as a conditional use or a special use.

Under the Lacey Zoning Code, Title 16 of the Lacey Municipal Code, any of the three identified alternative reclaimed water satellite plant sites would be a special use. Chapter 16.66 of the zoning code establishes performance standards and design standards for special uses. Special uses are considered a conditional use in all zones and require a public hearing and a permit.

The No Action Alternative would result in inconsistencies with existing land use plans. Current zoning densities would not be met within portions of the UGMA, and downzoning would be likely be necessary in some areas.

New Information

Described below is information obtained since the publication of the 1998 Final SEIS.

Sites 1, 2 East, 2 Center, and 2 West

Properties neighboring a reclaimed water satellite plant will be subject to short-term construction related air, noise, and traffic impacts. Similarly, properties adjacent to the alignments for the raw wastewater pipeline and solids return pipelines will have similar temporary impacts. Such impacts are discussed more thoroughly in the Air, Noise, and Traffic sections of this SEIS.

All of the alternative reclaimed water satellite plant sites are located in areas with residential development. Unless properly mitigated, operational impacts from the plant, including odor, noise, and aesthetics could adversely affect neighboring properties and potentially result in reduced property values. Refer to the Air, Noise, and Aesthetics sections of this SEIS for a more complete description of such impacts.

Under the Lacey Zoning Code, a special use permit would be required for any of the four reclaimed water satellite plant alternatives.

No Action Alternative

No reclaimed water satellite plant would be constructed under this alternative. Implementation of this alternative would result in inconsistencies with existing comprehensive land use plans. Current zoning densities would not be met, and downzoning in some areas would be likely.

5.1.10 Parks and Recreation

Described below are the potential recreational impacts associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

The 1998 Final SEIS noted that potential impacts to parks and recreation facilities are almost exclusively construction-related, temporary in nature, and associated with construction of conveyance facilities. General construction-related impacts would include increases in dust, noise, and traffic congestion where construction took place in the vicinity of a park or recreation facility.

Sites 1, 2 West, 2 Center, and 2 East

None of the reclaimed water satellite plant sites would result in any significant impacts to park or recreation facilities during construction. None of the plant sites contain any park or recreation facilities, and there are no park or recreation facilities within the immediate vicinity of any of the sites.

Martin Way and 15th Avenue NE are designated by the City of Lacey as Class 2 bikeways, as defined above. Construction traffic traveling to and from the satellite treatment plant sites could temporarily disrupt bicycle traffic on these roadways, particularly on 15th Avenue NE where there are limited shoulders, but disruption would be temporary and intermittent, and existing bike use on these roads is low.

Over the long-term, the proposed reclaimed water satellite plant would not have any adverse impacts on parks and recreation facilities. The proposed sites would not directly displace or disturb any existing or planned recreational activities or facilities, and they would not directly or indirectly increase park and recreation demands beyond what is already projected in planned growth for the region. Traffic associated with plant operation would be intermittent and low, and would not affect bike use of existing roadways (see Section 5.1.13, Transportation, for additional information).

No Action Alternative

The No Action Alternative would not result in any impacts to parks and recreation facilities. No reclaimed water satellite plant would be constructed under this alternative.

5.1.11 Aesthetics and Visual Resources

The aesthetic impacts related to all alternatives would include the appearance of the reclaimed water satellite plant and the groundwater recharge basin and/or polishing ponds and their visual proximity to viewer groups. The nature and degree of aesthetic impacts are generally subjective and vary from individual to individual. The following discussion describes the overall aesthetic changes that could be expected at a given site, and the likely affect on various viewer groups. The reclaimed water satellite plant would initially cover approximately 2 acres (see Figure 3-2) with parking to accommodate approximately 4 vehicles; the site would eventually be expanded to cover approximately 5 acres (see Figure 3-3). The polishing ponds and groundwater recharge basins including buffers would be designed and constructed with aesthetic quality in mind, and could be viewed as an amenity in some communities (see Figure 3-6) in the same manner as parks or other open space areas. Aesthetic impacts would also be affected by size and characteristics of a proposed site as well as the proximity and visibility to surrounding properties.

Summary of 1998 Final SEIS

Visual and aesthetic impacts related to construction would include vehicles and construction equipment, dust, and a disrupted landscape. These impacts would be temporary and would terminate upon project completion. Construction-related visual and aesthetic impacts are not anticipated to be significant and therefore site-specific discussion is not included.

New Information

Long-term impacts related to aesthetics would differ depending upon the type of facility (i.e., treatment plant vs. recharge site) and its location in the landscape. The reclaimed water satellite plant could be designed to blend in with the surrounding neighborhood and be virtually indistinguishable from other structures in the area through choice of exterior finishes and landscaping. Specific architectural elements would be determined at the time of facility design and would be based upon the general neighborhood characteristics.

Site 1

Following construction, the overall visual impact of the site would change from a vacant, weed-covered lot, to a landscaped property containing cement structures, a management office, and parking area. The overall look of the site would be industrial in nature and would be similar to

other buildings in the vicinity. Since this site is located in a commercial/industrial area dominated by concrete structures, no visual impacts to other commercial/industrial businesses or to passing vehicles are anticipated. The visual characteristics of the site will be altered for the residents of the multi-family housing to the north of the site. These adjacent residents currently view a vacant weedy lot. Due to the visual quality of the surrounding landscape and the lack of visual amenities currently present on the site, visual impacts are not anticipated to be significant.

Site 2 East

The existing residential viewscape would be altered from its current residential character. The form and scale of the reclaimed water satellite plant structures would be somewhat different from the existing residential structures on Site 2 East. The reclaimed water satellite plant structures would incorporate siding and roofing materials that would help the facility blend in with the residential character of the neighborhood. Landscaping to closely resemble residential landscaping would be installed to buffer the structures from other residences and from 15th Avenue NE (see Figures 3-2 and 3-3). Because the building finishes and landscaping would blend the facility into the surrounding neighborhood, aesthetic impacts are not anticipated to be significant.

Site 2 East is lower in elevation than the surrounding residential properties, which could further screen the visible portions of the structures from surrounding properties and the adjacent roadway. The level of impact would depend upon final placement of the structures on the property and their relationship to nearby homes and 15th Avenue NE.

Site 2 Center

Visual and aesthetic impacts would be generally the same as described above for Site 2 East. Site 2 Center is at approximately the same elevation as surrounding properties, and structures would likely be noticeable from surrounding properties and the adjacent roadway. The level of impact would depend upon final placement of the structures on the property and their relationship to nearby homes and 15th Avenue NE (see Figure 4-2). Because the facility would be designed to blend with the surrounding neighborhood, visual and aesthetic impacts to Site 2 Center are not anticipated to be significant.

Site 2 West

Aesthetic impacts would be generally the same as described above for Site 2 East. The form and scale of the reclaimed water satellite plant structures would be a substantial change from the currently undeveloped nature of the site. The reclaimed water satellite plant would be located to maximize the distance from the facility to the east and west property lines and allow for a landscaped buffer between homes and reclaimed water satellite plant structures (Figure 4-3). Because the facility would be designed to blend with the surrounding neighborhood, visual and aesthetic impacts to Site 2 West are not anticipated to be significant.

No Action Alternative

Should the No Action Alternative be chosen, aesthetic impacts to the various sites would depend upon future development patterns. Based on the current level and type of development in the Hawks Prairie area, Site 1 would likely be converted to commercial uses. Sites 2 West, Center, and East would likely remain residential.

5.1.12 Historic and Cultural Preservation

Site 1

There exists a high probability for hunter-fisher-gatherer archaeological resources on Site 1. Construction activities that more than superficially disturb the soils on this site may result in disturbance of these resources. Site 1 is within an area of recent road construction and modern residential development and has a low probability for historic period archaeological resources. No impacts to these resources are expected as a result of construction or operation of a treatment facility on Site 1. Due to its distance from Site 1, no impacts to the unevaluated, historic structure in the vicinity of

this site are expected as a result of construction or operation of a treatment facility.

Sites 2 West, 2 Center, and 2 East

Sites 2 West, 2 Center, and 2 East have low probabilities for hunter-fisher-gatherer and historic period archaeological resources, therefore no impacts to these resources are expected. No impacts to significant historic structures are expected as a result of construction or operation of a treatment facility on the zone 2 sites.

No Action Alternative

No impacts to cultural or historic resources are anticipated as a result of the No Action Alternative.

5.1.13 Transportation

Described below are the potential transportation-related impacts associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

The 1998 Final SEIS noted that construction of proposed reclaimed water satellite plants would result in minor traffic increases over the duration of construction. Excavation volumes for initial plant construction would require an estimated 250 to 500 one-way haul truck trips depending on haul truck capacity. These trips could temporarily increase congestion on local roadways. Operational trips would be negligible at an estimated 5 to 10 trips per day.

Sites 1, 2 West, 2 Center, and 2 East

Construction of a reclaimed water satellite plant on any of the proposed sites would result in a temporary increase in construction-related traffic. Construction is anticipated to last approximately 15 to 18 months. Construction traffic would include workers traveling to and from the site, delivery of materials and equipment to and from the site, and import and export of cut and fill material. Travel and access to Site 1 is likely to occur via Martin Way, while travel and access to Sites 2 West, Center, or East is likely to occur off of 15th Avenue NE (Figures 3-4 and 3-5).

Each site would require some excavation and fill for construction, generating haul truck trips on local area roadways. Although the size of each site varies, projected excavation volumes and truck trips would be similar among all of the sites. Specifically, construction of a satellite treatment plant at any of the sites is expected to require approximately 850 truck trips, or an average of 2 to 3 truck trips per day during the 15 to 18 months of construction. This assumes a 19 cubic yard haul truck capacity with a truck "pony," and that construction will occur from Monday through Friday.

Construction of feed pipelines to and from the reclaimed water satellite plant Sites 1 and 2 could also result in some temporary traffic disruption. Feed lines to Site 1 would result in closure of a single north lane on the 8100 block of Martin Way East for initial plant construction, with later expansion of the plant requiring closure of the north lane of Martin Way East between the 5400 and 8100 block. This construction could temporarily disturb access to businesses along Martin Way East. Although there are no businesses along 15th Avenue NE, temporary lane closure would be required, although access to residential properties would be maintained.

Increased construction and haul truck traffic would be minor and temporary and would not substantially affect traffic in the vicinity of any of the sites. Because 15th Avenue NE in the vicinity of Sites 2 West, Center, and East is narrower and more rural in nature, impacts to surrounding land uses from truck noise may be higher compared to Site 1, which is located along Martin Way East, a major arterial.

Safety of pedestrians would also be of concern along construction haul routes. Safety issues along Martin Way would be minimized by existing and proposed sidewalks, which would separate pedestrians from roadway traffic.

Operation of the reclaimed water satellite plant would not generate substantial new amounts of traffic. Overall, operation of a new plant would generate an estimated 5 to 10 trips per day for a

variety of facility operations. Since existing roadway conditions are acceptable and plant-generated traffic would be minor, no significant transportation impacts would occur. Screenings and grit would be trucked off-site. For a 1 mgd facility, screenings would be trucked off-site once every 5 to 7 days. This would increase to approximately once every two days for a 5 mgd facility. Grit would be trucked off-site approximately once every 2 days. Traffic impacts associated with truck hauling from the site would be negligible.

No Action Alternative

Under the No Action Alternative, no additional traffic would be generated for construction or operation. As a result, no transportation impacts would occur.

5.1.14 Public Services and Utilities

Described below are the potential impacts to public services and utilities associated with the reclaimed water satellite plant and the No Action Alternative.

Summary of 1998 Final SEIS

Described below are the impacts identified in the 1998 Final SEIS.

Wastewater. Short-term impacts to local wastewater collection facilities associated with the construction of reclamation and recharge facilities could include potential temporary disruptions in local service during construction of reclaimed water satellite plants, recharge facilities, and associated pipelines and conveyance systems. Since under the Wastewater Resource Management Plan LOTT would be operating reclaimed water production and use facilities in each of four resource management basins, operational requirements could potentially be more significant than for a centralized wastewater collection and treatment system.

Under the No Action Alternative, growth inside each city's UGMA would be limited by existing sewer system capacity. If adequate sewer service is not available concurrent with planned growth, land use within some portions of the UGMAs may need to be redesignated as rural, and wastewater services provided through on-site sewage systems.

Water Supply. Construction-related impacts to water supply could include temporary disruption of water service during installation of new pipelines and construction of new facilities.

Update of the North Thurston County Coordinated Water Supply Plan (CWSP) would be necessary to reflect the role of reclamation in assuring adequate regional water supplies within the Lacey UGMA.

Fire Protection and Emergency Services. Construction of pipelines, particularly along primary arterials, may cause temporary disruptions in traffic flow and could impede fire and emergency service response.

No long-term impacts to fire protection and emergency services have been identified.

Electricity and Gas. Reclaimed water satellite plants may require 220 to 730 kilowatts (kW) of power. Power demands increase proportionately with increases in plant capacity.

New Information

Described below is information obtained since the publication of the 1998 Final SEIS.

Sites 1, 2 East, 2 Center, and 2 West. The raw wastewater supply pipeline and solids return pipeline for Site 1 would extend from the Martin Way Pump Station to Site 1. The pipelines would be constructed in the existing Martin Way road right-of-way. The alignment of the pipelines would be essentially the same as that of the raw wastewater supply pipeline and solids return pipeline identified in the 1998 Final SEIS as HP-FM-1 and HP-SL-2.

The raw wastewater supply pipeline and solids return pipeline for Sites 2 East, 2 Center, and 2 West would extend from the Martin Way force main to the Zone 2 sites. The pipelines would be constructed in existing road rights of way.

Short-duration, temporary disruptions to utility services could potentially occur during construction of the aforementioned pipelines in road rights-of-way. In addition, traffic congestion in the immediate vicinity of construction areas could impede movement of fire and emergency response vehicles.

No Action Alternative

Growth inside the UGMAs would be limited by the existing sewer system capacity. Sewer system connections would be limited by the existing Budd Inlet Treatment Plant permitted discharge capacity.

5.2 MITIGATION MEASURES

This section describes the mitigation measures developed to reduce the identified environmental impacts.

5.2.1 Earth Resources

Construction activities would be conducted in a manner consistent with the City of Lacey's clearing and grading requirements. Erosion and sedimentation control measures will be implemented during all construction activities. Stringent erosion control measures will be employed at the site boundaries to minimize the potential for off-site sediment transport.

Sites 1, 2 East, 2 Center, and 2 West

To reduce construction-related erosion and sedimentation, a site-specific erosion and sedimentation control plan will be developed, which will include, at a minimum, the following measures:

- Expose soils only in the active construction area
- Install straw bales, silt fences, and/or geonetting around sensitive areas
- Cover stockpiled materials
- Revegetate the area promptly following construction

No Action Alternative

Mitigation measures have not been developed as no earth-related impacts have been identified associated with the No Action Alternative.

5.2.2 Air Resources

Mitigation measures would be implemented to control dust and emissions related to construction and to control odors related to reclaimed water satellite plant operation.

Construction mitigation includes such measures as wetting exposed surfaces, washing vehicles prior to leaving the project site, and shutting off engines when not in use. Operation measures would include proper sizing of transport systems, and areas exposed to the atmosphere, servicing of odor control units, and chlorination.

Odor-causing compounds are released into the atmosphere from stacks or as fugitives from open basins and channels at wastewater treatment plants or from unsealed manholes in the collection system. Atmospheric mixing dilutes the downwind concentration of such compounds. In addition, the compounds are subject to chemical reactions and/or physical transformation. The compounds may be carried to the ground by particles or by atmospheric elements such as snow, rain or fog.
The various factors that affect dispersion of odor include local meteorology (wind direction, wind speed, atmospheric stability), odor emission rates, type of odor source, and the surrounding topography. For odor estimation purposes, odor sources are often divided into two categories: area and point sources. Open tanks, channels, or other containers are area sources, while stacks are point sources. An atmospheric dispersion model can be used to account for these factors and predict downwind concentrations.

Specific mitigation measures would include the following:

- The primary on-site mitigation for odor emissions will likely consist of a two-stage process. The preliminary treatment building

will be ventilated and the biological batch reactors will be covered (see Figure 3-2). Air drawn off these sources would first be treated via a chemical scrubber or a carbon treatment system. The chemical scrubber would use sodium hypochlorite; should the chemical scrubber be the primary treatment choice, the size of the hypochlorite storage tank would need to be increased to 8,000-9,000 gallons. The second stage of odor control would consist of either a biofilter or a virgin activated-carbon tower. The activated-carbon tower option would also require a stack to meet the desired odor requirement at the fence line.

- The reclaimed water satellite plant would be located so as to maximize the distance between the facility and the closest receptor(s).
- Screenings and grit would be placed in enclosed containers and transported off-site to minimize odors.

Refer to Chapter 9 of the 1998 Final SEIS for a more detailed description of mitigation measures.

5.2.3 Surface Water Resources

Mitigation measures at all reclaimed water satellite plant sites will be similar, and focus upon mitigating construction-related impacts. Site development goals, as provided in the *Woodland and Woodard Creek Comprehensive Drainage Basin Plan*, (Thurston County et al., 1995) for flood prevention, protection of water quality, and enhancement of fish habitat would be used as guidance during facility development.

Construction

Construction will occur in accordance with requirements in the City of Lacey *Development Guidelines* (1999). Measures to reduce construction-related impacts would include the following elements: an erosion and sedimentation control plan, a construction spill prevention and response plan, and a restoration and revegetation plan. If site construction impacts a wetland, a wetland mitigation plan will also be required (refer to Section 5.2.5 for a discussion of wetlands). Key elements of these plans are outlined below. All construction activities will be conducted in accordance with permit conditions applied by the City of Lacey.

Erosion and Sediment Control Plan. This plan would be developed to prevent runoff of sediment and construction-related contaminants into drainageways, and particularly Woodland Creek. This plan would be developed consistent with the *Drainage and Erosion Control Manual for Lacey* (1994) requirements and include mapping of site topography, identification of land clearing and earth moving activities, identification and location of sediment and erosion control devices such as sediment walls and detention ponds, location and covering of spoils piles, storage of material, seasonal restriction for earth disturbing activities, provisions for modified operations in extremely wet weather, and monitoring and maintenance of erosion control facilities.

Spill Prevention and Response Plan. A spill prevention and response plan addresses potential spills of chemicals, typically petroleum-related materials, that could impact either ground or surface waters. Such a plan will be prepared in accordance with the City of Lacey requirements.

Site Restoration and Revegetation Plan. The purpose of this plan is to restore exposed soil areas to a vegetated condition as soon as practical following construction to prevent continuing erosion. This plan would specify the types of vegetation to be replanted, critical periods for replanting, and procedures for ensuring the vegetation becomes reestablished. This plan may be integrated with a landscaping plan for the site or may be included in the erosion control plan.

Operation

A site drainage plan is recommended in order to identify engineering structures to reduce the overall amount of impervious area and specific measures to reduce the impact of contaminants in runoff (e.g., sediment and oil trapping swales, maintenance procedures for parking areas, and storage of on-site chemicals or fuels).

5.2.4 Groundwater Resources

Mitigation measures outlined in the Final SEIS to reduce construction-related impacts include treating water to Class A reclaimed water standards, conducting a site-specific review to determine the presence of contaminated soil and/or groundwater, scheduling construction during the summer months, and providing any necessary treatment to withdrawn groundwater prior to discharge. Additional measures have not been identified.

5.2.5 Biological Resources

Mitigation measures to reduce impacts to biological resources are discussed below.

Site 1

Mitigation measures have not been developed for this alternative, as impacts are not anticipated.

Sites 2 East, 2 Center, and 2 West

Areas that contain sensitive plant communities or wildlife species will be avoided whenever possible.

If a sensitive species is present in the vicinity of construction, a biologist would be present to establish clearing limits and/or buffers as required by the permitting agency.

Vegetated buffers will be employed surrounding the reclaimed water satellite plant to minimize noise, light, and visual impacts to wildlife.

Erosion control BMP's as described by Ecology and local regulations would be followed during construction. All areas that are cleared for construction would be replanted as soon as is feasible following construction at ratios prescribed by local regulations. Roadsides will be hydroseeded; all other areas will be planted with western Washington native plant species.

Wetland areas that are temporarily impacted during construction will be restored following construction at ratios prescribed by local regulations. Permanent wetland losses would be mitigated as mandated by applicable regulations.

No Action Alternative

Mitigation measures have not been developed for this alternative as no impacts to biological resources are anticipated.

5.2.6 Fish Resources

Mitigation measures have not been developed because impacts to fish resources are not anticipated as a result of the action or No Action alternatives.

5.2.7 Shellfish Resources

Mitigation measures have not been developed as impacts from the construction and/or operation of a reclaimed water satellite plant or the No Action Alternative have not been identified.

5.2.8 Noise Resources

Mitigation measures for both construction and operation impacts from noise would be implemented as part of any alternative. Construction mitigation measures would include proper maintenance of equipment, limiting engine running, adherence to approved construction hours, use of attenuation barriers, and substitution of impact tools with less noisy tools. Construction and operational mitigation may also include the following specific measures:

- Construction Best Management Practices (BMPs) shall be employed to minimize noise impacts during construction hours.
- Construction will be strictly limited to City of Lacey allowable construction hours of 7 a.m. to 9 p.m.
- Noisy operations will be housed inside structures.
- Buildings that house equipment or machinery shall be insulated so as to absorb noise and buffer the outside environment from the sound source.
- Maintenance vehicles will be maintained in good working order to reduce noise.

Operational noise must meet appropriate environmental designation for noise abatement (EDNA) limits at property boundaries as set forth in the Thurston County Code (10.36 Public Disturbance Noise and 21.57.030 Lacey Urban Growth Area Noise) and City of Lacey Code (16.57.030 Noise).

No Action Alternative

Mitigation measures have not been developed as noise impacts are not anticipated.

5.2.9 Land and Shoreline Use

Mitigation measures developed to reduce land use-related impacts are discussed below.

Summary of 1998 Final SEIS

Measure to reduce impacts to land and shoreline use identified in the 1998 Final SEIS include the following:

- Maintain access to all residential areas and commercial/industrial areas in the vicinity of pipeline construction to the extent possible.
- Locate all new pipelines in developed roadways or existing utility rights-of way to the extent feasible.
- Incorporate property line setbacks, screening vegetation, and muted colors in the design of reclaimed water satellite plants and groundwater recharge basins, particularly where such facilities would be located in proximity to residential areas.
- Pursue all opportunities to acquire property for facility sites from willing sellers before considering options for condemnation.
- Continue coordination with Thurston County and local jurisdictions to ensure the timely and equitable siting of reclaimed water satellite plants and groundwater recharge basins to serve projected growth.

Sites 1, 2 East, 2 Center, 2 West

LOTT will notify potentially affected residents and business owners prior to commencing construction activities. Inconvenience to residents and business owners will be minimized to the extent practicable. Measures will be implemented to minimize noise and odors associated with operation of reclaimed water satellite plants. In addition, the reclaimed water satellite plant will be carefully designed to be compatible with surrounding land use in order to minimize any potential impacts on the value of adjacent or nearby properties.
Additional relevant mitigation measures are incorporated into the Earth, Groundwater, Noise, Air, Aesthetics, Traffic, and Public Services and Utilities sections of this SEIS.

No Action Alternative

Mitigation for the No Action Alternative would include amending the *City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area*, as well as the comprehensive plans for the cities of Olympia and Tumwater, to re-designate as rural portions of the UGMA where adequate wastewater utility services cannot be provided concurrent with urban growth. The amendments would need to preclude further urban growth in such areas and restrict development to low density land uses that could be served by on-site sewage disposal systems. Such an action would minimize inconsistencies between the state Growth Management Act and the *City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area*, and the other comprehensive plans.

5.2.10 Parks and Recreation

Measures to reduce recreational impacts include minimizing disruption of bike lanes during construction, particularly at construction entrances to the sites.

5.2.11 Aesthetics and Visual Resources

Mitigation measures associated with visual and aesthetic impacts would be similar for all alternatives and include thoughtful facility placement, property line setbacks, vegetative screening or buffers, and design features that decrease facility visibility. However, some features would be specific to facility location.

Reclaimed water satellite plant design would conform to surrounding structures in form, scale, and character. For example, a facility in a commercial/industrial area would be designed to appear indistinguishable from surrounding structures. Facilities proposed in residential areas would be designed to appear similar to surrounding structures, including use of siding materials, roofing, and landscaping.

5.2.12 Historic and Cultural Preservation

Mitigation measures to reduce or eliminate impacts to historic and cultural resources are discussed below.

Site 1

Mitigation for potential impacts to historic and cultural resources at Site 1 include coordination with the Nisqually and Squaxin Island Tribes. In addition, a professional archaeologist should conduct field reconnaissance of Site 1 prior to any ground disturbing construction activity, including geotechnical testing. In the event that probably significant archaeological resources are exposed during construction activities, the Washington State Office of Archaeology and Historic Preservation, the Nisqually Tribe, the Squaxin Island Tribe, and a professional archaeologist would be notified.

Sites 2 West, 2 Center, and 2 East

Due to the low probability for encountering historic or cultural archeological resources on the zone 2 sites, no field reconnaissance is recommended. In the event that probably significant archaeological resources are exposed during construction activities, the Washington State Office of Archaeology and Historic Preservation, the Nisqually Tribe, the Squaxin Island Tribe, and a professional archaeologist would be notified.

No Action Alternative

Mitigation measures have not been developed as impacts are not anticipated.

5.2.13 Transportation

Mitigation measures to reduce transportation-related impacts are discussed below.

Summary of 1998 Final SEIS

Measures identified in the 1998 Final SEIS to mitigate impacts to transportation resources include the close coordination with affected jurisdictions and agencies to facilitate concurrent construction schedules with planned improvements to minimize disruption and reduce costs associated with impact fees. Traffic control plans will be developed for affected areas. In addition, emergency service providers will be notified in advance of construction activity of schedules and detour routes.

New Information

In accordance with 12.16.055 of the Lacey Municipal Code, close coordination should occur with the City of Lacey for payment of "disruption fees" for disruption to streets that have been improved within 5 years of project initiation. Safety hazards should be minimized during construction along 15th Avenue NE by separating pedestrians from active truck haul rates and construction areas, including temporary relocation of school bus stops if necessary to ensure the safety of children.

5.2.14 Public Services and Utilities

Mitigation measures to reduce impacts to public services and utilities are discussed below.

Summary of 1998 Final SEIS

Measures to reduce impacts to public services and utilities identified in the 1998 Final SEIS include:

- Existing local water and sewer lines would be identified through site-specific analyses to minimize any disruptions in service.
- LOTT would coordinate with local jurisdictions to ensure consistency between the Wastewater Resource Management Plan and local sewer and water comprehensive plans.

- Local grading and drainage ordinances as well as the Thurston County Drainage Manual would be complied with during design and construction of facilities.
- LOTT would collaborate with local fire and emergency service providers to minimize disruptions of responses during pipeline construction in roadways.
- Traffic control plans will be prepared to minimize any impacts on response times. Local fire and emergency service providers should be consulted during facility design and prior to construction.
- Local fire and emergency service providers would be consulted during planning and design of individual facilities to ensure that each site is accessible to fire and emergency vehicles.
- Energy efficiency measures would be incorporated into the design of proposed facilities.
- Puget Sound Energy would be consulted during site specific design regarding the potential for, and means to avoid, disruption of gas and electric service during construction activities.

New Information

Mitigation measures identified since the publication of the 1998 Final SEIS are summarized below.

Sites 1, 2 East, 2 Center, 2 West

Cable television and telephone utilities would be consulted prior to any construction activities in an effort to reduce the potential for construction related interruptions in service. Locations of all underground utilities will be identified prior to construction.

No Action Alternative

Since sewer capacity would not be available to support planned growth in the UGMA, the *City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area*, as well as the comprehensive plans for the cities of Olympia and Tumwater would likely be amended to re-designate urban lands to rural uses.

5.3 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS AND CUMULATIVE IMPACTS

This section discusses significant unavoidable adverse impacts and cumulative impacts associated with a reclaimed water satellite plant and the No Action Alternative.

5.3.1 Earth Resources

Significant unavoidable adverse and cumulative impacts to earth resources are discussed below.

Sites 1, 2 East, 2 Center, and 2 West

Minor erosion will unavoidably occur during construction of the reclaimed water satellite plant.

No Action Alternative

Significant unavoidable adverse impacts or cumulative impacts to earth resources are not anticipated as a result of the No Action Alternative.

5.3.2 Air Resources

No significant unavoidable adverse or cumulative impacts to air resources have been identified.

5.3.3 Surface Water Resources

Significant unavoidable adverse impacts and cumulative impacts to surface water resources are not anticipated from the construction of a reclaimed water satellite plant.

5.3.4 Groundwater Resources

No significant unavoidable adverse impacts to groundwater resources are expected as a result of any of the action alternatives. Increases in nitrate levels in groundwater are likely to occur as a result of increased use of on-site sewage systems associated with the No Action Alternative.

5.3.5 Biological Resources

No significant unavoidable adverse or cumulative impacts to biological resources have been identified.

Cumulative impacts to vegetation, wetlands, wildlife, and sensitive species include conversion of upland habitat to impervious surface associated with construction of a new reclaimed water satellite plant.

5.3.6 Fish Resources

No significant unavoidable adverse impacts or cumulative impacts to fish resources have been identified.

5.3.7 Shellfish Resources

Significant unavoidable adverse and cumulative impacts to shellfish resources are discussed below.

Sites 1, 2 West, 2 Center, and 2 East

Significant unavoidable adverse and cumulative shellfish impacts have not been identified associated with the construction or operation of a reclaimed water satellite plant.

No Action Alternative

Increased reliance on the use of on-site sewage systems in the LOTT service area could increase levels of non-point pollution from failing or improperly functioning systems. Within the Hawks Prairie RMB, this could potentially affecting water quality in shellfish habitat areas.

5.3.8 Noise Resources

No significant unavoidable adverse impacts or cumulative impacts to noise resources have been identified.

5.3.9 Land and Shoreline Use

Construction of reclaimed water satellite plants and groundwater recharge basins, including associated constructed wetlands polishing ponds, would unavoidably result in changes in land use through development of largely vacant sites. Proposed reclaimed water satellite plants and groundwater recharge basins would incrementally add to the continuing conversion of land uses from undeveloped to developed conditions throughout the UGMA.

Sites 1, 2 East, 2 Center, and 2 West

Short-term construction-related impacts to land use such as noise from equipment and trucks, dust, and traffic restrictions in road rights-of-way may occur.

No Action Alternative

Reliance on the use of on-site sewage systems to support population growth under the No Action Alternative would result in an inability to achieve development densities specified in local comprehensive land use plans for the UGMA and may be inconsistent with the state Growth Management Act.

Amending the *City of Lacey and Thurston County Land Use Plan for the Lacey Urban Growth Area*, as well as Cities of Olympia and Tumwater Land Use Plans, to re-designate as rural portions of the Urban Growth Management Area where adequate wastewater utility services cannot be provided concurrent with urban growth could result in an incompatible mix of existing urban and future low density land uses in such areas. In addition, future on-site sewage use in such areas could result in groundwater contamination.

5.3.10 Parks and Recreation

No significant unavoidable or cumulative parks and recreation impacts have been identified.

5.3.11 Aesthetics and Visual Resources

No significant unavoidable or cumulative aesthetic impacts have been identified.

5.3.12 Historic and Cultural Preservation

No significant or cumulative historic and cultural preservation impacts have been identified.

5.3.13 Transportation

No significant or cumulative transportation-related impacts have been identified.

5.3.14 Public Services and Utilities

The need for construction and long-term operation of reclaimed water production and use facilities constitutes a significant unavoidable impact. In conjunction with continuing development in the North Thurston County UGMA, the development of additional wastewater capacity may contribute indirectly to the cumulative increase in demand for other public services and utilities, including fire and emergency services, water supply, and energy. Because the project would be providing wastewater treatment services and would not be a significant water user, no direct cumulative impacts on water supply should occur.

Reliance on expanded use of on-site sewage systems under the No Action Alternative would unavoidably require additional support from the Thurston County Public Health and Social Services Department' on-site sewage permitting and operation and maintenance programs. Expanded groundwater monitoring may also be required.

Reliance on the use of on-site sewage systems to support population growth under the No Action Alternative would result in an inability to achieve development densities specified in local comprehensive land use plans within the UGMA, and may be inconsistent with the state Growth Management Act.

LOTT
Wastewater
Resource Management
Plan

CHAPTER SIX: CONSTRUCTED WETLANDS POLISHING PONDS, GROUNDWATER RECHARGE BASIN, AND ASSOCIATED CONVEYANCE SYSTEMS

6.1 IMPACTS

This section describes the potential impacts associated with the construction and operation of constructed wetland polishing ponds, a groundwater recharge basin, and associated conveyance systems.

6.1.1 Earth Resources

As noted in section 5.1.1, the majority of earth-related impacts are associated with construction activities. The extent of the impacts relates to the size of the facility, the area that must be cleared and graded, and the duration of construction.

Site A

Construction of wetland polishing ponds and a groundwater recharge basin will disturb approximately 40 acres during construction. Excavation volumes are estimated to be approximately 200,000 cubic yards, and construction will occur over a roughly nine month period. The majority of the excavated material will be used on-site to construct the berm around the ponds and basin. Imported material will include approximately 20,000 cubic yards of fine sand and bentonite for the wetland polishing pond and groundwater recharge basin surface preparation.

Operational impacts to earth resources are anticipated to be minimal. Periodic maintenance activities at the site will include scarifying the surface of the groundwater recharge basin to maintain infiltration rates. This work will be conducted roughly every 6 to 12 weeks using a backhoe or bulldozer. Every several years, an estimated 15,000 cubic yards of sand will be replaced in the basin. Impacts from the maintenance activities are anticipated to be minor.

Site B

Impacts resulting from the construction and operation of wetland polishing ponds and a groundwater recharge basin on this site would be similar to those described for Site A.

Site C

Impacts resulting from the construction and operation of wetland polishing ponds and a groundwater recharge basin on this site would be similar to those described for Site A.

This site is located near Eagle Creek, a tributary to Woodland Creek.

Site D

Impacts resulting from the construction and operation of wetland polishing ponds and a groundwater recharge basin on this site would be similar to those described for Site A.

Site E

Impacts resulting from the construction and operation of wetland polishing ponds and a groundwater recharge basin on this site would be similar to those described for Site A.

Conveyance System

Erosion and sedimentation may occur as a result of conveyance system construction, particularly at stream crossings. A stream crossing would be necessary associated with the conveyance pipeline originating from a reclaimed water satellite plant at Site 2 West, Site 2 Center, or Site 2 East to any of the identified groundwater recharge/wetland polishing facilities. All stream crossings would be jack and bored or microtunneled under the stream

Operational impacts to earth resources are not anticipated as a result of the conveyance systems.

6.1.2 Air Resources

This section discusses air resources in the vicinity of the proposed constructed wetland polishing ponds and groundwater recharge basin sites.

Sites A, B, C, and D

Construction impacts related to odors at these sites would be the same as for Site 1, except that the duration of construction would be 6 to 9 months.

Odor impacts related to the operation of the groundwater recharge basin and polishing ponds on these sites are not anticipated to be significant. Two commercial/industrial buildings are located east of Site B, and two commercial/industrial buildings are located west of Site C. No sensitive receptors currently exist within approximately 1/4 mile of any of these sites. Surrounding areas are being developed into single-family neighborhoods at this time. It is possible that properties adjacent to Sites A, B, C, and D would be developed in a similar manner in the future.

Odors from the recharge basin and polishing ponds are not anticipated to be significant because the reclaimed water would have already been treated to Class A reclaimed water standards prior to reaching the ponds. Reclaimed water that is suitable for reuse undergoes treatment and disinfection that is over and above conventional wastewater treatment. Class A reclaimed water is the highest standard for reclaimed water as defined by the Department of Ecology (Ecology, 1997). Reclaimed water is currently used in a variety of ways including irrigation of landscaping and food crops, decorative fountains, spray washing of streets, and industrial uses. Impacts to residents located within 1/4 mile are therefore not anticipated to be significant because facilities using Class A reclaimed water are typically not odor-producing.

Some odor production related to facility vehicle emissions would occur, but is not anticipated to be significant due to the small number of personnel expected to be associated with these types of facilities as well as the isolated location of these sites.

Site E

Construction and operational impacts for Site E are similar to those described above for Sites A, B, C, and D. Site E is located on a former land-application disposal site for Olympia Cheese's process water. During construction, the disposal site would be disturbed and may release odors to the surrounding area. The construction excavation activities are expected to last approximately 16 weeks and the excavated soil would be removed and disposed of off-site. Due to the relatively isolated location of Site E and the short duration of excavation activities, impacts from odors are not anticipated to be significant.

Operational odors would be as described above for Sites A, B, C, and D.

Conveyance System

The conveyance system between the reclaimed water satellite plant and the polishing pond and recharge basin site would follow existing roadways within the City of Lacey area. Construction-related odors will include vehicle, dump truck, and equipment emissions, and asphalt fumes. Airborne dust will also be generated during construction activities. Residences and/or businesses along the conveyance system route would experience impacts from odors during allowable construction hours between 7 a.m. and 9 p.m. The conveyance system would be installed in

segments, and would last approximately a week in any given segment. Due to the short and temporary duration of construction activities, impacts are not anticipated to be significant.

Odor impacts related to the operation of the conveyance system are not anticipated as the pipelines will be transporting highly treated water.

6.1.3 Surface Water Resources

The evaluation of wetland polishing ponds, groundwater recharge basins, and conveyance systems is presented in reference to Woodland Creek and its tributaries. Impacts to Henderson Inlet, Nisqually Reach, or McAllister Creek are not anticipated.

Site A

The headwaters of Eagle Creek, a small tributary to Woodland Creek, are located on this site. Development of Site A as a groundwater recharge basin/wetland polishing pond site is not anticipated to impact surface water resources. Impervious surfaces at the site will generate additional runoff; however, most of this runoff is expected to infiltrate within the site boundaries. The high level of infiltration capacity of surface soils (predominantly recessional outwash) and gentle, flat topography generally preclude runoff in this area. Because local site conditions may vary, areas of less permeable soils could produce surface runoff during extreme events; however, these areas are likely minimal. This site has the lowest potential to impact surface water of the recharge sites evaluated.

Potential indirect impacts to surface water may include additional groundwater discharge to Eagle Creek, and also to the Nisqually Reach and McAllister Creek, resulting from increases in groundwater elevations. Recharged groundwater is expected to move radially from the application basin. The estimated time of travel for reclaimed water to reach surface waters is in excess of 10 years. It is difficult to predict the level of flow increases and their resulting impact; full-scale pilot testing evaluations will be conducted to verify that potential impacts to adjacent surface waters will not be significant. Increases during summer low flows may improve water temperature and fish habitat slightly; however, changes are not anticipated to be dramatic. Eagle Creek appears to dry up at points during the summer months; increased groundwater levels could help to prolong summer flow periods in the creek. However, based on preliminary information, increases are expected to be minor. Elevated groundwater levels may also increase wintertime flows; however, since the depth to groundwater is approximately 60 to 80 feet below ground surface, the anticipated level of recharge is not expected to contribute to increased flooding problems in Eagle or Woodland Creek.

The potential for nutrient enriched recharge water to impact surface waters is minimal because of the high level of treatment and polishing that will occur prior to discharge. For example, total nitrogen levels in treated effluent are not expected to exceed 5.0 mg/L prior to polishing (2.0 to 4.0 mg/L nitrate). This concentration of nitrate, combined with anticipated dilution by ambient groundwater (typical levels are approximately 1.9 mg/L, refer to Section 5.4), will not likely be measurable in Eagle Creek, Woodland Creek, or McAllister Springs downstream.

Site B

Site B has similar recessional outwash soil and topographical conditions as described for Site A. Soils generally encourage rapid infiltration. Newly created impervious areas at the site will increase the amount of runoff generated from the site, however, most of the runoff will likely infiltrate within the site boundary. The travel time for reclaimed water to reach surface waters is the same as described for Site A. Some areas of ponding may occur in the northwest portion of this site and these areas have the potential to produce runoff to Eagle Creek under conditions of heavy rainfall. Overall, little or no direct impact to surface waters is expected from development of this site for recharge. As described for Site A, the potential for nutrient enriched recharge water to impact surface waters is low because of the anticipated radial

movement of the reclaimed water, and the high level of treatment and polishing proposed.

Site C

Site C has similar conditions to Sites A and B; however, greater areas of till may be encountered near the surface at this site with a resultant increased potential for runoff generation from newly-created impervious surfaces at the site. In addition, surface drainage features are more developed than at Sites A and B. Eagle Creek drains the western portion of the site. There is a potential for surface water to be affected at this site from direct runoff and through increased discharges from groundwater. Depth to groundwater is anticipated to be approximately 40 to 80 feet below ground surface, and the travel time of reclaimed water may be somewhat less than 10 years. Increases in groundwater may be beneficial by increasing base flows in Eagle and Woodland Creeks. Portions of the soils in the western portions of this site are listed as till, or are identified as saturated (Thurston County et al., 1995). Development over much of this site has little potential to impact surface water; however, development in areas of current overland flow has a limited potential to affect water quality. Site runoff will not be routed through the groundwater recharge basins.

Site D

Site D is located in an area with a current gravel mining operation. There are no surface drainage channels in this area and so direct impacts to surface waters is unlikely. Because of the relatively close proximity to Woodland Creek, the potential for construction-related impacts to the creek is higher at this site. Currently, groundwater recharge is not proposed at this site; it would be used only for wetland polishing ponds.

Site E

Conditions at Site E are similar to those described for Sites B and C above. Impacts resulting from the construction and operation of groundwater recharge/wetlands polishing facilities at this site are similar to those described for Sites B and C above.

Conveyance System

Conveyance systems will be constructed between a reclaimed water satellite plant (Site 1 or Site 2 East, Central, or West) and wetland polishing ponds/groundwater recharge basin (Site A, B, C, D, or E). Short-term impacts to surface waters include construction-related erosion and turbidity. Construction related erosion and sedimentation are expected to be minor and would be minimized by employing construction BMPs (refer to Section 5.2.3). The majority of pipeline construction will occur in existing rights-of-way. Stream crossings, if necessary, would be jack and bored or microtunneled to minimize impacts to the stream (refer to Section 5.1 Earth, for further discussion).

Once construction is complete, conveyance facilities are not expected to have an impact on surface water resources. Because these pipelines will carry highly treated wastewater, even a rupture would have only a minor short-term volumetric impact on surface water resources.

6.1.4 Groundwater Resources

Each identified site contains significant areas of surface and subsurface soils that are suitable for recharge facilities. Each site also contains areas where soils are not suitable for recharge but may be appropriate for wetland polishing facilities. A detailed survey and pilot testing will be completed before facility design to verify the anticipated performance at the site. Recharge basins will be designed for areas on each proposed site where surface and near surface soils are permeable (Vashon recessional outwash), subsurface Vashon till is largely or wholly absent, and depth to groundwater is suitable (Robinson & Noble, 1996). Polishing wetlands will be designed with liners to minimize incidental infiltration and optimize storage of reclaimed water. The semipermeable liner may be constructed with native soil (Vashon till), bentonite, or plastic/PVC. Each of the candidate sites meet all the siting criteria; permitting requirements dictate these conditions will be met and are able to be maintained over the anticipated service life.

Site A

Impacts to groundwater resources at Site A include the potential for elevation of local and regional groundwater levels below the site (Robinson & Noble, 1997). For the Hawks Prairie area, this report concludes "...where [Vashon till] is present beneath the [Vashon recessional gravels], or lower permeability units of the [Vashon advance outwash/Hawks Prairie gravels] exist, localized water table perching may occur, but over most of the candidate area, infiltrated water will rapidly move vertically until it reaches the regional water table at an estimated 60 to 80 foot depth.... Discharge from the aquifer can occur vertically, or to the east, west, or north as springs.... " The degree of change is dependent on the recharge location and rate. Recharged groundwater will move through the aquifer following established hydraulic grade lines and discharge through existing springs and outlets. The estimated time of travel from the groundwater recharge basin to an established well or spring is in excess of 10 years, with the exception of a well near 31st Avenue and Wylie Lane NE. The discharge rate will be proportional to the application rate at the recharge basins. The report also notes that recharge "...will increase the baseflows to both McAllister and Woodland Creeks. Such enhancements may be beneficial to anadromous fish populations, and may potentially be useful as a water right mitigation measure...." The report states that potential adverse impacts may include local slope instability and wet ground problems near the discharge points, but that these problems will be minor in the Woodland Creek basin where slopes are gentle. Once a property has been secured, a six-month pilot test will be conducted to confirm the hydrogeologic patterns and to ensure that negative impacts to surface water flows are not likely to occur.

Water Quality. Reclaimed water will be treated to Class A reclaimed water standards prior to discharge to a recharge area. Class A reclaimed water treatment requirements are summarized below in Table 6-1, along with other effluent limits.

Nitrate levels leaving the treatment plant will be slightly higher (at 3.0 to 4.5 mg/L) than typical Vashon recessional groundwater nitrate levels of 0.1 to 1.9 mg/L (Robinson & Noble, 1996) but will still be well below federal drinking water maximum contaminant levels of 10 mg/L. The wetland polishing ponds and groundwater recharge basins will further reduce nitrate levels prior to reaching the groundwater table. Reclaimed water will also be treated to reduce coliform organisms to near drinking water standards (two to three orders of magnitude below typical levels discharged from on-site sewage systems). In addition, polishing of water in wetland systems prior to recharge will allow natural removal of volatile elements such as residual chlorine, trihalomethanes, and chloramines. Leaving the plant, Class A reclaimed water will likely have somewhat higher dissolved mineral levels (estimated 200 to 400 mg/L) than existing Vashon outwash (recessional or advance) or pre-Kitsap glacial waters (90 to 120 mg/L, Robinson & Noble, 1996). Precipitation and dispersion in the wetland ponds and recharge basins will have a mitigating effect on these concentrations. The federal standard for total dissolved solids is 500 mg/L, consequently, the recharged water will have no significant impact on groundwater quality.

Groundwater recharge of wastewater, particularly for indirect potable recharge, has been identified as a concern to citizens in the area. Emerging concerns include potential impacts from protozoan parasites (Giardia and Cryptosporidium) and pharmaceutically active compounds (endocrine disruptors, antibiotics, analgesics); because these issues are fairly recent discoveries there is less extensive research to document their effects.

Table 6-1. Reclaimed Water Satellite Treatment Plant Effluent Design Requirements

Requirement	Regulation, Standard or Decision	Notes
≤ 2.2 total coliform/100 mL (7 day average)	Water Reclamation and Reuse Standards, Sept. 1997.	In Class A water definition.
≤ 23 total coliform/100 mL in any sample	Water Reclamation and Reuse Standards, Sept. 1997.	In Class A water definition.
BOD ≤ 30 mg/L	Water Reclamation and Reuse Standards, Sept. 1997.	In Class A water definition.
TSS ≤ 30 mg/L	Water Reclamation and Reuse Standards, Sept. 1997.	In Class A water definition.
≤ 5 mg/L Total Nitrogen	Value agreed upon with WDOE at a meeting held on June 26, 2000.	
≤ 2 NTU average monthly	Water Reclamation and Reuse Standards, Sept. 1997.	The definition of Class A requires filtered wastewater. The filtered wastewater definition lists this requirement.
≤ 5 NTU any time	Water Reclamation and Reuse Standards, Sept. 1997.	The definition of Class A requires filtered wastewater. The filtered wastewater definition lists this requirement.
Drinking Water Quality Standards	WAC 173-200-040	Refer the section indicated for a table of contaminant limits.
Oxidized, coagulated, filtered, disinfected	Water Reclamation and Reuse Standards, Sept. 1997.	In Class A water definition.
≤ 5 odor units at the fence line	Decision made by LOTT plant staff in a meeting on Sept. 11, 2000.	A two-stage odor control system will be designed for the reclaimed water satellite plant.
CT ≥ 30	Department of Ecology Design Guidelines for Sewage Works.	Disinfection contact time.
Chlorine residual of ≥ 0.5 mg/L	Water Reclamation and Reuse Standards, Sept. 1997.	

Endocrine disruptors are chemicals that can produce hormone effects in humans consuming water containing these chemicals or in animals such as fish that live in water containing these chemicals. Of concern to humans are the estrogenic compounds produced including natural estrogen excreted by women and synthetic estrogen contained in birth control pills. These compounds are excreted into wastewater. Preliminary research by Sedlak, et al. (*The Fate of Endocrine Disrupting Hormones in Wastewater Treatment Systems and Surface Waters*, 1999) has indicated that the hydrophobic nature of these compounds results in their being removed during the wastewater treatment process, down to concentrations as low as one part per trillion. A peer review meeting of the National Toxicology Program evaluated low-dose effects and dose-response relationships for endocrine-disrupting chemicals in late 2000. The panel noted that low-dose effects have been observed for estradiol and some estrogenic

compounds, including effects on the immune system and on neurological structure of humans. The panel concluded, however, that further research is needed to better understand overall and long-term health consequences of such effects (*Water Environment and Technology, January 2001).* LOTT will continue to monitor the outcome of ongoing research studies, and comply with all emerging regulations.

As previously described, effluent will be treated to comply with Class A treatment requirements. The proposed treatment method is a biological batch reactor with membrane filtration. The reactor will go through several mixing, aeration and settling phases, with a membrane installed inside the reactor. After the reactor has completed its batch process, the treated effluent will be filtered through the membrane and discharged to the disinfection facilities. Membrane pore openings will be between 1 and 4 microns. Disinfection will be done using either ultraviolet light (UV) or sodium hypochlorite. Hypochlorite will be used for residual disinfection as required by the Department of Ecology (refer to Table 6-1). Following disinfection, the effluent will be discharged to a polishing wetland, where it will be detained and processed for at least an additional 5 days prior to discharge to the groundwater recharge basin.

Recent studies have been conducted to assess the treatment efficiency of membrane filtration and ultraviolet disinfection. These types of facilities were tested at pilot feed rates ranging from 12-24 gallons per minute. Membrane filters with UV disinfection achieved 100percent removal of Giardia and Cryptospiridia with a relatively limited number of samples (Holmes et al, 2000). Long-term studies conducted in the San Gabriel Valley in California indicated that tertiary treated effluent met the total coliform standard of 2.2 organisms per 100mL 99.1 percent of the time, with 82.9 percent of the samples having undetectable levels of total coliform. Further, a study by the Sanitation Districts of Los Angeles County found only one positive virus sample in a 20 year monitoring program that has included 1,045 samples consisting of more than one million liters of effluent (Hartling and Nellor, 2000). Similar studies in other recharge locations, including Hawaii and California, have not indicated any negative groundwater impacts resulting from groundwater recharge.

As a result of the proposed high level of wastewater treatment, anticipated reclaimed water and groundwater monitoring, and multiple treatment system safeguards to ensure program reliability, groundwater recharge at Site A is not expected to have significant impact on groundwater quality. Groundwater at discharge points is expected to be of similar quality to surface water at these locations. Because of greater depth to groundwater and fewer areas of perching near the surface, potential impacts are expected to be the least at Site A, compared to other sites.

Potential impacts to drinking water supplies are minimal. The closest water supply well is near the corner of 31st Avenue and Wylie Lane, approximately 2,500 feet from the site. The Category A wells in the area are not within the 10-year capture zone.

Site B

Impacts to groundwater resources would be similar to those described for Site A above. The well located neat 31st Avenue and Wylie Lane is approximately 1,500 feet from this site. The site is not within the 10-year capture zone for a Category A well.

Site C

Impacts to groundwater resources would be similar to those described for Site A; however, portions of the site have been identified as till or as saturated and additional study will be required in order to place recharge facilities in appropriate locations. The well located neat 31st Avenue and Wylie Lane is approximately 2,000 feet from this site. The site is not within the 10-year capture zone for a Category A well.

Site D

Impacts to groundwater resources would be similar to those described for Site A above. Groundwater recharge is not currently planned at this site, and would likely increase surface water

flows in Woodland Creek due to the close proximity. The closest well to this site is located approximately 3,000 feet away; however this well is no longer in operation due to elevated nitrate levels.

Site E

Impacts to groundwater resources would be similar to those previously described for Site A with several additional considerations. Site E was historically used by the Olympia Cheese factory for land application treatment and percolation to the groundwater as the primary means of waste disposal during its operation. The cheese factory waste material included dairy byproducts (whey) high in BOD (carbon) and total dissolved solids. These materials may be present in the vadose zone and groundwater beneath Site E. Excess carbon in the vadose zone will create a biological film when exposed to oxygenated water and substantially reduce the infiltration rate and potentially cause localized groundwater flooding and/or surface ponding. The nearest well is located near 31st Avenue and Wylie Lane approximately 1,500 feet from this site. The site is not within the 10-year capture zone for a Category A well.

Conveyance System

There will be no impact to groundwater resources from conveyance systems. Potential pipeline breaks or leaks are rare and prompt repair will prevent groundwater impacts. The pipelines will be transporting highly treated wastewater.

6.1.5 Biological Resources

Impacts to biological resources associated with the wetland polishing ponds, groundwater recharge basins, and associated conveyance systems are described below.

Site A

Impacts associated with siting constructed wetlands and a groundwater recharge basin on Site A would involve the permanent loss of upland non-native shrub vegetation. Impacts to wetlands or wildlife on Site A are not anticipated.

Site B

Impacts associated with siting constructed wetlands and a groundwater recharge basin on Site B would involve the loss of third growth Douglas fir forest, native and non-native shrub habitat, and some small Garry oak trees. Impacts to wetlands on Site B are not anticipated. The long-term effect on wildlife would be the loss of a habitat type that is common in the vicinity of the project.

Site C

Impacts associated with siting constructed wetlands and groundwater recharge facilities on Site C would involve the permanent loss of third growth Douglas fir forest, and non-native upland shrub habitat. The permanent loss of a small forested/scrub shrub wetland would~~could~~ also likely occur. The effect on wildlife would be the loss of a habitat type that is common in the project vicinity.

Site D

The impacts associated with siting constructed wetlands and groundwater recharge facilities could include the loss of clumps of native trees. No impacts to natural wetlands are anticipated. The effect on wildlife would be the loss of small patches of remnant trees.

Site E

The impacts associated with siting constructed wetlands and groundwater recharge facilities on Site E would involve the permanent loss of non-native grass-dominated meadow habitat. The loss of a small amount of wetland could also result. Impacts to wildlife on Site E are not anticipated.

Conveyance System

The impacts associated with siting the conveyance system could include temporary loss of roadside vegetation, and sedimentation caused by construction activities.

6.1.6 Fish Resources

Impacts to fish resources associated with the wetland polishing ponds, groundwater recharge basins, and associated conveyance systems are described below.

Sites A, B, C, D, and E

Groundwater recharge may benefit stream flow, particularly summer flows, which may benefit fish resources throughout the basin.

Recent research has shown the potential for effects to aquatic resources, particularly fish, resulting from the presence of endocrine-disrupting chemicals in receiving waters. This potential impact was discussed in the 1998 Final SEIS. The source of these chemicals is largely through the excretions of individuals taking hormone supplements as part of birth control, hormone therapy, or other medical reasons. Most research in this area has focused on receiving water systems with direct wastewater discharge; there is minimal information available about the effects of reclaimed water upon surface water resources. Chemicals discharged into the wastewater system that may not be completely removed could enter the surface water system and potentially migrate to adjacent groundwater resources, resulting in potential impacts. Limited research has been conducted and results are not conclusive, but biological changes have been detected at chronic low doses for some chemicals present in treated wastewater. Given the high level of treatment provided, anticipated volume of wastewater discharged to groundwater, anticipated dilution by groundwater, and additional dilution by the surface water system, impacts to biological resources in receiving surface waters are not anticipated. At the current time, the proposed treatment process, which includes biological treatment in a sequencing batch reactor followed by membrane filtration and ultraviolet disinfection, represent state of the art technology for wastewater treatment. This treatment will be followed by additional polishing in a wetland polishing system. LOTT will continue to monitor emerging research on this issue to ensure that any potential impacts are minimized.

Conveyance System

The most significant potential impacts to freshwater fish resources resulting from construction of the conveyance system would be those created by the crossing of Woodland Creek by pipelines connecting the Zone 2 sites with any of the proposed constructed wetlands polishing ponds and groundwater recharge facilities. The crossing of streams by pipelines can generally result in erosion of stream banks, temporary periods of elevated turbidity, and disturbance to the stream channel. Any fish in the immediate vicinity of instream construction would be displaced. Erosion can introduce fine sediments, which can reduce the suitability of spawning gravels by restricting intergravel flow and reducing dissolved oxygen levels. Impacts would be greatest in those areas inhabited by salmonids during critical spawning and/or rearing periods. As noted in Section 6.1.1, all stream crossings would be jacked or microtunneled to minimize disturbance to the stream.

6.1.7 Shellfish Resources

Impacts to shellfish-resources associated with the wetland polishing ponds, groundwater recharge basin, and associated conveyance systems are described below.

Sites A, B, C, D, and E

Impacts to shellfish habitat as a result of groundwater recharge and/or wetland polishing could occur if recharged water containing fecal coliform bacteria and/or viruses reached marine waters. Discharge of wastewater treated to Class A reclaimed water standards will have total coliform levels of less than 2 organisms/mL. Research has indicated that viral concentrations are largely non-detectable in wastewater treated to secondary standards with microfiltration and/or ultraviolet disinfection. Refer to Section 6.1.4 for additional discussion of wastewater treatment effectiveness.

Based upon modeling conducted as part of this study, it is estimated that the travel times from the recharge sites to a surface water discharge location would be on the order of 10 years. Fecal coliform bacteria and viruses can survive up to six months in surface waters (Keswick and Gerba, 1980). Longer viral survival rates may be possible in groundwater since the lethal effects of sunlight are eliminated and temperatures are maintained at a relatively low level. It is not anticipated; however, that viruses could survive

in groundwater up to 10 years. As a result, recharge of highly treated effluent to groundwater is expected to have no detectable impact to shellfish in adjacent marine waters.

Conveyance Pipelines

Impacts to shellfish resources have not been identified from the construction and/or operation of conveyance pipelines.

6.1.8 Noise Resources

Noise-related impacts associated with the wetland polishing ponds, groundwater recharge basins, and associated conveyance systems are described below.

Sites A, B, C, D, and E

Recharge basins and polishing ponds are not significant sources of noise. Construction noise would occur for the approximately 9 month construction period and would be similar to those described above for Site 1 (Section 5.1.8), with earthwork producing the most construction-related noise. The primary earthwork activity periods are anticipated to last for approximately 16 to 20 weeks. Following construction, impacts to receiving properties would be generally limited to the splashing or flowing of water into the polishing ponds and maintenance activities associated with these types of facilities, and periodic maintenance to scarify the surface of the groundwater recharge basins to maintain infiltration rates. This work would occur every 6 to 12 weeks, and would entail the use of a backhoe or bulldozer. Every several years, the sand in the recharge basis will be replaced. Noise impacts to receiving properties are anticipated to be minimal as work would be infrequent and would occur during daytime hours.

Water flow into the polishing ponds and recharge basins is not anticipated to create a significant amount of noise. Periodic trimming or mowing of vegetation and other landscape maintenance would occur, particularly during the growing season. Noise associated with these activities could include engine noise from mowers or trimmers and voices. At present, these five sites are generally isolated, and no noise impacts to receiving properties are anticipated.

Off-site noise sources are not anticipated to have an impact on the recharge basin or polishing pond operations.

Conveyance System

The conveyance system between the reclaimed water satellite plant and the polishing pond and recharge basin site would follow existing roadways within the City of Lacey area. Construction-related noise would include asphalt removal by jackhammer or scraper, vehicle and heavy truck noise, and excavation and installation equipment. Residences and/or businesses along affected roadways would experience higher noise levels during allowable construction hours as a result of the presence of heavy equipment such as backhoes and other heavy equipment. The conveyance system would be installed in segments, and would last approximately a week in any given segment. Due to the short and temporary duration of construction activities, noise impacts are not anticipated to be significant.

Noise related to operation of the conveyance system would generally be limited to pump stations along the conveyance route. These impacts are not anticipated to be significant as the pump stations would be housed within insulated structures that effectively reduce noise levels at receptors.

6.1.9 Land and Shoreline Use

Construction-related ~~I~~impacts identified in Section 5.1.9 are applicable to the groundwater recharge basin/constructed wetland polishing pond site and associated conveyance systems. Land use-related operational impacts have not been identified. As noted in Section 6.1.11, some residents may view the wetland polishing ponds as an amenity.

6.1.10 Parks and Recreation

The 1998 Final SEIS noted that potential impacts to parks and recreation facilities are almost

exclusively construction-related, temporary in nature, and associated with construction of conveyance facilities. General construction-related impacts would include increases in dust, noise, and traffic congestion where construction took place in the vicinity of a park or recreation facility. Pipeline segments would be constructed at a rate of approximately 125 to 200 feet per day.

Sites A, B, C, D, and E

There would be no impacts to parks and recreation facilities resulting from construction at any of the proposed sites for wetland polishing ponds and/or groundwater recharge facilities. None of these sites contain any existing or proposed park or recreational facilities. The nearest potentially affected facility is the proposed Meridian Campus Park South, located approximately 1,000 feet west of Site A and separated by Willamette Road and a presently forested buffer. Although a general site for the park has been identified, this park has not yet been constructed; as a result, there would be no construction impacts to this park at this time.

NE Britton Parkway, Marvin Road E, and Hogum Bay Road NE are designated as Class 2 bikeways and portions of all three have designated bike lanes. Any construction-related traffic on these roadways could cause minor disruption to biking, but this disruption would be temporary and intermittent. In addition, biking activity on these roads is presently limited. Refer to the Transportation Section (6.1.13) for a discussion of safety-related impacts along these roadways.

Operation of polishing ponds, groundwater recharge facilities, and associated conveyance systems would not result in any park or recreation impacts. With the exception of Meridian Campus Park South, no park or recreation facility would be closer than approximately one-quarter mile from the sites. With landscaping, odor control, and noise controls, no impacts to any park or recreation facility would occur. Refer to Sections 6.1.2 and 6.1.8 for a discussion of potential odor and noise impacts.

Conveyance System

Construction of the conveyance system potentially could disrupt use of bicycle lanes or biking activity throughout the project area. Depending on the conveyance alternative selected, construction could temporarily interfere with the roadways that have been designated as Class 2 bikeways:

- NE Britton Parkway;
- Hogum Bay Road NE;
- West Mall Drive S;
- Marvin Road E;
- Martin Way E;
- Carpenter Road SE; and
- 15th Avenue NE.

Conveyance pipelines associated with all of the Zone 2 reclaimed water satellite plant sites would likely have the greatest impacts, as these alternatives would all affect the longest portions of bikeway along NE Britton Parkway. Conveyance pipelines associated with reclaimed water satellite plant Site 1 would likely have the least impact on bikeways. Impacts to biking could be reduced by phased construction, and by limiting the disruption to only one road segment at any one time. Depending on the alternative, conveyance construction from the reclaimed water satellite plant site to the wetland polishing pond/groundwater recharge basin site would take approximately 6 to 9 months. Depending on the location of conveyance lines within the roadway, impacts could be avoided if lines were located away from roadway shoulders where bike lanes are located.

There would not be any impacts to other park and recreation facilities from the construction of conveyance lines.

6.1.11 Aesthetics and Visual Resources

Visual impacts associated with the wetland polishing ponds, groundwater recharge basins,

and associated conveyance systems are described below.

Site A

The aesthetic and visual character of this site would be altered from an undeveloped area covered with weedy and invasive vegetation to a developed property containing park-like landscaped areas and ponds. These types of aesthetic amenities are frequently perceived in a positive manner by viewers. The recharge basin and polishing ponds would be landscaped and maintained by maintenance personnel. These facilities could be perceived as an amenity in some communities in much the same way that parks or other open space are typically valued. For these reasons and because of its isolated location, visual and aesthetic impacts are not anticipated to be significant (see Figure 4-4).

Site B

Aesthetic impacts would be generally the same as described above for Site A. Following construction of the recharge basin and polishing ponds on Site B, the aesthetic and visual character of this site would change from an undeveloped, wooded area to a more open property containing landscaped areas and ponds. The site is not visible to adjacent residents. Visual and aesthetic impacts are not anticipated to be significant (see Figure 4-4).

Site C

Aesthetic impacts would be generally the same as described above for Site A. Impacts to viewers in the industrial areas to the west and to viewers moving past in their vehicles would likely be minimal and would depend upon the proximity of the facilities to site boundaries and to Marvin Road. The facilities would be located so as to maximize the distance from property boundaries and allow for a landscaped buffer between the facilities and property lines or Marvin Road. Visual and aesthetic impacts are not anticipated to be significant.

Site D

Site D is located near the intersection of Carpenter Road NE and Britton Parkway. This site will only be used in conjunction with either Site A, Site B, Site C, or Site E and will only include polishing ponds. Some areas of the site are currently cleared and contain weedy vegetation or are otherwise developed in support of the active gravel mine. No adjacent residences view the site at this time. Viewers moving past the site in their vehicles would experience a noticeable change in aesthetic character if the wooded portion is cleared and a recharge basin or polishing pond facility is constructed near the roadways.

Site E

The visual and aesthetic character of Site E would change from an open grassy area covered with waste process water residue to a landscaped facility containing ponds and vegetation. Site E is visible only from Hogum Bay Road NE. It is likely that the change from a waste process water disposal site to a more park-like setting with ponds and landscaping would be perceived as positive by some viewers. Visual and aesthetic impacts are therefore not anticipated to be significant.

Conveyance System

Visual and aesthetic impacts associated with conveyance systems have not been identified as all conveyance systems will be constructed below ground.

6.1.12 Historic and Cultural Preservation

Impacts to historic and cultural resources would be associated with construction of wetland polishing ponds, a groundwater recharge basin, and associated conveyance systems.

Sites A, B, and C

There exists a high probability for intact hunter-fisher-gatherer archaeological resources on Sites A, B, and C. Construction activities that more than superficially disturb the soils on these sites may result in disturbance of these resources. A low probability for intact historic period archaeological resources exists for Sites A, B, and C, therefore, no impacts are expected. No impacts to significant historic structures are expected as a result of construction or operation

of wetland polishing ponds or a groundwater recharge basin on Sites A, B, or C.

Site D

There exists a high probability for intact hunter-fisher-gatherer archaeological resources on Site D; however, extensive land disturbance on this site makes it unlikely that any intact resources would be encountered during construction. There is low probability for historic period archaeological resources, therefore no impacts are expected. No impacts to significant historic structures are expected as a result of construction or operation of wetland polishing ponds or a groundwater recharge basin on Site D.

Site E

There exists a high probability for intact hunter-fisher-gatherer archaeological resources on Site E. Construction activities that more than superficially disturb the soils on this site may result in disturbance of their resources. A low probability for intact historic period archaeological resources exists for Site E, therefore, no impacts are expected. No impacts to significant historic structures are expected as a result of construction or operation of wetland polishing ponds or a groundwater recharge basin on Site E.

Conveyance System

Proposed conveyance lines on or adjacent to the historic 1854 and the larger pre-1854 boundaries and the Woodland Creek floodplain would have a high probability for hunter-fisher-gatherer archaeological resources. Construction activities that more than superficially disturb the soils along conveyance routes may result in disturbance of these resources. There is a low probability for historic period archaeological resources along all of the proposed conveyance line routes, therefore no impacts to these resources are expected as a result of construction or operation of the conveyance lines. Although many recorded, unevaluated historic structures exist adjacent to the Draham Street NE, Britton Parkway, and Martin Way SE conveyance lines, no impacts to these structures are expected as a result of construction or operation of the lines.

6.1.13 Transportation

Most construction impacts would be associated with conveyance line construction. Haul trips associated with excavation for conveyance lines could range from 30 to 60 one-way trips per day in any one location. Other impacts could include increased traffic congestion along affected roadways and potential detour routes. Impacts would be greatest on arterials or major thoroughfares (refer to Table 6-2).

Sites A, B, C, D, and E

During construction of the groundwater recharge basin and/or polishing pond, additional traffic would be temporarily generated over the estimated 9 months of construction at the site. Additional trips would be generated by workers traveling to and from the selected site, delivery of materials and equipment to and from the site, and import and export of cut and fill material. Peak truck trip activity would occur during earth-moving activities, anticipated to occur during the first 28 weeks of the construction period (likely to be between the April to October time frame). Travel and access to Sites A, B, and E is likely to occur via Hogum Bay Road. Access to Site D is likely to occur from Britton Parkway or Carpenter Road, while travel and access to Site C is likely to occur off of Marvin Road (see Figures 3-4 and 3-5).

Each site would require potentially substantial amounts of excavation for construction of wetland polishing ponds or recharge facilities, generating haul truck trips on local area roadways. Depending on the site selected, excavation and fill requirements are likely to range from 52,000 to 131,000 cubic yards (cy), plus an additional 13,000 cy of imported sand for infiltration basins (Table 6-2). Construction is expected to occur from 2002 to 2003, with peak construction associated with earth moving expected to occur during April to October. The temporary increase in truck trips would increase traffic volumes on local roadways and potentially cause minor disruptions in traffic flow near each site, overall traffic impacts would not be significant in the long term because of the temporary nature of the traffic increases, and

because there are no identified major traffic concerns on area roadways.

The increase in construction traffic would increase the risk of safety hazards to pedestrians if proper precautions are not taken. Hogum Bay Road, Britton Parkway, and portions of Marvin Road have wide shoulders and/or dedicated bike lanes, which would reduce the potential for conflicts between pedestrians/bicyclists and truck traffic. Additional precautions, particularly in the vicinity of Carpenter Road, where shoulders are more limited, and near school bus stops should be implemented to ensure pedestrian safety.

Table 6-2. Estimated Excavation Volumes and Truck Trips, Recharge Facilities/Polishing Ponds

Site	Excavation/ Offsite Fill Required (cy)	Estimated Haul Truck Trips Required[1]	Truck Trips Per Day[2]	Major Truck Haul Routes
Wetlands Polishing Ponds	131,000	6,550 - 10,917	50 - 75	Draham St. NE, Britton Parkway, Martin Way E. Marvin Road E., Hogum Bay Road SE, Carpenter Road NE, 15th Avenue NE
Groundwater Recharge Basin	52,000	2,600 - 4,333	18 - 30	
Imported Sand for Recharge Basin	13,000	650 - 1,083	5 - 8	

[1] Range assumes a truck volume of 12cy, or pony plus truck volume of 19cy.
[2] Based on a 5 day work week.

Once construction is completed, the groundwater recharge basin and polishing ponds would not require extensive numbers of truck or vehicle trips for maintenance. Activities generating additional vehicle trips would include primarily vegetation removal. Additional trips would occur sporadically as maintenance is needed and are not likely to affect area roadways.

During operation, the recharge basin and polishing ponds may result in small increases in traffic from informal recreational use of public access areas around these facilities. The facilities, however, will not be designated as a formal park area, and will not contain recreational facilities or parking for public use. There are on-going discussions with the Washington Department of Fish and Wildlife (WDFW) concerning possible location of an oiled wildlife rehabilitation center with the storage ponds. During oil spill incidents, oiled birds and other small wildlife would be transported to the center, cleaned and returned to their collection point. The Center would use significant amounts of reclaimed water when active, but periods of activity are very infrequent. Parking during spill incidents would be managed off-site with shuttle transportation to the Center. These impacts will be quantified and described in a separate EIS if the Center is located at LOTT's storage ponds.

Conveyance System

Construction of conveyance from the reclaimed water satellite plant to wetland polishing ponds and groundwater recharge sites would require temporary open-trench construction in some project area roadways. Construction would temporarily disrupt local traffic patterns over an estimated 6 to 9 months and may require short-term detours, potentially causing some traffic delays. It is estimated that conveyance line construction would proceed at a rate of 80 to 180 feet per day, resulting in open trench segments of 100 to 200 feet at any one time.

Table 6-3 identifies road segments that are likely to be affected by construction for each alternative, along with potential impacts resulting from lane closures. Conveyance routes are also shown on Figures 3-4 and 3-5. Because impacts

would be temporary and there are no identified major traffic issues on project area roadways, no significant transportation impacts are anticipated. Similar precautions to those described above would minimize potential hazards to pedestrians and bicyclists. Safety concerns would be relatively greater on 15th Avenue NE, where road shoulders are narrower and more limited. Thurston County is installing 8-foot sidewalks in 2001 between Carpenter Road and Galaxy Drive (McGuin, personal communication, 2001). There are currently sidewalks from Galaxy Drive to Martin Way.

Once construction was completed, no operational impacts to transportation are expected.

Table 6-3. Roadways Directly Impacted by Construction of Conveyance Systems

Alignment Alternative[1]	Roadways Impacted By Construction	Estimated Truck Trips for Excavation/Fill	Overall Impacts
1A	• SE West Mall Drive (Galaxy Drive) north under I-5 • North across Marvin Road to Site A	810 to 1,349	• 4.5-foot wide trench along east side of Galaxy Drive; closure of east lane. • Low volumes of traffic on Galaxy Drive; traffic local in nature. • One crossing of Marvin Road would require one lane closure at a time for 5 to 10 days. • Roundabouts (e.g., Marvin Road and Britton Parkway) will be jack and bored.
2A	• NE 15th Avenue east to Britton Parkway/Draham Way intersection • Britton Parkway east to Marvin Road • North on Marvin Road to Site A	530 to 883	• 4.5 foot wide trench would close south lane of NE 15th Avenue and east land of Draham Street. • Low to moderate traffic volumes on NE 15th Avenue, low traffic volumes on Draham Street and Britton Parkway. • Construction along Britton Parkway would occur outside of existing roadway. • Impacts to Marvin Road same as 1A.
1B	• SE West Mall Drive (Galaxy Drive) north under I-5 • North across Marvin Road to Site B	567 to 946	Largely same as 1A.
2B	• NE 15th Avenue east to Britton Pkwy/Draham Way intersection • Britton Parkway east to Marvin Road • North on Marvin Road to Site B	1,400 to 2,333	Largely same as 2A.
1C	• SE West Mall Drive (Galaxy Drive) north under I-5 • North across Marvin Road to Site C	1,135 to 1,892	Largely same as 1A.

Alignment Alternative[1]	Roadways Impacted By Construction	Estimated Truck Trips for Excavation/Fill	Overall Impacts
2C	• NE 15th Avenue east to Britton Parkway/Draham Street intersection • Britton Parkway east to Marvin Road • North on Marvin Road to Site C	1,173 to 1,955	Largely same as 2A.
2AD	• NE 15th Avenue East to Woodland Creek Road • Northeast on Woodland Creek Road to Site D • Britton Parkway to Marvin Road • North on Marvin Road to Site A	1,430 to 2,383	• 4.5 foot wide trench would close south lane of NE 15th Avenue. • Low to moderate traffic volumes on NE 15th Avenue, low traffic volumes on Britton Parkway.
2BD	• NE 15th Avenue east to Woodland Creek Road • Northeast on Woodland Creek Road to Site D • Britton Parkway to Marvin Road • North on Marvin Road to Site B	1,165 to 1,942	• Construction along Britton Parkway would occur outside of existing roadway. • Marvin Road impacts same as 1A.
2CD	• NE 15th Avenue east to Woodland Creek Road • Northeast on Woodland Creek Road to Site D • Britton Parkway to Marvin Road • North on Marvin Road to Site C	1,203 to 2,005	Same as 2BD.
2E	• NE 15th Avenue east to Britton Parkway/Draham Street intersection • Britton Parkway east to Marvin Road • North on Marvin Road to Site E	684 to 1,140	Largely same as 2A.

[1] Number refers to reclaimed water satellite plant sites, letter refers to groundwater recharge site. "2" includes Sites 2 West, Center, and East.

6.1.14 Public Services and Utilities

In addition to impacts discussed in Section 5.1.14, long-term, recharge of reclaimed water would augment groundwater and could result in increases in the availability of groundwater for public water supplies and other beneficial uses.

Sites A, B, C, D, and E

The alignment for the conveyance system connecting Site 1 to groundwater recharge basin/constructed wetlands polishing ponds Sites A, B, C, and E will extend from Site 1 along E Martin Way to Galaxy Drive NE, then north on Galaxy Drive NE to Interstate-5. The

conveyance system would be bored/jacked under Interstate-5. From Interstate-5, the alignment would proceed north on a City of Lacey sewer right-of-way to the recharge site, crossing Marvin Road NE in the process.

The alignment for the conveyance systems connecting the Zone 2 reclaimed water satellite plant sites to groundwater recharge basin/ constructed wetlands polishing ponds sites A, B, C, and E (2A, 2B, 2C, and 2E) will extend from the Zone 2 sites along 15th Avenue NE, then northeasterly along Draham Street NE to Britton Parkway NE. The alignment follows Britton Parkway to a City of Lacey sewer right-of-way, crossing Marvin Road NE in the process. The conveyance system alignments for alternatives 2AD, 2BD, 2CD, and 2 ED, are similar to that described above for the other Zone 2 conveyance systems. However, less construction would occur on Draham Road NE, and these alternatives would involve construction in Woodland Creek Road NE.

Short-duration, temporary disruptions to utility services could potentially occur during construction of the aforementioned conveyance systems in road rights-of-way. In addition, traffic congestion in the immediate vicinity of construction areas could impede movement of fire and emergency response vehicles.

6.2 MITIGATION

This section describes the mitigation measures developed to reduce the environmental impacts described above.

6.2.1 Earth Resources

Construction activities will occur consistent with all applicable City of Lacey clearing and grading requirements. Erosion control measures will be implemented during all construction activities.

Sites A, B, C, D, and E

Measures to reduce construction impacts would be similar to those described in section 5.2.1 for reclaimed water satellite plants.

Conveyance System

Measures to reduce construction impacts would be similar to those described in section 5.2.1 for reclaimed water satellite plants. All stream and wetland crossings would be conducted by jack and bore technologies to minimize erosion and sedimentation in the surface water body.

6.2.2 Air Resources

Mitigation measures would be similar to those described in Section 5.2.2.

6.2.3 Surface Water Resources

Hydraulic impacts to surface water are expected to be positive and, therefore, mitigation measures are not warranted. Land clearing and grading activities have a limited potential for short-term impacts to surface water resources from erosion. Mitigation measures are similar to those described for reclaimed water satellite plants, Section 5.2.3.

Conveyance Systems

Conveyance systems will be constructed in accordance with strict requirements; newly-constructed pipelines have a very low risk of failure. Conveyance systems should receive periodic monitoring and all breaks or leakage should be promptly repaired. Construction-related mitigation measures, as described in Section 5.2.3, include erosion and sediment control, spill management, and site restoration planning, especially in locations where conveyance systems cross wetlands or streams.

6.2.4 Groundwater Resources

Mitigation measures outlined in the 1998 Final SEIS designed to reduce the potential for groundwater degradation associated with groundwater recharge include treating the wastewater to Class A reclaimed water standards, conducting extensive geotechnical and hydrogeologic studies prior to development of recharge facilities, and establishing a groundwater monitoring network to detect any

changes in groundwater quality or potential flooding problems.

The design criteria for these facilities include:

- Groundwater recharge basin siting factors should include the type, grain size, and thickness of surface soils, vertical and horizontal transmissivity, absence of till, and depth to groundwater;
- A groundwater monitoring network would be established; and
- The facilities should be regularly maintained to ensure proper operation.

The level of proposed treatment (described in Section 6.1.4) precludes significant impacts to water quality; although some modifications of the mineral content of the water may occur, specifically, levels of hardness, total dissolved solids, and other readily soluble minerals (sulfate, chloride) may rise slightly. These potential groundwater chemistry changes will not affect beneficial uses and do not require mitigation.

Long-term impacts to groundwater quantity are anticipated to be positive due to the greater availability of water resources, and/or increased discharge to surface waters. Monitoring of groundwater near the site will allow control of recharge volumes should local problems of saturated shallow soils, or problems associated with extreme precipitation, be encountered.

Conveyance System

Periodic monitoring of conveyance system integrity should be performed and leaks and failures repaired promptly.

6.2.5 Biological Resources

Mitigation measures to reduce impacts to biological resources are described below.

Site A

Erosion control BMPs as prescribed by Ecology and the City of Lacey would be followed during construction. All areas that are cleared for construction would be replanted as soon as is feasible following construction at ratios prescribed by local regulations.

Buffers around recharge basins will be planted with western Washington native plant species to increase the habitat benefits of created wetlands. Maintenance activities within recharge basins will be scheduled in autumn to avoid affecting breeding amphibian use of the site.

Sites ~~B and C~~

Mitigation measures for biological resources associated with Sites ~~B and C~~ are identical to those proposed for Site A.

Sites C, D, and E

Mitigation measures for biological resources associated with Sites C, D, and E are identical to those proposed for Site A.

Additionally, wetland areas that are temporarily or permanently impacted during construction will be restored following construction at ratios prescribed by local regulations. All permitting requirements will be met.

Conveyance System

The City of Lacey wildlife corridor located in the vicinity of Site A will be avoided. Pipelines will be routed so as to avoid the corridor.

Roadsides will be hydroseeded; all other areas will be planted with western Washington native plant species.

6.2.6 Fish Resources

Mitigation measures to reduce impacts to fish resources are described below.

Sites A, B, C, D, and E

No mitigation measures are proposed for fish resources for this alternative, as impacts are not anticipated.

Conveyance System

Measures developed to reduce those impacts to fish resources associated with construction of the conveyance system include accomplishing all construction in accordance with WDFW requirements. This includes the avoidance of construction between June 15 and September 30 near Woodland Creek to protect critical salmonid

spawning and rearing areas during low flow periods.

For the pipeline crossing Woodland Creek on a developed roadway, minimizing disturbance of stream channels where possible by using existing bridge structures for crossings.

Use of corrosion-resistant materials in construction of pipelines near waterways to minimize the risk of rupture.

6.2.7 Shellfish Resources

Mitigation measures are the same as those described in Section 5.2.7.

6.2.8 Noise Resources

Mitigation measures are the same as those described in Section 5.2.8.

6.2.9 Land and Shoreline Use

Mitigation measures identified in Section 5.2.9 are generally applicable to the groundwater recharge basin/constructed wetland polishing pond sites and associated conveyance systems. In addition, the groundwater recharge basin and constructed wetland polishing ponds will be designed and constructed in a manner that will result in a visual amenity to the neighborhood in which they are located.

6.2.10 Parks and Recreation

To minimize safety hazards during construction, bicycle detour routes should be established for areas and urban trails. Pipeline corridors should be integrated into future planned trail systems where feasible.

Disruption of bike lanes at construction entrances to the sites should be minimized during construction of a groundwater recharge basin/wetland polishing ponds. In addition to providing detour routes, minimize disturbance to bikeways during construction of conveyance lines by phasing construction and avoiding delineated bike lanes where feasible.

6.2.11 Aesthetics and Visual Resources

Mitigation measures are generally the same as described in Section 5.2.11.

The wetland-like quality of the polishing ponds could be considered a visual amenity by local residents. These ponds are anticipated to develop wetland characteristics attractive to wildlife, including birds and amphibians. The development of native wetland plant species would add to the overall visual character of this facility and to its attraction to wildlife species that typically utilize wetlands.

Sites B and C could be developed to preserve portions of the evergreen and deciduous trees and native undergrowth as well as develop landscaping plans that utilize native species that blend with the existing vegetation.

6.2.12 Historic and Cultural Preservation

Mitigation measures to reduce impacts to historic and cultural resources are discussed below. In all cases, in the event that probably significant archaeological resources are exposed during construction activities, the Washington State Office of Archaeology and Historic Preservation, the Nisqually Tribe, the Squaxin Tribe, and a professional archaeologist would be notified.

Sites A, B, C, and E

Mitigation for potential impacts to historic and cultural resources at Sites A, B, C, and E include coordination with the Nisqually and Squaxin Island Tribes. In addition, Sites A, B, C, and E have a high probability for intact hunter-fisher-gatherer archaeological resources, therefore a professional archaeologist should conduct field reconnaissance of these sites prior to any ground disturbing construction activity, including geotechnical testing.

Site D

Due to the extensive disturbance related to gravel pit operations, no field reconnaissance is recommended for Site D.

Conveyance System

Mitigation for potential impacts to historic and cultural resources along the conveyance routes include coordination with the Nisqually and Squaxin Island Tribes. In addition, many of the conveyance system routes have a high probability for intact hunter-fisher-gatherer archaeological resources, therefore a professional archaeologist should conduct field reconnaissance of these sites prior to any ground disturbing construction activity, including geotechnical testing.

6.2.13 Transportation

Coordination will be conducted with affected jurisdictions and agencies to facilitate concurrent construction schedules with planned improvements to minimize disruption and reduce costs associated with impact fees. Traffic control plans will be developed for affected areas. Emergency service providers will be notified in advance of construction activity of schedules and detour routes.

All construction activities will comply with applicable City of Lacey and Thurston County regulations and permits regarding construction in road right-of-ways, including construction in newly surfaced or built roads, and open trenching in the vicinity of intersections. Conveyance construction will be phased, to the extent feasible, to minimize traffic disruption. The pipeline will be tunneled under Interstate-5 from reclaimed water satellite plant Site 1 to avoid impacts to traffic.

6.2.14 Public Services and Utilities

In addition to the mitigation measures listed in Section 5.2.14, recharge facilities would be sited, designed, and monitored to minimize potential water quality impacts to groundwater resources used for drinking water supply.

6.3 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS AND CUMULATIVE IMPACTS

This section describes significant unavoidable adverse and cumulative impacts that have been identified associated with constructed wetlands polishing ponds and groundwater recharge basins.

6.3.1 Earth Resources

Minor erosion will unavoidably occur during construction of the groundwater recharge/wetland polishing facilities and conveyance pipelines. These impacts will be temporary.

6.3.2 Air Resources

No significant unavoidable or cumulative impacts to air resources have been identified.

6.3.3 Surface Water Resources

There will be no significant unavoidable adverse or cumulative surface water impacts from the construction of groundwater recharge or wetland polishing pond facilities in the Hawks Prairie basin. As noted, the potential adverse impacts to surface water are primarily short-term and associated with construction and land clearing activities. Long-term impacts are primarily positive due to potential increases in surface water flows.

6.3.4 Groundwater Resources

No significant unavoidable adverse or cumulative impacts from implementation of wetland polishing ponds and groundwater recharge facilities are anticipated. Long-term impacts to groundwater quality are primarily associated with slight changes in local groundwater chemistry; however, these changes are not anticipated to affect beneficial uses. Impacts to groundwater quantity are anticipated to be beneficial.

6.3.5 Biological Resources

No significant unavoidable adverse or cumulative impacts to biological resources have been identified.

6.3.6 Fish Resources

No significant unavoidable adverse impacts to fish resources have been identified.

Cumulative impacts to fish resources would consist of increases in recharge of groundwater resources and decreases in demand for potable water through reclaimed water production and use. Such measures would help offset declining groundwater levels in Thurston County, and could help to maintain or restore base flows in area streams over the long-term.

6.3.7 Shellfish Resources

Significant unavoidable adverse and cumulative shellfish impacts have not been identified associated with the construction or operation of constructed wetlands polishing ponds, groundwater recharge basins, or conveyance pipelines.

6.3.8 Noise Resources

No significant unavoidable adverse or cumulative noise impacts have been identified.

6.3.9 Land and Shoreline Use

Significant unavoidable adverse and cumulative impacts associated with the groundwater recharge basin/constructed wetland polishing pond site and associated conveyance systems were identified in Section 5.3.9.

6.3.10 Parks and Recreation

No significant unavoidable adverse or cumulative impacts to recreational facilities have been identified.

6.3.11 Aesthetics and Visual Resources

No significant unavoidable adverse or cumulative impacts to visual resources have been identified.

6.3.12 Historic and Cultural Preservation

No significant unavoidable adverse or cumulative impacts to historic and cultural resources have been identified.

6.3.13 Transportation

No significant unavoidable adverse or cumulative transportation-related impacts have been identified.

6.3.14 Public Services and Utilities

Significant unavoidable adverse impacts and cumulative impacts are the same as those discussed in Section 5.3.14.

CHAPTER SEVEN: RECLAIMED WATER USE AREAS

7.1 IMPACTS

This section discusses the potential impacts associated with the use of reclaimed water.

7.1.1 Earth Resources

Described below are the potential impacts to earth resources resulting from the use of reclaimed water.

Potential Use Areas

Minor amounts of erosion and sedimentation may occur during construction of the reclaimed water pipelines. These impacts would be temporary, and are not anticipated to be significant.

Generic Use Areas

Impacts to earth resources resulting from generic use areas would be short-term construction-related impacts, similar to those described for the Potential Use Areas.

7.1.2 Air Resources

Described below are the potential impacts to air resources resulting from the use of reclaimed water.

Potential Use Areas

Reclaimed water that would be used at the Merriwood/Vicwood Golf Course, Lacey parks, roadway medians, and Thurston County Waste and Recovery Center does not carry an odor. Prior to use in landscaping, the water will have been oxidized, coagulated, filtered, and disinfected to Class A Reclaimed Water standards. No impacts related to odor are anticipated from use of reclaimed water at these sites.

Generic Use Areas

No impacts to air resources are anticipated as a result of reclaimed water use.

7.1.3 Surface Water Resources

Regulations governing the use of reclaimed water have been designed to prevent negative impacts to surface waters from irrigation, landscaping, surface impoundments, and commercial and industrial uses. Only Class A reclaimed water will be used for these purposes and both the water quality and hydraulic loadings are specified to prevent surface water impacts. Class A reclaimed waters must be oxidized, coagulated, filtered to produce a high quality water. In addition, in most areas of potential reuse, porous shallow soil conditions would tend to prevent runoff into surface waters.

The public may confuse reclaimed water (treated wastewater) with untreated wastewater treatment plant influent or treatment plant effluent. It may be prudent to implement a public education campaign to educate the public about the nature of reclaimed water and its properties following treatment to Class A reclaimed water standards.

Potential Use Areas

Potential golf course and park land uses (Merriwood/Vicwood golf courses, City of Lacey Parks) would be fully regulated by the Washington Department of Health (DOH) and the Washington Department of Ecology (Ecology) so no adverse impacts to surface water would occur.

Generic Use Areas

Potential impacts at generic use areas are similar to those discussed above. Generic uses include landscape irrigation for public and private lands, application to sod or ornamental plant nurseries, application for animal uses excluding milking goats or cows, food crops with no direct water contact, creation of wetlands, groundwater recharge, flushing of sewers, street and public and commercial/industrial yard and lot cleaning, construction application for dust control, fire fighting, industrial boiler feed and process, and concrete aggregate mixing and washing. No adverse impacts to surface water are anticipated if reclaimed water is used in accordance with the State Water Reclamation and Reuse standards, and proper management controls are implemented, including minimization of runoff to surface waters.

7.1.4 Groundwater Resources

Described below are the potential impacts to groundwater resources resulting from the use of reclaimed water.

Potential Uses

There is a limited potential that reclaimed water, when applied to golf course or park land, will slightly impact shallow groundwater, particularly through the transmittal of nutrients and dissolved minerals to groundwater. This potential impact is negligible because the reason for application of water to turf at these facilities would be to satisfy turf water and nutrient needs. Uptake by turf and other plants would reduce or eliminate net percolation and would also remove residual nutrients and minerals.

Generic Use Areas

The potential impacts of reclaimed water on groundwater in generic use areas are limited to potential localized increases in volume, nutrients, and mineral constituents in groundwater if the use areas are in, or drain to, areas of rapid groundwater infiltration. In general, these areas will be spatially and temporally dispersed over the region, therefore, net hydraulic impact will not be measurable. Further, since the water will be treated to Class A reclaimed water standards prior to application and will undergo additional treatment via percolation through the soil column, impacts to groundwater quality will be negligible.

7.1.5 Biological Resources

No impacts to biological resources are anticipated from using reclaimed water to irrigate golf courses, parks, roadside landscaping, or the landfill facility, or other generic uses. These types of sites are already highly manipulated and support little in the way of biological resources.

7.1.6 Fish Resources

Described below are the potential impacts to fish resources resulting from the use of reclaimed water.

Potential Use Areas

No adverse impacts to fish resources are anticipated from using reclaimed water to irrigate golf courses, parks, roadside landscaping, or the landfill facility. These types of sites are already highly manipulated and typically do not provide or affect fish resources.

Use of this reclaimed water may result in a decreased demand for groundwater for irrigation and may result in an increase in base flows in area streams.

Generic Use Areas

No adverse impacts to fish resources are anticipated from using reclaimed water for the proposed generic uses.

7.1.7 Shellfish Resources

Impacts to shellfish resources from the use of reclaimed water at the identified use areas or at the unspecified locations and/or uses in the Hawks Prairie area are not anticipated.

7.1.8 Noise Resources

Described below are the potential noise-related impacts resulting from the use of reclaimed water.

Use of reclaimed water at the Merriwood and Vicwood Golf Courses and Lacey Parks would not be a significant source of noise on or near these use areas. Noise from irrigation/sprinkler systems would be the only noise produced as a result of the use of reclaimed water. Irrigation noises currently occur on these sites due to use of the local potable water supply to maintain landscape vegetation. No difference in noise level or frequency would occur following a switch from the potable water supply to reclaimed water.

Use of reclaimed water at the Thurston County Waste and Recovery Center would not be a significant source of noise on or near the site. Noise from irrigation/sprinkler systems and wash-down operations would be the only noise produced as a result of the use of reclaimed water. A substantial amount of noise currently occurs at the landfill site. Noise sources include vehicles, dumptrucks and other commercial vehicles which include audible warning signals, and earth and refuse moving equipment. Noises associated with irrigation and wash-down practices currently occur on this site with the use of potable water supply. No difference in noise level or frequency would occur following a switch from the potable water supply to reclaimed water.

Generic Use Areas

Noise impacts are not anticipated with the use of reclaimed water. Noise levels would be the same as those experienced with potable water sources.

7.1.9 Land and Shoreline Use

Temporary construction related impacts to land use may occur during installation of pipelines to connect use areas with the reclaimed water conveyance systems. Installation of reclaimed water distribution systems within use areas with public access, such as golf courses or parks, may result in temporary disruptions to the use of such areas. Signage will need to be placed at use areas to inform users of the areas that reclaimed water is being applied or used.

7.1.10 Parks and Recreation

In cases where construction occurs within golf course or park boundaries, portions of the facility may be temporarily closed to users. Retrofitting parks and golf courses for application of reclaimed water would require installation of 6-inch reclaimed water lines, construction of storage systems, and installation of irrigation heads.

No significant operational impacts are anticipated. Because reclaimed water use is a fairly new concept in the region, informational signs may be appropriate in application areas to facilitate public education.

Potential Use Areas

Reclaimed water use at identified use areas are discussed below.

Merriwood/Vicwood Golf Courses. Construction of pipelines for the distribution of water to and within the Merriwood and Vicwood Golf Courses would likely result in short-term, localized disruption in use of the golf courses. Due to the small diameter of pipelines, the likely phased construction, and short-term nature of construction, these impacts would not be expected to substantially disrupt golf course use and would not be significant. Long-term operation of the irrigation system would not impact recreation activities.

With proper adherence to the Water Reclamation and Reuse Standards, there would be no operational impacts to either golf course. Reclaimed water would be used for irrigation, and proper measures to avoid exposure of players to reclaimed water during irrigation activities would be required in conformance with these Standards.

Lacey Parks: Meridian Campus Park and Britton Parkway Park. Construction of pipelines for the distribution of water to and within either the North or South Meridian Campus Parks or the potential future Britton Parkway Park would likely result in short-term, localized disruption in use of these future parks.

Due to the small diameter of pipelines, the likely phased construction, and short-term nature of construction, these impacts would not be significant. It is possible that construction could occur before or during construction of the actual park facilities to minimize any disruption of recreation activities.

With proper adherence to Ecology Water Reclamation and Reuse Standards, there would be no operational impacts to these future parks. Reclaimed water would be used for irrigation, and proper measures to avoid exposure of park users to reclaimed water during irrigation activities would be required in conformance with these Standards.

Generic Use Areas

Construction of pipelines for the distribution of water to parks, golf courses, schoolyards, and common areas would likely result in short-term, localized disruption in use of these existing and future types of facilities. Due to the small diameter of pipelines, the likely phased construction, and short-term nature of construction, these impacts would not be significant. It is possible that construction could occur before or during construction of the actual future facilities to minimize any disruption of recreation activities. Long-term operation of the irrigation system would not impact recreation activities.

With proper adherence to the Water Reclamation and Reuse Standards, there would be no operational impacts to these future facilities. Reclaimed water could be used for irrigation, decorative fountains, and restroom facilities. Proper measures to avoid exposure of park users to reclaimed water during irrigation activities would be required in conformance with these standards.

7.1.11 Aesthetics and Visual Resources

Described below are the potential visual impacts resulting from the use of reclaimed water.

Potential Use Areas

The use of reclaimed water at the Merriwood and Vicwood golf courses, and at Lacey Parks would require signage to inform and alert patrons to the use of reclaimed water. Signage would be colored purple with white or black lettering as described in *Water Reclamation and Reuse Standards* (Ecology, 1997). Reclaimed water would only be used for watering of grass/lawn areas and other landscaping. These signs would be approximately 3 to 4 feet square in size and would be posted adjacent to areas where reclaimed water is used. The dimensions of the signs and their placement would not be disruptive to views or visual amenities and would be designed to be compatible in form and scale with other signage in the use area. All reclaimed water valves, piping, outlets would be colored purple as described in *Water Reclamation and Reuse Standards* (Ecology, 1997). These appurtenances would not be prominent features in the landscape and are not expected to disruptive to the visual quality of the facilities.

The use of reclaimed water at the Thurston County Waste and Recovery Center would require signage to inform and alert users and employees to the use of reclaimed water. Signage would be as described above for golf courses. Reclaimed water would only be used for watering of landscaping at the facility. These signs would be approximately 3 to 4 feet square and would be posted adjacent to areas where reclaimed water is used. As described above for golf courses, all reclaimed water valves, piping, and outlets would be colored purple. No significant views are present on the Waste and Recovery Center site, therefore signs and their placement, as well as purple-colored appurtenances such as valves, piping, and outlets, are not anticipated to be disruptive to views or visual amenities.

Generic Use Areas

Aesthetic and visual impacts are not anticipated with the use of reclaimed water. Signs would be posted around any use area. The signs would be developed to be compatible in form and scale with the surrounding areas. Reclaimed water valves, piping, and outlets would be colored

purple but are not expected to be disruptive to visual quality.

7.1.12 Historic and Cultural Preservation

The majority of the identified use areas will use existing irrigation or other piping systems. In addition, where new conveyance pipe lines are installed, they will be installed in the same trench as other pipe systems in the area, thus reducing potential impacts to buried hunter-fisher-gatherer or historic period archaeological resources. Where digging would occur, an archaeological assessment would be performed prior to ground-disturbing activity to reduce or eliminate impacts to hunter-fisher-gatherer or historic period archaeological resources.

7.1.13 Transportation

Both specific and generic use areas would generate some minor amounts of construction-related traffic. Construction would be temporary and would not likely require any large amounts of excavation for distribution pipelines because the lines would likely be small diameter. As a result, no significant transportation impacts would occur.

Depending on the roadway affected, construction of conveyance lines to application sites would likely result in temporary disruptions of traffic flow, similar to conditions described under Section 6.1.13. These impacts would be temporary and localized and would not be significant.

7.1.14 Public Services and Utilities

Seasonal reuse of reclaimed water for irrigation of golf courses, parks, and school properties could help supplement regional water supplies and offset some of the anticipated future demand for water in Thurston County.

Localized, short-term disruption in utility services could occur during construction of reclaimed water distribution and application systems.

7.2 MITIGATION

This section summarizes mitigation measures to reduce impacts associated with the use of reclaimed water.

7.2.1 Earth Resources

As described in previous chapters, construction Best Management Practices (BMPs) will be employed to minimize erosion and sedimentation during all construction activities.

7.2.2 Air Resources

Because no impacts are anticipated, mitigation measures have not been proposed.

7.2.3 Surface Water Resources

The following mitigation measures apply to reclaimed water uses for the protection of surface waters and groundwater. Health, safety, notification, and transportation requirements for reclaimed water use are specified in the *Water Reclamation and Reuse Standards* (Washington Department of Health and Ecology, September, 1997).

The following uses have been identified by the Departments of Health and Ecology.

Irrigation Uses

- Open access areas such as parks, golf courses, green belt areas, schoolyards, residential landscaping, nonresidential landscaping, and commons.
- Sod or ornamental plants for commercial sale.
- Pasture lands to which milking cows or goats have access.
- Food crops with direct contact between irrigation water and food crops.
- Food crops with no direct contact between irrigation water and food crops.

Surface Impoundments

- Landscaping impoundments.

- Recreational impoundments (excluding recreational impoundments used for swimming).
- Constructed beneficial use wetlands and constructed treatment wetlands.

Groundwater Recharge

- Groundwater recharge by surface percolation.

Commercial and Industrial Uses

As a source of supply for:

- Basins at fish hatcheries.
- Decorative fountains.
- Flushing of sanitary sewers.
- Street cleanings.
- Washing of yards, lots, sidewalks on business/industry grounds.
- Dust control.
- Dampening for soil compaction.
- Water jetting for consolidation of backfill around pipelines.
- Fire fighting/fire protection.
- Toilet and urinal flushing.
- Industrial boiler feed.
- Industrial cooling.
- Industrial process water.
- Washing aggregate and making concrete.

Surface Water Augmentation

- Streamflow augmentation.
- Natural wetlands augmentation.

Mitigation Measures under the Water Reclamation and Reuse Standards (Washington State Departments of Health and Ecology, September 1997) include the following:

All Uses. The following mitigation measures apply to all reclaimed water uses.

- All reclaimed water valves, storage facilities, and outlets shall be tagged or labeled to notify the public or employees that the water is not intended for drinking. Signs or notification will read "Reclaimed Water - Do Not Drink" or other language acceptable to the Washington Departments of Health and Ecology.
- The public and employees shall be notified of the use of reclaimed waters at all use areas. This shall be accomplished by the posting of advisory signs at use areas, notices on scorecards (golf), distribution of written notices to residents or employees, or by other methods.
- Adequate measures shall be taken to prevent unplanned ponding of reclaimed water.
- Runoff and spray shall be confined to the designated and approved use area.
- Precautions shall be taken to assure that reclaimed water will not be sprayed on people or any facility or area not designated for reuse, including but not limited to buildings, passing vehicles, and drinking water fountains.
- The maximum attainable separation will be provided between reclaimed water lines and potable water lines. A minimum horizontal separation of 10 feet will be maintained between reclaimed water lines and potable water lines. When crossing, a minimum vertical separation of 18 inches must be maintained between reclaimed water lines and potable water lines.
- All reclaimed water valves and outlets must be of a type, or secured in a manner, that permits operation only by authorized personnel.
- Except by special authorization of the Washington Departments of Health and Ecology, hose bibs on reclaimed water lines are prohibited.
- A groundwater monitoring program may be required by the Washington Departments of Health and Ecology.

- Cross connection between the reclaimed water and potable water systems are not allowed. The supplier of reclaimed water must prepare and obtain approval from the Washington Department of Health for a cross connection control and inspection program pursuant to WAC 246-290-490.
- Where both reclaimed water and potable water are supplied to a use area, a reduced pressure principle backflow prevention device or an approved air gap separation shall be installed at the potable water service connection to the use area.
- Where potable water is used to supplement a reclaimed water systems, there shall be an air gap separation, approved and regularly inspected by the potable water supplier, between the potable water and reclaimed water.
- The minimum setback between any Class A reclaimed water pipeline and a potable water supply well is 50 feet.
- The user will be responsible for maintaining use records in compliance with state standards.

All Uses. Where applicable the following mitigation measures apply to all reclaimed water uses.

- Tank trucks and other equipment used or distribute reclaimed water shall be clearly identified with advisory signs.
- Tank trucks used to transport reclaimed water shall not be used to transport potable water that is used for drinking or other potable purposes.
- Tank trucks used to transport reclaimed water shall not be filled through on-board piping or hoses that may subsequently be used to fill tanks with water from a potable water supply.
- Tank trucks used to transport reclaimed water must be inspected and approved for such use by the water supplier that provides potable water to the use area prior to transporting reclaimed water.

Surface Water Augmentation. Surface water augmentation must meet the requirements of the federal water pollution control act and Chapter 90.48 RCW, and must identify a beneficial purpose such as in-stream flow enhancement, water right replenishment or transfer, or fisheries propagation.

Commercial and Industrial Uses. Reclaimed water cannot be used for food preparation and cannot be incorporated into food or drink for humans.

Irrigation and Landscaping. Water used for spray irrigation of food crops must be at all times Class A reclaimed water or better.

Irrigation and Landscaping. The hydraulic loading rate of reclaimed water shall be determined based on a detailed water balance analysis.

Irrigation and Landscaping. There shall be no application of reclaimed water for irrigation purposes when the ground is saturated or frozen.

Irrigation and Landscaping with Class A water. The minimum setback between any area subject to irrigation and a potable supply well is 50 feet.

Surface Water Augmentation, Constructed Wetlands, Groundwater Recharge. Use for this purpose must be incorporated into an approved sewer or water comprehensive plan.

Surface Impoundments. Enhanced nutrient removal would be provided to minimize algal and macrophyte growth.

Irrigation and Landscaping, Surface Impoundments, Constructed Wetlands With Class A Water. The minimum setback between an impoundment, storage pond, or constructed wetland that is not lined to prevent seepage and a potable water supply well is 500 feet. The minimum setback between an impoundment,

storage pond, or constructed wetland that is lined to prevent seepage and a potable water supply well is 100 feet.

Groundwater Recharge. The secondary treatment process must include an additional step to reduce nitrogen prior to final discharge to groundwater. The generator must have an industrial wastewater pretreatment program, or all industries that discharge wastewater to the system must have current waste discharge permits issued by Ecology. The recharge project must meet reliability requirements of the Reclamation and Reuse Standards, provide emergency storage for upset conditions, provide additional water quality monitoring for chemical constituents, and use chlorine contact time values in the disinfection process.

7.2.4 Groundwater Resources

Mitigation measures to protect groundwater resources are described in Section 7.2.3, above.

7.2.5 Biological Resources

No mitigation measures are proposed, as impacts to biological resources are not anticipated.

7.2.6 Fish Resources

No mitigation measures are proposed for this alternative, as impacts to fish resources are not anticipated.

7.2.7 Shellfish Resources

Mitigation measures have not been developed, as impacts to shellfish resources are not anticipated from reclaimed water use.

7.2.8 Noise Resources

No noise-related impacts are anticipated; therefore, no mitigation is proposed.

7.2.9 Land and Shoreline Use

Relevant mitigation measures for use areas are incorporated into the Earth, Groundwater, Noise, Air, Aesthetics, Traffic, and Public Services and Utilities sections of this SEIS.

7.2.10 Parks and Recreation

Access to parks and golf courses will be maintained throughout the construction period. When possible, disruption during peak park and recreation facility use periods will be avoided. Disturbed areas will be restored as soon as possible following completion of construction. Affected jurisdictions, communities, user groups, and golf course operators will be notified regarding construction schedules and location of construction activities. Construction areas in parks will be fenced to ensure the safety of park users.

All valves, storage facilities, and outlets should be tagged with signs reading "reclaimed water-do not drink." The public and employees should be notified of use of reclaimed water at all use areas. Precautions should be taken so water will not be sprayed on people or any facility not designated for reuse such as buildings, passing vehicles or drinking water fountains. All other applicable measures should be taken as specified by the Water Reclamation and Reuse Standards. Opportunities to construct reclaimed water irrigation systems for future parks before or concurrent with park construction should be explored.

7.2.11 Aesthetics and Visual Resources

Informational signs will be designed to be comparable in look and format to other signage within the use area. Careful placement of signs to avoid disrupting the overall visual quality of golf course and park areas.

7.2.12 Historic and Cultural Preservation

A professional archaeologist should conduct field reconnaissance of use areas prior to any ground disturbing construction activity, including geotechnical testing.

7.2.13 Transportation

Close coordination will be conducted with affected jurisdictions and agencies as to concurrent construction schedules with planned improvements to minimize disruption and reduce costs associated with impact fees. Traffic control plans will be developed for affected areas. Emergency service providers will be notified in advance of construction activity of schedules and detour routes. All construction activities will comply with applicable city and Thurston County regulations and permits regarding construction in road right-of-ways, including construction in newly surfaced or built roads, and open trenching in the vicinity of intersections. Conveyance construction will be phased to the extent feasible to minimize traffic disruption. Pedestrians and bicyclists will be separated from active truck haul routes and construction areas to minimize safety hazards. School bus stops will be temporarily re-located if necessary to ensure the safety of children.

7.2.14 Public Services and Utilities

No significant adverse environmental impacts to public services and utilities associated with use areas have been identified, therefore, no mitigation measures were proposed.

7.3 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS AND CUMULATIVE IMPACTS

Described below are significant unavoidable adverse and cumulative impacts associated with reclaimed water use.

7.3.1 Earth Resources

No significant unavoidable adverse effects to earth resources have been identified associated with reclaimed water use.

7.3.2 Air Resources

No significant unavoidable adverse or cumulative impacts related to odor are anticipated at these use areas as reclaimed water will not carry an odor.

7.3.3 Surface Water Resources

Because there is little potential for individual use areas to significantly impact surface waters, there are no significant unavoidable adverse impacts. Since use areas will be dispersed spatially and temporally, there is little or no potential for cumulative impacts. There is a potential for cumulative beneficial impacts to surface waters from increased surface water flows during dry periods.

7.3.4 Groundwater Resources

No significant unavoidable adverse impacts to groundwater resources have been identified from the use of reclaimed water, either at specific use locations (golf courses, parks, and the landfill) or as the result of incidental and dispersed uses. The hydraulic effects of reuse will tend to be cumulative with recharge, however, the level of cumulative effect is expected to be small and will likely be beneficial. Cumulative beneficial impacts will include greater availability of groundwater for extraction, and reduced demand on existing groundwater resources.

7.3.5 Biological Resources

No significant unavoidable adverse or cumulative impacts to biological resources have been identified.

7.3.6 Fish Resources

No significant unavoidable adverse or cumulative impacts to biological resources have been identified.

7.3.7 Shellfish Resources

Significant unavoidable adverse or cumulative shellfish impacts have not been identified associated with reclaimed water use.

7.3.8 Noise Resources

Because no new source of noise is anticipated as a result of use of reclaimed water, no significant unavoidable adverse or cumulative noise-related impacts will occur.

7.3.9 Land and Shoreline Use

No significant unavoidable adverse impacts or cumulative impacts to land use associated with use areas have been identified.

Use of reclaimed water in place of potable water at use areas will serve to reduce demands on local groundwater resources.

7.3.10 Parks and Recreation

No significant unavoidable or cumulative impacts to recreational facilities have been identified.

7.3.11 Aesthetics and Visual Resources

No significant unavoidable adverse impacts related to aesthetics or visual impacts are anticipated for any of the use areas.

7.3.12 Historic and Cultural Preservation

No significant unavoidable adverse or cumulative impacts to historic or cultural resources have been identified.

7.3.13 Transportation

No significant unavoidable adverse impacts or cumulative impacts to transportation resources have been identified.

7.3.14 Public Services and Utilities

No significant unavoidable adverse impacts or cumulative impacts to public services and utilities associated with use areas have been identified.

GLOSSARY

Aquifer	A geologic formation capable of yielding a significant amount of groundwater to wells or springs.
Ambient air quality	Quality of the outside air.
Anadromous fish	Fish that ascend rivers from the sea at certain seasons for breeding (e.g., salmon).
Anaerobic	In the absence of oxygen.
Aquatic	Growing or living in or upon the water.
Average dry weather flow (ADWF)	The average non-storm flow over 24 hours during the dry months of the year (May through September). It is composed of the average sewage flow and the average dry weather inflow/infiltration.
Average wet weather flow (AWWF)	The average flow over 24 hours during the wet months of the year (October through April) on days when no rainfall occurred on that or the preceding day.
Best Management Practice (BMP)	A method, activity, or procedure for reducing the amount of pollution entering a water body.
BOD	Biochemical Oxygen Demand.
Biological Treatment	A method of wastewater treatment in which bacterial or biochemical action is intensified as a means of producing oxidized wastewater.
cfm	Cubic feet per minute.
cfs	Cubic feet per second, discharge volume.
Class A Reclaimed Water	Water that is at all times an oxidated, coagulated, filtered, disinfected wastewater. The median number of total coliform cannot exceed 2.2 organisms/100 mL.
Class B Reclaimed Water	Water that is at all times an oxidated, disinfected wastewater. The median number of total coliform cannot exceed 2.2 organisms/100 mL.
Class C Reclaimed Water	Water that is at all times an oxidated, disinfected wastewater. The median number of total coliform cannot exceed 23 organisms/100 mL.

Clean Water Act	Also known as the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).
Coagulated wastewater	An oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or by an equally effective method.
COD	Chemical oxygen demand.
Combined sewer overflows (CSOs)	Overflows, during wet weather, of combined wastewater and stormwater. CSOs occur when flows in the wastewater collection system exceed the capacity of that system. The term "CSO" is also sometimes used to denote a pipe that discharges those overflows.
Combined sewers	A sewer that carries both sewage and stormwater runoff.
cy	Cubic yards.
Discharge, direct or indirect	The release of wastewater or contaminants to the environment. A direct discharge of wastewater flows from a land surface directly into surface waters, while an indirect discharge of wastewater flows into surface waters by way of a sewer system.
Disinfection	A chemical or physical process that kills organisms which cause infectious disease. Chlorine is often used to disinfect treated sewage.
DNR	Washington Department of Natural Resources.
DOH	Washington State Department of Health.
DOT	Washington State Department of Transportation.
Dredged	Removing bottom sediments from a stream or the water body to deepen.
DU/acre	Dwelling units per acre.
Ecology	Washington State Department of Ecology.
Effluent	Treated water, wastewater or other liquid flowing out of a treatment facility.
Environmental Protection Agency (EPA)	A federal agency established in 1979 by Presidential executive order to control pollution of the environment.
ERU	Equivalent residential unit.
ESA	Endangered Species Act.
Estuary	A body of water where freshwater joins saltwater.
Fecal coliform bacteria	A group of organisms common to the intestinal tracts of humans and animals. The presence of fecal coliform bacteria in water, wastewater, or biosolids is an indicator of pollution and possible contamination by pathogens.
Force main	A pipeline leading from a pumping station that transports wastewater under pressure.

GMA	Growth Management Act.
gpcd	Gallons per capita per day, typically associated with water usage.
gpm	Gallons per minute, flow rate.
GWMA	Ground Water Management Area.
HPA	Hydraulic Project Approval, granted by the Washington Department of Fish and Wildlife.
I&I	Infiltration and inflow.
Impacts	"Impacts" are the effects or consequences of actions. Environmental impacts are effects upon the elements of the environment listed in WAC 197-11-444.
Inflow	Flows of extraneous water into a wastewater conveyance system from sources other than sanitary sewer connections, such as roof leaders, basement drains, manhole covers, cross-connections from storm sewers, and street washing.
Influent	Water, wastewater or other liquid flowing into a reservoir, basin or treatment plant.
Infrastructure	Streets, water, sewer lines, and other public facilities basic and necessary to the functioning of an urban area.
LOTT	Lacey, Olympia, Tumwater, and Thurston County.
LOTT Customer	Someone who is hooked up and/or paying rates to LOTT.
mg	Million gallons, a measure of liquid volume.
mgd	Million gallons per day, a rate of liquid flow.
mg/L	Milligrams per liter.
National Pollutant Discharge Elimination System (NPDES)	Section 402 of the federal Clean Water Act, which prohibits discharge of pollutants into navigable waters of the United States unless a special permit is issued by EPA, a state, or (where delegated) a tribal government on an Indian reservation.
NH_3-N	Ammonia - nitrogen.
NMFS	National Marine Fisheries Service.
NO_3-N	Nitrate – nitrogen.
Nonpoint source pollution	Pollution that enters water from dispersed and uncontrolled sources (such as surface runoff) rather than through pipes. Nonpoint sources (e.g., stormwater runoff from agricultural or forest operations, on-site sewage disposal systems, and discharge from boats) may contribute pathogens, suspended solids, and toxicants. The cumulative effects of nonpoint source pollution can be significant.

NMFS	National Marine Fisheries Service.
NPDES Permit	Permit issued under the National Pollution Discharge Elimination System, which establishes reporting requirements and other conditions for discharge of pollutants to receiving waters.
NRCS	Natural Resources Conservation Service, formerly Soil Conservation Service.
NWIFC	Northwest Indian Fisheries Commission.
OAPCA	Olympic Air Pollution Control Agency.
OAHP	Washington State Office of Archaeology and Historic Preservation.
Outfall	The exit point, usually a pipe or pipes where effluent is discharged from the wastewater collection system into receiving water and which is engineered to ensure dispersion and dilution of the effluent in the receiving waters.
Outwash (glacial)	Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice.
Pathogens	Microorganisms that can cause disease in other organisms or humans, animals, and plants. Pathogens include bacteria, viruses, fungi, or parasites found in sewage, in runoff from farms or city streets, and in water used for swimming. Pathogens can be present in municipal, industrial, and nonpoint source discharges.
Peak flow	The maximum flow expected to enter a facility.
PM_{10}	Federal standard for the total suspended particulates defined as the fraction of total particulates less that 10 microns in diameter.
Point source pollution	Pollution that enters water from a well-defined origin such as a discharge from a stormwater pipe or CSO outfall.
Primary treatment	The first stage of wastewater treatment involving removal of floating debris and solids by screening and/or settling.
PSAMP	Puget Sound Ambient Monitoring Program.
PSWQA	Puget Sound Water Quality Authority.
Pump Station	A structure used to move wastewater uphill, against gravity.
Raw sewage	Untreated wastewater.
RCW	Revised Code of Washington.
Regional Treatment Plant	For purposes of this study, a regional treatment plant has a capacity of 2 to 20 MGD.
RM	River Mile
RMB	Resource Management Basin.
Salmonids	Suborder that includes salmon, whitefish, etc.

Satellite Reclamation Plant	For purposes of this study, a satellite reclamation plant is a small-scale wastewater treatment plant with a capacity of 0.5 to 2 MGD.
SEIS	Supplemental Environmental Impact Statement.
Separation, total or partial	A method for controlling combined sewer overflow whereby the combined sewer is separated into both a sanitary sewer and a storm drain, as is the practice in new development. Separation may be total, in which case no stormwater is diverted to the sanitary sewer, or it may be partial, involving only the removal of runoff from streets and parking lots from the sanitary system.
Sewage	Total organic waste and wastewater generated by residential and commercial establishments.
Sewer	A channel or conduit that carries wastewater or stormwater runoff from the source to a treatment plant or receiving stream. Sanitary sewers carry household, industrial, and commercial wastewater. Storm sewers carry runoff from rain or snow. Combined sewers carry both kinds of water.
Significant	"Significant" as used in SEPA means a reasonable likelihood of more than a moderate adverse impact on environmental quality. Significance involves context and intensity. The context may vary with the physical setting. Intensity depends upon the magnitude and duration of the impact. WAC 197-11-330 specifies a process for determining whether a proposal is likely to have significant adverse environmental impact.
Spawning	Producing or depositing eggs.
State Environmental Policy Act (SEPA)	A state law (Chapter 43.21C RCW) which requires that state agencies and local governments consider environmental impacts when making decisions regarding certain activities, such as development proposals over a certain size, and comprehensive plans. As part of this process, environmental impacts are documented and opportunities for public comment are provided.
Stormwater	Water that is generated by rainfall and is often routed into drain systems in order to prevent flooding.
Suspended solids	Small particles of organic or inorganic materials that float on the surface of, or are suspended in, sewage or other liquids and which cloud the water. The term may include sand, mud, and clay particles as well as waste materials.
TAC	The Advisory Committee.
TKN	Total Kjeldahl nitrogen.
Till (glacial)	Unstratified material deposited by the glacial ice and consisting of clay, sand, gravel and boulders.
TMDL	Total Maximum Daily Loads.

Toxic	Causing death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in any organism or its offspring upon exposure, ingestion, inhalation, or assimilation.
Treatment	Chemical, biological, or mechanical procedures applied to industrial or municipal wastewater or to other sources of contamination to remove, reduce, or neutralize contaminants.
TRPC	Thurston Regional Planning Council.
TSC	Technical Subcommittee.
TSS	Total suspended solids.
UGMA	Urban Growth Management Area.
US EPA	United States Environmental Protection Agency.
USFWS	United States Fish and Wildlife Service
UV radiation	Ultraviolet radiation.
VSS	Volatile suspended solids.
WAS	Waste activated sludge.
Washington Administrative Code (WAC)	The codified regulations adopted by various Washington state agencies through the rulemaking process.
Wastewater	Total flow within a sewerage system. In separated systems, it includes sewage and infiltration/inflow. In combined systems, it includes sewage and stormwater.
Water pollution	The addition of harmful or objectionable material to water in concentrations or sufficient quantities to adversely affect is usefulness or quality.
Water quality criteria	The levels of pollutants that affect use of water for drinking, swimming, raising fish, farming or industrial use.
WDFW	Washington Department of Fish and Wildlife.

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PERSONAL COMMUNICATIONS

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COMMENT LETTERS, RESPONSES, AND PUBLIC HEARING TRANSCRIPT

Hawks Prairie Reclaimed Water Project
Comments received on the Draft Supplemental Environmental Impact Statement

Letter No. 1	Dale Severson, Development Services Engineer, Washington State Department of Transportation
Letter No. 2	Peter Brooks, Water Resources Manager, City of Lacey
Letter No. 3	John Erwin, President, Olympia Master Builders
Letter No. 4	Wayne K. Beckwith, Member, Olympia/Thurston County Chamber of Commerce
Letter No. 5	Elvine L. Sandefur, President, Jensen Investments, Inc.
Letter No. 6	Audrey Jensen Fredeen
Letter No. 7	Joan E. Bouck
Letter No. 8	Thomas Cook
Letter No. 9	Scott Daniels
Letter No. 10	Lynn W. Larsen
Letter No. 11	Nicole Mercier and Donald Schelter
Letter No. 12	Nicole Mercier, Petition signed by 53 residents

Public Hearing Transcript, May 2, 2001

Fowler, Karla

From: Severson, Dale [SeversD@WSDOT.WA.GOV]
Sent: Wednesday, May 02, 2001 2:59 PM
To: 'karlafowler@lottonline.org'
Cc: Martin, Bill
Subject: LOTT Hawks Prairie Reclaimed Water Project

Hi Karla, my name is Dale Severson and I am the WSDOT Olympic Region Development Services Engineer. We have briefly looked at your DEIS for the Hawks Prairie Reclaimed Water Project and basically have no comments other than any work done on or to State highway right of way requires prior WSDOT permission and approval.

It appears your project has no impact of interest to the WSDOT other than there might be an underground crossing of I-5 for a conveyance system as stated in Table 1-5 (page I-25). Any work on or to I-5 requires WSDOT review and approval and in this case that would probably be an Utility Permit from our Region Utility Office. Should that be the case, then you would need to contact Bill Martin, the Region's Utility Engineer at (360) 357-2745 to coordinate the review and approval of any Utility Permit. Please note Mr. Martin has announced his retirement for sometime around June of this year, so Mr. Martin may not be there as your project proceeds, but the phone number would still reach the new Utility Engineer. I may also be reached for discussions and coordination regarding impacts and permission to be on WSDOT right of way.

1

If you have any question please give me a call at (360) 357-2736.

Dale Severson, PE
Development Services Engineer
WSDOT, Olympic Region

Letter No. 1 Dale Severson, Development Services Engineer, Washington State Department of Transportation

1. Comment acknowledged.

LETTER 2

Fowler, Karla

From: Peter Brooks [PBrooks@ci.lacey.wa.us]
Sent: Wednesday, April 04, 2001 2:17 PM
To: Karla Fowler (E-mail)
Cc: Dennis Ritter
Subject: Additional comments on the SEIS

The SEIS has received additional review from Lacey staff and the following comments are being brought to your attention.

1 1) Two of the sites proposed for wetland polishing ponds have wetlands on them. Sites E and C. This would impact the usability of the sites under the City of Lacey's wetland protection ordinance. The reviewer found no mention of this. To the contrary the study indicates a site analysis was done on the sites and ground water was well below the surface; 80 feet and 40 feet was mentioned. It is possible that having wetlands on the site will also impact the sites ability to infiltrate water, another limitation that should be considered.

2 2) A third wetland polishing site, A, is located adjacent to an OSI zone proposed as a middle school. This was not discussed. Due to the sensitivity of citizens who may, at some point, send their children to that school, LOTT may want to consider making mention of this during the current public information process.

Peter C. Brooks, P.E.
Water Resources Manager
City of Lacey Public Works
P.O. Box 3400
Lacey, WA 98509-3400
(360) 438-2675

Letter No. 2 Peter Brooks, Water Resources Manager, City of Lacey

1. All applicable City of Lacey environmental regulations will be followed with respect to any site disturbance or development associated with the proposed project. Wetlands identified on the proposed project sites will be delineated and any impacts to the wetlands or buffers will be compensated according to the City's requirements. Any limitations imposed by wetlands on the site will be incorporated into the site evaluation process.

2. LOTT has initiated consultations with the North Thurston School District including a presentation to the School Board on June 25, 2001. If Site A is selected, this site will be subject to a local permitting process in which the school district will be invited to participate. The same will be true for the selected reclaimed water satellite plant site. LOTT will work with the school district to develop the site in manner that is amenable to the school district (e.g., signing for educational purposes, fencing if safety is a concern, etc.), Constructed wetlands adjacent to the middle school could provide an educational opportunity for the students. North Thurston High School students were active participants in LOTT's long-range planning process. Representatives of the district have also expressed interest in the potential use of reclaimed water for irrigation at selected school sites.

LETTER 3

OLYMPIA MASTER BUILDERS

1211 STATE AVENUE NE • OLYMPIA, WA 98506 • (360) 754-0912 • 1-800-456-6473 • FAX (360) 754-7448

RECEIVED 4-20-01

April 17, 2001

LOTT Wastewater Alliance
2101 4th Avenue East, Suite 101
Olympia, WA 98504-4729

Subject: Hawks Prairie Supplemental EIS

Since we will be unable to attend the public hearing on May 2, we offer this written testimony instead.

1 The Olympia Master Builders approves the above subject document and believes that it fully and fairly analyzes the environmental concerns involved in locating satellite treatment facilities in the Hawks Prairie area.

Pending further evaluation, we have no position at this time on the selection among the various alternatives presented.

Sincerely,

John Erwin
President

LETTER 4

4 May 2001

LOTT Wastewater Alliance
2101 4th Avenue East, Suite 101
Olympia, WA 98506

Subject: Comments for Hawks Prairie SEIS dated March 2001

Thank you for this opportunity to respond. Comments:

1 Page 1-1 Purpose. There exists a higher rate of septic tank/ drain field failure than now considered. The only mitigation is enlarging county treatment capacity. Have more emphasis of this problem and need in your justification. Failures occur on Cooper Point, Hawks Prairie including vicinity of this satellite plant, and south of Tumwater near the future satellite plant. Some long time property owners are using a second and maybe third on site facility.

2 Separately, we suggest local governments be planning the necessary sewerage and costs to provide LOTT treatment for all portions of each UGA.

3 Page 1-8 Scope. Restate that satellite plant (Sites 1 or 2) will not include surface water ponds, surface discharge, or ground water recharge.

4 Page 1-10 Surface and Groundwater. Unplanned plant shutdown will occur. Comment that sewage overflow will not occur. That inflow will be redirected to existing interceptors; a criterion for plant location. Treatment of this bypass or overflow will occur at the downtown plant until the satellite is back in operation.

5 Pages 1-14 and 1-18 Air Resources. Odor and smell will be a primary neighborhood concern. Suggest more detail concerning methodologies to minimize effects.

6 Page 1-16 Land and Shoreline. Suggest design provide for some structure below grade. This to reduce building and tank silhouette in proximity to residential areas. Add comment to DEIS.

7 Page 1-23 Fish. Emphasize that infiltration from surface ponds will enhance and stabilize flows in Woodland Creek benefiting fish species.

OLYMPIA/THURSTON COUNTY CHAMBER OF COMMERCE

P.O. Box 1427 ▫ Olympia, WA 98507 ▫ 360/ 357-3362 ▫ Fax 360/ 357-3376

8 We have been consistent in support of additional treatment at the earliest date. This to avoid any potential county development restrictions by the Department of Ecology. LOTT must consider treatment alternatives when considering opposition to the satellite concept by neighborhood groups and no growth advocates.

This letter answers your 4 May suspense date.

Wayne K. Beckwith, Member

Cys to: David Schaffert, Exec
Pat Beehler, B&E CoChair

Letter No. 4 Wayne K. Beckwith, Member, Olympia/Thurston County Chamber of Commerce

1. Section 1.2 provides a brief summary of the purpose and need of the project. The purpose and need has been extensively described in Chapter 1 of the *1996 LOTT Wastewater Resource Management Plan Final Programmatic EIS*, and in Chapter 2 of the *1998 LOTT Wastewater Resource Management Plan and Final Supplemental EIS*. A more complete summary of the purpose and need is provided in Section 2.2.1 of this SEIS. This section states that the purpose of the project is to meet the planned wastewater needs in the LOTT service area, meet the requirements of the National Pollutant Discharge Elimination System (NPDES) permit, meet the requirements of the federal Clean Water Act and Washington's water pollution control legislation, and meet the local environmental protection and land use management covenants and agreements. LOTT is responding to the comprehensive land use plans developed by each city for their respective urban growth areas. LOTT is not seeking to find failing on-site septic systems. An ancillary benefit of the project is that increased system capacity will allow the cities and the health department to address emergent problems as they arise.

2. Refer to Response 1 above. LOTT is responding to the capital facilities planning identified in each individual city's comprehensive plans. These plans were factored into the wastewater resources management planning efforts conducted by LOTT. LOTT does not control the land use planning efforts conducted by the individual cities.

3. The text of the SEIS, sections 1.5, 2.4.1, and 3.6.1, has been modified in response to your comment.

4. Table 1-2 and section 5.1.3 of the SEIS has been modified in response to your comment.

5. Tables 1-4 and 1-5 have been modified in response to your comment.

6. Table 1-3 has been modified in response to your comment. In addition, Figure R-1 illustrates a proposed profile view of a reclaimed water satellite plant.

7. Table 1-5 has been modified in response to your comment.

8. Comment acknowledged.

LOTT
Wastewater
Resource Management
Plan

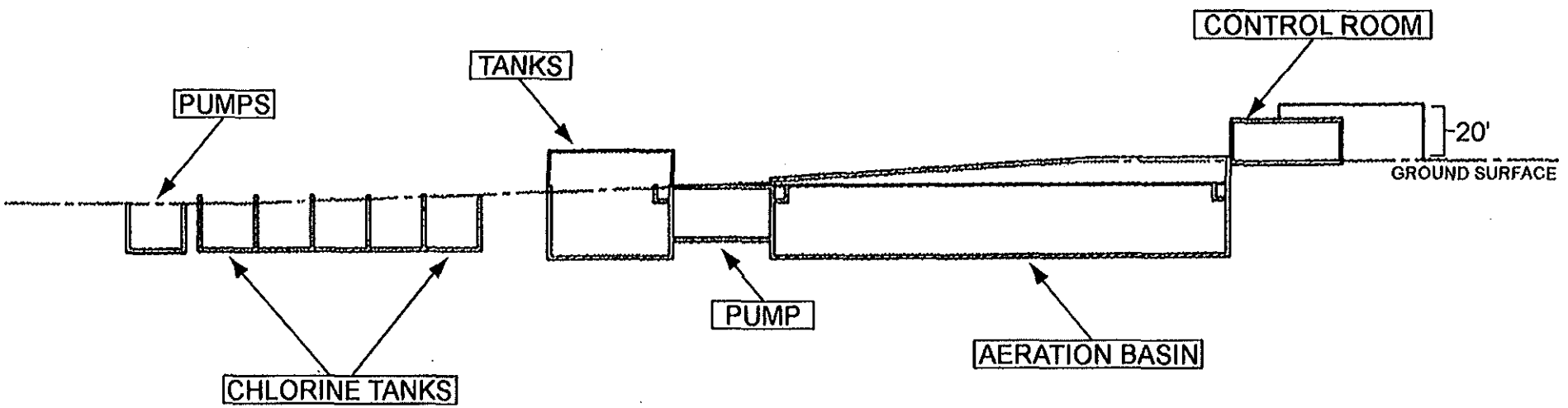
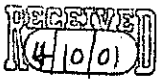


Figure R-1.
Proposed Elevation Profile

ADOLFSON ASSOCIATES, INC.
AND BROWN AND CALDWELL

LETTER 5



JENSEN INVESTMENTS, INC.
155 SHELLEY LANE
WHEATON, IL 60187

April 6, 2001

Karla Fowler
Program Manager
Lott Wastewater Alliance
2101 – 4th Avenue East, #101
Olympia, WA 98506-4729

Dear Ms. Fowler:

Thank you for sending me the Supplemental Environmental Impact Statement dated March 2001.

I am the President of Jensen Investments, Inc., a residential property investment company. Jensen Investments, Inc. objective is to provide single family housing in a safe, protected neighborhood, free from air, ground and water pollution.

Jensen Investments, Inc. owns property immediately west of the proposed satellite reclamation Site 2 (center) and a short distance from proposed Site 2 (west).

1 In my letter of October 27, 2000, we opposed the wastewater treatment facilities in the areas noted in the Scoping Notice. At that time we were unaware of the proposed Site 2 (center) and Site 2 (west). Considering that there are two proposed sites near our property, we have greatly increased our opposition to the wastewater plan.

2 The Supplemental Environmental Impact Statement dated March 2001 acknowledges our concerns and comments included in our October 27, 2000 letter, however, we do not believe that the comments and response in Table 1-3. Mitigation Measures Summary: Reclaimed Water Satellite Plant adequately responded to those concerns. Most of the mitigation measures comments address the construction of the plant, but not its long-term effects that we believe must be adequately addressed. If our concerns have been addressed we do not find adequate explanation in the materials to eliminate our concern about the long-term damage to the environment or harm to the residents living in the area.

3 We continue to believe that odors emitted from the plant after it becomes operational will be offensive to the residents. Whether there will be any harmful bacteria, disease or other effects that may make the area unfit for human habitation has not been answered.

We understand that the water may be used for irrigation. We do not understand how the water can be disposed of in this manner during the Puget Sound rainy season. Generally, the ground in the Puget Sound area is saturated with water and will not absorb any additional water. We believe that during these periods, water will be allowed to return to the streams, underground water, and drinking water wells. Accordingly, we believe that there is an obvious and real opportunity for harm to come to the environment, the animal wildlife, stream and ocean fish, shellfish and people living in the Puget Sound region.

4

We would like to ask and know if any of the authors and principal contributors of the environmental report or the management of Lott Wastewater Alliance plan to move their families to within a few blocks of proposed Site 2 once it is completed. We noted that some of these parties are from Olympia, Gig Harbor and Seattle. Obviously, they do not believe that the project will be harmful to their immediate environment or provide any health concerns since they are not personally affected by the proposed water treatment plant and its emissions, i.e. odor and contaminates.

5

We also would like to point out that the authors and principal contributors and management of Lott are professionals in the area of wastewater reclamation, however, that does not necessarily make them conscious of the impact that a wastewater plant can have on an established community and its citizenry.

Thank you for the consideration of our comments.

Sincerely,

Elvine L. Sandefur

Elvine L. Sandefur
President
Jensen Investments, Inc.
155 Shelley Lane
Wheaton, Illinois 60187
630-668-7518
sandefur@ameritech.net

Letter No. 5 Elvine L. Sandefur, President, Jensen Investments, Inc.

1. Comment acknowledged.

2. Table 1-3 is a brief summary of mitigation measures identified for each element of the environment. A more detailed description of mitigation measures identified for the reclaimed water satellite plant can be found in section 5.2 of the SEIS; impacts are discussed in section 5.1. Both of these sections more thoroughly describe impacts and mitigation, for both construction-related and operational impacts, of a reclaimed water satellite plant.

3. Section 5.1.2 provides a discussion of odors associated with wastewater. Measures to reduce odors at the reclaimed water satellite plant are described in section 5.1.2, and include the following:

   - The reclaimed water satellite plant will include numerous design features specifically to control odor. The facility will be fully enclosed and ventilated. The air drawn off the facility will be treated via a chemical scrubber or carbon treatment system prior to release.
   - The facility will be sited to maximize the distance from the closest receptor(s).
   - Screenings and grit would be placed in enclosed containers and transported off-site.

   In addition, no other process solids will be treated at the reclaimed water satellite plant; removed solids will be piped to the Budd Inlet Treatment Pant for processing. Solids treatment is typically one of the most odorous processes of wastewater treatment. Further measures (chemical odor control) will also be undertaken upstream of the plant site to reduce the odors in the wastewater reaching the plant. Also, for Alternative Sites 2 West, Center, and East, screening can be conducted at the Martin Way Pump Station, which will significantly reduce the odor generation potential at the satellite plant. Design modifications will be made to the Martin Way Pump Station to reduce odors at that facility as well.

   The treatment plant will be a fully enclosed facility; therefore, there will be no avenue for public contact with untreated wastewater, associated bacteria, and other pathogens at the treatment plant. Airborne release of pathogens will be minimal because of the enclosed nature of the plant and the high degree of treatment provided.

4. During the winter months, reclaimed water may be used for commercial and industrial purposes, surface impoundments, and groundwater recharge rather than for irrigation purposes. Reclaimed water that is not used for industrial purposes in the winter months will be discharged to groundwater. Refer to Letter 8, response 1 for a discussion of the groundwater studies to be conducted at the selected

recharge site prior to implementation. Potential impacts from reclaimed water use to wildlife are discussed in section 7.1.5 of the SEIS, potential impacts to shellfish are discussed in section 7.1.7, and potential impacts to surface waters are discussed in section 7.1.3 of the SEIS. Long-term impacts to these resources are not anticipated as a result of reclaimed water use in Hawks Prairie.

5. As noted, the authors and principal contributors, of the SEIS, and the management of LOTT do not live in the vicinity of the proposed Site 2 reclaimed water satellite plant locations. Also as noted, the authors and management are professionals in the area of wastewater treatment and reclaimed water production, and are very familiar with the potential impacts associated with such facilities. The potential impacts, as well as mitigation measures, have been objectively described in this SEIS using the latest research results available from world-wide evaluations.

Fowler, Karla

From: AkVacation@aol.com
Sent: Thursday, April 05, 2001 2:46 PM
To: karlafowler@lottonline.org
Subject: Re: Hawks Prairie Reclaim

1 Thank you for checking into this matter. Please use our comments in your new round of inquiries that are due May 4th. (comments from Oct 27, 2000)

Audrey Jensen Fredeen

Sharar, Michael

From:	AkVacation@aol.com
Sent:	Friday, October 27, 2000 2:37 PM
To:	Mikesharar@lottonline.org
Cc:	sandefur@ameritech.net
Subject:	LOTT Wastewater Phase I

Mike Sharar

I am adamantly opposed to the construction of a reclamation plant site being proposed for constructed on your designated Site 2, approx. at the 5600 block of 15th Ave. NE. I am a stockholder in our family corporation, Jensen Investments Inc. that owns property located at 5501 15th Ave NE. I oppose this facility for the following reasons:

2 | 1. Plant is proposed to be built in an area best suited for family homes, not an industrial plant processing sewage.

2. Plant will introduce into the area potential for ground water contamination

3 | and air pollution. Our property operates with a well and septic system and has wet lands. All of which are subject to damage by the treatment plant proposed.

4 | 3. The treatment plan will immediately lower the value of our property and make it difficult for resale.

5 | 4. Site 1 is better located to pipe the treated effluent to the reclaimed ponds on sites A, B, and C.

Sincerely,

Audrey Jensen Fredeen
General Delivery
Preston, WA 98050
(425) 222-9352

Letter No. 6 Audrey Jensen Fredeen

1. Comments from October 27, 2000 are attached and responses are provided below.

2. The sites are zoned for residential development and would require a special use permit from the City of Lacey to develop the site with a reclaimed water satellite plant. A special use permit requires that placement of the treatment plant on the site will be conducted in such a way as to minimize the impact to the nearest neighbors. In addition, LOTT will work with the community to develop a façade that blends well with the neighborhood, as well as explore the possibility of creating a park-type amenity in the buffer area between the plant and the roadway. Refer to Figure R-2 for façade examples, and Figures R-3 and R-4 for a schematic of the treatment plant location on the site in conjunction with buffer options and nearby roadways. Figure R-3 depicts a dense vegetative buffer, and Figure R-4 depicts a vegetated buffer, with a soft trail and picnic tables. At the Site 2 locations, the treatment plant would be placed as close as possible to Interstate-5, and would likely not be visible from 15th Avenue NE.

3. The reclaimed water satellite plant will only serve to treat wastewater to Class A Reclaimed Water standards. Groundwater recharge will not be conducted at the treatment plant site; treated, reclaimed water will be piped to reuse sites, or to constructed wetland polishing ponds and groundwater recharge basins. Your well, septic system, and wetlands would not be impacted by the construction or operation of a reclaimed water satellite plant.

   With regard to odors, refer to Letter No. 5, response 3.

4. While of considerable concern to residents in the area, the State Environmental Policy Act (SEPA) does not require an evaluation of property values to be included in an EIS (WAC 197-11-444), to the extent that property values change as a result of environmental factors. These environmental factors are discussed in the EIS. The fact that consideration of property values is not required for consideration in the EIS does not preclude decision-makers from considering these factors. Because property values are highly variable and dependent upon a number of market factors including lot size, house size, number of rooms, interior and exterior finish details of the structures, condition of the structure, views, and other considerations, a discussion of property values is not included in this evaluation.

   Property values are subjective, and a number of individual factors go into the valuation of a particular site. There are no state or federal guidelines specific to property valuation. However, numerous factors contribute to the devaluation of a property, and these generally relate to real physical damage of the property. Some examples of physical damage include corrosion caused by releases from a facility, vibration from machinery or equipment, noise, and impacts from wildlife

and birds (e.g., bird droppings). In addition to the physical factors, externalities can have an impact on property values. These include such things as visual impacts, proximity to major roadways, or other noise-generating facilities, etc. The proximity these sites already have to Interstate 5 is an example.

Many factors outside the purview of municipal infrastructure projects affect property values, including mortgage rates, the overall economy, tax rates, and school districts, for example. LOTT will work diligently to design the facility to minimize the potential of any direct impacts, including visual, odor, or noise impacts, and will work with the neighborhood to blend the facility with its surroundings. By minimizing its perceptibility in the neighborhood, LOTT will thus reduce any potential negative impacts associated with operation of the facility. Prior to implementation in a residential area, LOTT will be required to obtain a special use permit from the City of Lacey. Permit requirements are intended to insure that the constructed and operational facility is as compatible as possible with surrounding land uses.

5. The distance from treatment plant Site 1 to constructed wetlands/groundwater recharge basin Sites A, B, and C is less than the distance from the Site 2 locations; however, the distance from Site 2 to the reclaimed water use areas is less than from Site 1. Both locations are feasible for a treatment plant location with regard to proximity to the constructed wetlands/groundwater recharge basin and the reclaimed water use areas.

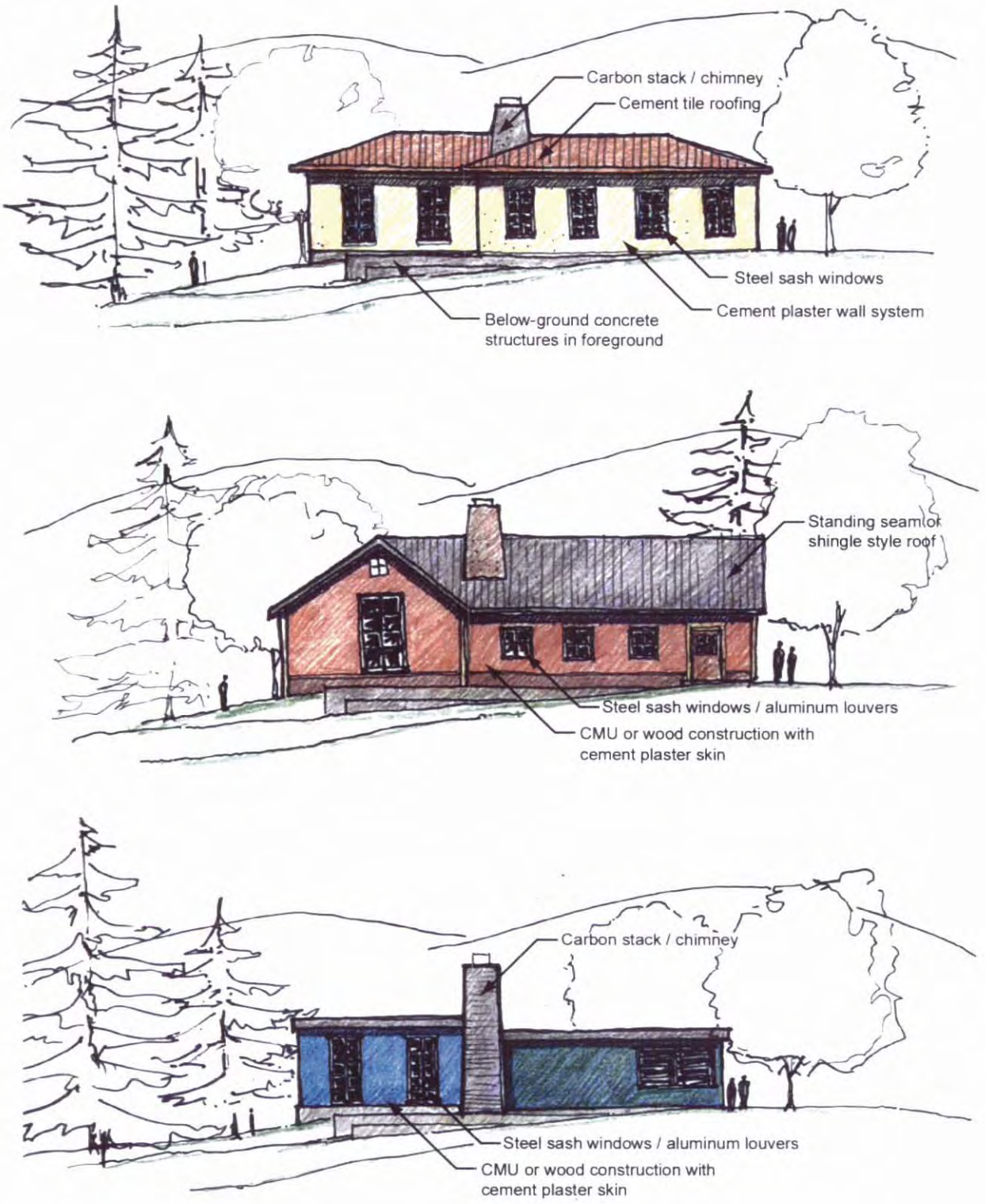


Figure R-2.
Facade Examples

ADOLFSON ASSOCIATES, INC.
AND BROWN AND CALDWELL

Source: Michael Willis Architects

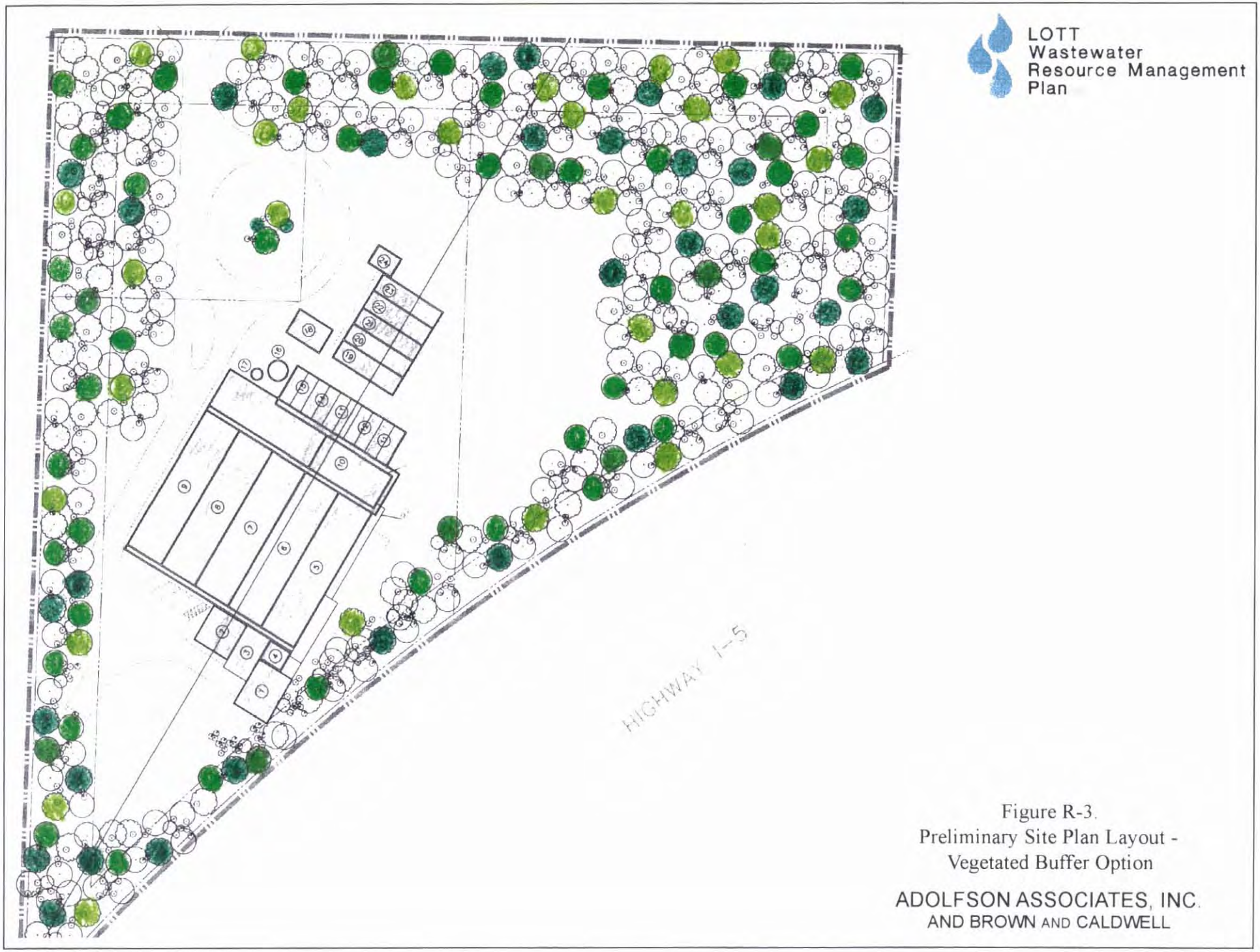


Figure R-3.
Preliminary Site Plan Layout -
Vegetated Buffer Option

ADOLFSON ASSOCIATES, INC.
AND BROWN AND CALDWELL

LOTT
Wastewater
Resource Management
Plan

Figure R-4.
Preliminary Site Plan Layout -
Passive Recreation Option

ADOLFSON ASSOCIATES, INC.
AND BROWN AND CALDWELL

LETTER 7

LOTT Wastewater Alliance

Hawks Prairie Supplemental EIS
Public Hearing

Wednesday, May 2, 2001
Washington Department of Ecology, Lacey

RECEIVED 5-1-01

TESTIMONY FORM

If you would like to provide testimony in writing, you may use this form. Please give completed forms to a LOTT staff member or consultant before you leave the meeting, or deliver by 5:00 P.M., Friday, May 4th to:

LOTT Wastewater Alliance
2101 4th Ave. E., Suite 101
Olympia, WA. 98506

Name: JOAN E. BOUCK
Address: 1238 HENSLEY ST NE, OLYMPIA, WA 98516
THOMPSON PLACE

I would first like to say that ~~there~~ was poor notification for this meeting. A neighbor in our area took it upon themselves to hand deliver this meeting information. Nobody else around me even knew of it.

1

My neighbors and I are strongly opposed to locating a wastewater sewage plant in our housing area. We are concerned about the air quality being ruined in our area and possibly ground pollution problems, declining property values, mandated hook-up to the city system when all of us have septic systems (a huge expense to moderate income families). We also have major concerns about the effect of health issues to our families.

2

Please do not put these facilities in our area. (Site 1) We already have the freeway noise to deal with, it seems that a site could be found that would be more appropriate than destroying the property value in our area and other neighborhoods heavily populated and residential. These need to be located away from populated areas.

3

Letter No. 7 Joan E. Bouck

1. Throughout this project, extensive public notification efforts have been undertaken and are summarized below. Public notification efforts beyond that required by the State Environmental Policy Act (WAC 197-11) and LOTT'S Environmental Rules were conducted as part of this project. LOTT attempted to notify as wide a populace as possible, by using several different communication methods. Following is a summary of the notification elements.

For the Scoping Process:

- **Scoping Notice** mailed to 2,335 addresses (October 6, 2000) – LOTT mailing list plus surrounding Hawks Prairie property owners and neighbors
- **Bulk deliveries** of the Scoping Notice to all three City Halls and the Courthouse for public distribution
- **News release to local media**
  - *The Olympian* published 2 major stories, both with maps (October 16 & 26, 2000)
- **Legal advertisement** published in *The Olympian* (October 6 & 9, 2000)
- **Public hearing** (October 25, 2000) – 47 citizens signed in

For the Draft SEIS:

- **Documents** mailed to regulatory/resource agencies, tribes, public libraries, and local media (March 20, 2001)
- **Letters** mailed to neighboring property owners, with document order form (March 21, 2001) – about 200
- **Letters** mailed to other previously interested organizations & individuals, with document order form (March 21, 2001) – about 40
- ***Hot LOTT News*** issue –
  - Mailed to over 2,300 people, with document order form (March 28, 2001) – LOTT mailing list + Hawks Prairie property owners and neighbors
  - Bulk copies sent to the City Halls and Courthouse for public distribution
- **News release to local media** about release of the SEIS, a public workshop and public comment opportunities (March 21, 2001)
  - *The Olympian* published a major story March 26
- **Legal advertisement** published in *The Olympian* (March 20 & 25, 2001) – about release of the Draft SEIS, public workshop, public hearing & written comments
- "**Public Notice" Signs posted** at 16 potential plant, pond/recharge and use sites including a map that shows all sites being evaluated
- **LOTT's Web Site** – Draft SEIS Summary put on-line, with information about the public workshop, public hearing and written comments
- **Public Workshop** (April 2, 2001) – 13 citizens attended
- **News release to local media** about the public hearing (April 30, 2001)
  - *The Olympian* published a small sidebar story (May 1, 2001)

2. With regard to odors, refer to Letter No. 5, response 3. With regard to groundwater concerns, refer to Letter No. 8, response 1. With regard to property values, refer to Letter No. 6, response 4. With regard to potential health issues, refer to Letter No. 5, response 3.

   The City of Lacey does not require mandatory sewer hook-ups unless the on-site sewage system is failing, and the house is located within 200 feet of a sewer line. The construction of the reclaimed water satellite plant will not result in mandatory sewer hook-ups for any residences being served by properly functioning on-site sewage systems.

3. As described in section 3.5.1 of the SEIS, reclaimed water satellite plants must be located in relatively close proximity to sources of wastewater and potential users of reclaimed water, in this case the existing Martin Way force main and/or pump station, will provide a source of raw wastewater for the reclamation process. Siting the reclaimed water satellite plant in close proximity to existing sewer lines will also minimize the amount of time raw wastewater is in the conveyance pipelines, which will reduce the potential for odor generation. Conveying clean reclaimed water is preferable since it offers more opportunities for recycling reuse. Properties need to be a minimum of four acres to allow for construction and upgrades to full plant site buildout plus surroundings landscape or other buffers. The configuration of the site will be such that the operation of the plant will cause minimal adverse impacts on adjacent properties. Because LOTT lacks the power of condemnation, only properties available for purchase were considered. Sites 1 and 2 meet these criteria.

   Noise from the reclaimed water satellite plant will not be discernible from ambient noise by adjacent properties and will comply with city regulations. To mitigate noise from the treatment plant, a number of engineering features have been incorporated into the design of the facility. The plant will be fully enclosed, with the noisier operations (i.e., pumps, blowers) located either below ground or housed in noise attenuating structures. The plant would be located near Interstate-5, which generates significant ambient background noise. In addition, an earthen berm will be constructed around the facility to reflect noise up and away from nearby receptors. As mentioned above, noise from the plant will not be discernible from ambient noise at any proposed plant location.

   Refer also to Letter No. 6, response 5.

LETTER 8

5-4-2001

Mr. Richard D. Blinn P.E. Presiding Member (Responsible Officer
LOTT Environmental Review Committee
2101 Fourth Ave East #101
Olympia, Wash 98506-4729

Dear Mr. Blinn:

Please find attached My Supplemented comments and concerns regarding the ~~Draft~~ Environmental Impact Statement for the Hawks Prairie Reclaimed Water Project.

1 This draft SEIS is lacking a comprehensive groundwater and hydrogeologic evaluation of the proposed recharge basins and adjacent geology and hydrology to the east upstream and including McAllister Creek and its unstable slopes.

The above comprehensive groundwater evaluation must be done within the context of this SEIS and not be left to be determined after the final SEIS is issued and a site purchased.

Thank you for the opportunity to comment

Sincerely
Alan Cool

Testimony on the Draft Supplemental Environmental Impact Statement (SEIS) for LOTT's Hawks Prairie Reclaimed Water Project.

My name is Thomas Cook and I reside at 6052 Sandra Lee Ct. S.E., Olympia Washington 98513.

I have a concern with the lack of hard groundwater and hydrogeologic data in the area were the groundwater recharge basins are proposed to be located including the area between the proposed site and the Mc Allister Creek Bluff.

2 The environmentaly sensitive McAllister Creek Bluff has unstable slopes and has had significant landslide occur during the winter of 1996 due to heavy rains and high groundwater pressures. The increase in net inflows of large volumes of water to the recharge basins behind these bluffs as proposed in "The Highly Managed Alternative" only increases my concerns that the Bluffs and McAllister Creek will be adversely impacted. Homes in the area

Without a comprehensive groundwater and hydrogeologic study/characterization of the area from the recharge basins upto

and including the McAllister Creek Bluff, sufficient hard information/data has not been provided in this SEIS to determine if this proposal is likely to have a potential significant adverse environmental impact. Until such comprehensive groundwater and hydrogeologic information/data is provided all of the recharge basin alternatives and then stated "environmental impacts" "mitigations" and "significant unavoidable adverse impacts and cumulative impacts" are based only on "assumptions" "estimates" and "anticipations" that are not founded on hard information/data.

2

In order to determine if the recharge basins proposed in this draft SEIS are likely to have a probable significant adverse environmental impact I'm respectfully requesting a comprehensive groundwater and hydrogeologic study be done as described above to provide the hard information/data upon which to make a sound and safe determination.

—

Upon completion of the comprehensive groundwater and hydrogeologic studies worst case ~~[illegible]~~ scenarios must be run to evaluate the environmental impact on the McAllester Creek Bluffs unstable slopes. This information then must be reflected in a revised supplemental environmental impact statement so that the decision makers have this vital information to base their decision to issue the Final Supplemental EIS. 2

Anything short of completing the above comprehensive studies within the context of this SEIS would seriously question this documents compliance with the SEPA statue and rules. 3

Thanking you for the opportunity to comment.

Sincerely,
Thomas Cook

Letter No. 8 Thomas Cook

1. As noted in sections 4.4.2 and 6.1.4, a detailed survey and pilot testing of the selected site will be conducted prior to facility design and full-scale implementation to verify the anticipated performance of the site. The testing will take considerable time, and could cause significant disturbance of the site. Because LOTT does not currently own any of the properties, a property must be purchased prior to commencement of the testing. LOTT cannot purchase the property until the environmental process has been completed (i.e., completion of the EIS process). However, preliminary hydrogeologic investigations have indicated that all of the sites considered in the EIS (Sites A, B, C, D, and E) appear to be appropriate for groundwater recharge.

   The site selected for wetland polishing and groundwater recharge will undergo extensive hydrogeologic testing to ensure that the site meets all the necessary water quality criteria and will not result in any adverse impacts to unstable slopes or increased flooding. Should these criteria not be met, it will be necessary to adjust the facility design; should that not adequately address potential impacts, a different site for groundwater recharge will be selected.

2. Refer to response 1 above. A six to 12 month pilot study will be conducted to test preliminary model results and verify disposition of groundwater. Included in that pilot study will be an assessment of impacts to McAllister Creek and the McAllister Creek bluffs, as well as other systems.

3. The Washington State Environmental Policy Act (SEPA) (WAC 197-11-402 (6)) states:

   > "The basic features and analysis of the proposal, alternatives, and impacts shall be discussed in the EIS and shall generally be understood without turning to other documents; however, an EIS is not required to include all information conceivably relevant to a proposal, and may be supplemented by appendices, reports, or other documents in the agency's record."

   In addition to the additional studies to be conducted as described in response 1 above, LOTT has conducted several preliminary groundwater investigations and modeling of the Hawks Prairie area. These documents are listed in the reference section of the SEIS and are available for review at the LOTT office.

LETTER 9

May 3, 2001

LOTT Wastewater Alliance

RE: Hawks Prairie Reclaimed Water Project

Greetings:

Two issues I would like to raise with this letter. The first would be treatment plant site location. It would seem clear that all sites being considered are inaproprate. I reached that conclusion from reading your March 2001 Draft EIS.

There are two resources at stake, one being the environment, two being children. As you know, all sites are from .2 to 1.5 miles from Woodland Creek. But there is a major consideration I did not hear at the two meetings I attended nor did I read in the EIS.

1

Site 1 is across the street from a day care that has been in business several years if not decades. In addition, River Ridge High school is within 1 mile of site 1. Olympic View elementry is within .5 mile of site 1 (or approx. 700 yards as the crow flies)

1

1 One would think NTSD would be an interested party.

Which brings me to my second issue, notification of scoping meeting. After the Miller Brewing uproar, one would think LOTT would do everything possible to draw interested parties forward as early as possible for creative input. Once again this appears not to be the case.

I became aware of the issue after reading a well-written piece in the Olympian 3/26. I am not aware of an active Homeowners Association in any of the affected neighborhoods, or if they exist at

2 all. Being such a large project that would affect not only the environment but hundreds if not thousands of people on a daily basis, one would think door-to-door notification to affected neighborhoods within .5 miles would be the responsible action to take.

In this regard, as was promised at the May 2 meeting, please forward a copy of the mailing list regarding scoping notice of Oct. 6, 2000 to the address below.

One would think the community would be better served to have such a facility in a largely undeveloped area.

2 An area in which this facility is being built to serve, Hawks Prairee/Hogum Bay/Marvin Rd.

3 In closing, additional study is needed for location of plant sites as well as pond locations. If such a facility is built next to an existing neighborhood, it would be easy to conclude that legal action may follow.

P.S. sorry for the typos!

Sincerly,

Scott Daniels

PO BOX 3211

LACEY WA 98509-3211

PH: 412-0673

Letter No. 9 Scott Daniels

1. The reclaimed water satellite plant would be a fully enclosed facility, that would not be open for public access. The proximity of the plant to a day care facility or school would not result in a safety issue for the children, nor would it impact those facilities. Odors and noise will meet city and state regulations and will not be discernible from nearby properties. Refer also to Letter No. 5, response 3, and Letter No. 7, response 3. Prior to implementation, it will be necessary to meet all permit and regulatory requirements including special use requirements from the City of Lacey.

   See also Letter No. 2, response 2.

2. Refer to Letter No. 7, response 1. A copy of the mailing list was sent to you on May 5, 2001.

3. This is the third environmental review conducted for the wastewater facility planning efforts. The planning process has included the programmatic review of nine potential "program directions" which was conducted in 1996. Following selection of a preferred program direction, a supplemental environmental review was conducted in 1998. This document consists of the environmental review for the implementation of the preferred program direction in the Hawks Prairie area. Refer to section 2.2 of the SEIS for a more complete discussion. Additional site-specific environmental review will be conducted as part of the permit process.

   Refer also to Letter No. 7, response 3 regarding additional studies to be conducted, as well as Letter No. 8, response 3.

LETTER 10

2610 Carpenter Road N.E.
Olympia, Washington 98516
May 1, 2001

Karla Fowler, Program Manager
LOTT Wastewater Alliance
2101 - 4th Avenue E., #101
Olympia, Washington 98506-4729

Re: Draft SEIS
Hawks Prairie Reclaimed Water Project

Dear Karla:

1 I am writing to comment on the plan to pump sewage water into the Hawks Prairie area for further processing, while sending the solids downtown for treatment at the main plant.

2 I think your plan could be evaluated by stating two words. It stinks. The idea of having satellite sewage treatment plants is really quite a dumb idea, because you are putting something entirely dirty, smelly, polluting, and distasteful into residential communities surrounded by people, and you are bound to meet with much opposition. In fact, I hope you meet with so much opposition that you abandon the project altogether.

3 The information that was sent to me on this in the mail is the SUMMARY of the DSEIS, and the Hot LOTT News, Vol. 5, No. 2, for

I live just north of your "Site D," so am most concerned about it, but I am also concerned about "Site C". We live on the east side of Carpenter Road down in the valley, and have lived in our present location since 1946.

4 I would say my main concern is with possible pollution to our well, pollution to Eagle Creek, odor problems and pollution, insect problems and breeding ground expansion areas, and in general the potential for pollution to all of the groundwater in our general area. I will now go into more detail on each of these items.

We presently have very good drinking water, but if you put in all your proposed ponds, our well may be in jeopardy. We have what is known as a shallow well, which
5 consists of a sandpoint driven down 10 to 15 feet into the ground. As such, we are more vulnerable to surface water conditions around the well. We have been lucky so far in not having anything nearby to pollute it, but all that could change if your project were to proceed.

The next item to be considered is Eagle Creek.
6 In previous time periods, this was called "an un-named tributary of Woodland Creek". Only in more recent years was it changed, and is now called Eagle Creek. In order to

parcel, where it continues on eastward
through my brother's, Duane Larsen, 10 acre
parcel, proceeding southeast through
the south side of his land. It then
6 goes only a couple hundred feet or so
into our neighbor Weldon Neuschwanger's
land (about 8 acres) and originates
on Weldon Neuschwanger's land from a spring
in the side of the hill. Eagle Creek
flows out of this spring year-round,
and never dries up.

The runoff portion of Eagle Creek shown
7 to originate on your "Site C" goes through
our back field in a ditch. This ditch
then joins with Eagle Creek on my brother
Duane Larsen's land, and from there continues
on to join with Woodland Creek.

Your selection of "Site C" would pollute
all of our farm land in the back,
before polluting Eagle Creek and then
Woodland Creek.

8 Your selection of "Site D" would pollute
Eagle Creek directly, before it went on
and then would pollute Woodland Creek
after it flowed into it.

I am not familiar with "Sites B & E",
but if they would flow into "Site C",
I would say they should also be rejected.
This leaves you only "Site A" left, so that

water to go to, so it overflows and runs into Eagle Creek. If "Site D" were selected, and we had heavy rains or the pumps failed, the overflow would be the same, into the lowest area, which means it would run through Weldon Neuschwanger's land and then into Eagle Creek. Eagle Creek would in effect be the same equivalent as Budd Inlet when you have a failure, which you know there have been numerous failures and the sewage has to go into the bay, like the last one only a few weeks ago.

9

Did you know that they are trying to restore the fish in Eagle Creek? Only about a year ago, the 2 small culverts under Carpenter Road were replaced with a giant metal culvert, that was placed in deeper and filled with gravel in the bottom, to help allow for any possible fish to make it through. The "stream team" volunteers come to look regularly for any possible fish. Do you want to help contribute to the problem of practically no surviving fish in Eagle Creek? If you select "Site D" you will be just as guilty as Olympia Sand & Gravel Co. in putting Eagle Creek at further risk, no matter how well designed your system or how fail-proof the pumps are, accidents do happen, and it would only be a matter of time before an accident did in deed happen, and you had an over-flow into Eagle Creek.

10

13 expensive it could be to install mile after mile of water lines to area after area, only to possibly be rejected by potential users if you couldn't require them to hook up? The point is, you might be recycling water that had no use, so you would have to put it all back into the ground somewhere, and it's unlikely it would have any significant impact on the water table of the general area, so why not send this dirty water Downtown along with the rest of the sewage and be done with it?

14 In short, the potential users of your reclaimed water may be few and far between. I would suspect they would largely consist of government agencies only, such as fire departments that could be required to use your water, irrigation of public areas such as Britton Parkway and Willamette Drive, and for using for flushing out portable toilets if you made a strong enough sales pitch to the Sani-Han pumpers, and possibly for city street-cleaning trucks. You might have to spend a fortune advertising the availability of your re-claimed water, only to have few users of it.

15 In summary, I would recommend that no action be taken on the re-claimed water project at the present time. I think you need to do a much more thorough job of evaluating

Letter No. 10 Lynn W. Larsen

1. Comment acknowledged.

2. With regard to the siting criteria, refer to Letter No. 7, response 3. With regard to potential odors, refer to Letter No. 5, response 3.

3. The ponds at the St. Martin's College Campus are former sewage lagoons which are currently being used as stormwater ponds, not constructed wetlands or groundwater recharge basins that contain reclaimed water. These lagoons have not been used for sewage in several years, and have been modified to provide beneficial vegetation and wildlife habitat. Reclaimed water is highly treated and is not considered odorous, nor does it have any color. Class A water is cleaner than lake or stream waters. Water in the ponds will be in constant circulation. That which is not used will be infiltrated into the ground at the rate it comes out of the plant. Figure 3-6 in the SEIS provides an illustration of the constructed wetland facilities. The constructed wetlands may be an attraction to walkers in the neighborhood, as they will be aesthetically designed to provide a park-like setting. Birds and fish in the ponds will control insects.

4. With regard to groundwater concerns, refer to Letter No. 8, response 1. With regard to odor, refer to Letter No. 5, response 3. With regard to Eagle Creek, refer to response 6 below.

5. Refer to Letter No. 8, response 1.

6. Eagle Creek is shown on Figure 4-5 and is described in section 4.3.2 of the SEIS. The SEIS also noted that Eagle Creek may be ephemeral (seasonal). This would be particularly true near the headwaters. You are likely correct that Eagle Creek flows from a spring on Weldon Neuschwarger's property. However, runoff from east of the area also flows to Eagle Creek during the fall and winter months, which may or may not also be considered Eagle Creek. During the field reconnaissance work for this project, field staff did not have access to private property and had to rely on published documentation and visual siting from public roadways and rights-of-way. An accurate characterization of the origins of Eagle Creek cannot be made without field verification. The SEIS was conservative in estimating the distance to Eagle Creek. Should Site C be selected as the constructed wetlands/groundwater recharge basin site, a thorough review of the site will be conducted for the presence of streams and/or wetlands.

7. Comment acknowledged; refer to response 6 above.

8. Comments acknowledged. Refer to sections 5.3 and 6.3 of the SEIS for a discussion of surface water impacts anticipated from each of these sites.

Action Alternative, would be inconsistent with the state Growth Management Act, as well as the local comprehensive plans. Some areas that have partially undergone urban development would have to be re-zoned for rural development, which would result in an incongruous mix of urban and rural land uses in some areas.

14. Refer to response 13 above.

15. Comments acknowledged. Refer to Letter 8, response 1 for a discussion of further studies to be conducted at the selected constructed wetland/groundwater recharge basin site. The project must receive approval and permits from the Washington State Departments of Ecology and Health, in addition to special use permits from the City of Lacey, prior to implementation.

As described in Letter No. 9, response 3, this is the third round of environmental review associated with this project. From 1995 through 1999, LOTT spent more than four years and $4.7 million dollars developing the Wastewater Resource Management Plan, which is being implemented with this Hawks Prairie Reclaimed Water Project. An estimated one-third of that planning budget was spent to conduct the largest public information and involvement effort that has been conducted locally on any issue. An estimated 4,000 different individuals participated in one or more of the planning activities, which included:

- 41 public workshops and hearings, 11 agency workshops and 7 elected officials workshops
- 8 treatment plant open houses
- 89 speaking engagements to 2,225 people
- about 300,000 pieces of mail including two major publications sent to every household and business within the Lacey-Olympia-Tumwater urban area (58,000 each mailing)
- over 1,200 response forms received from mailings and 206 EIS comment letters received
- 2 video programs distributed for free loan through local video stores
- 8 TCTV programs cablecast on channels 3 and 64
- public opinion research including: 965 random sample telephone interviews (as part of 2 public opinion surveys), 228 business surveys and 96 structured interviews with community leaders

The resulting plan, with reclaimed water as its core component for future new wastewater treatment capacity, was a product of this public involvement process. Reclaimed water was consistently ranked very high, second only to flow reduction measures, as a solution to meeting this community's future treatment capacity needs.

LETTER 11

DRAFT

Thursday, May 3, 2001

Mr. Mike Sharar, LOTT Executive Director
2101 – 4th Ave. E, #101
Olympia, WA 98504-4729

Dear Mr. Sharar:

We are again writing to protest the construction of a sewage treatment plant anywhere along 15th Avenue. We feel that there are many reasons why this is not the best place to build this plant. Here is a list of our concerns.

1. We feel that this will in no way be beneficial to the property values in this area. Contrary to what we were led to believe by a representative of Brown and Caldwell, we believe this will put our property values at risk. We have consulted with several real estate agents in the area and they have all warned us that this would NOT be a desirable asset to a community. No matter how well the building will be camouflaged, when a prospective buyer finds out that there is a sewage treatment plant in the vicinity of a prospective home, he will more than likely be able to negotiate down the asking price, or simply choose not to pursue the purchase. Obviously, you feel that this is not an important issue, or you are under the false impression that this will not happen. In either case, you are wrong. We request that an economic impact investigation be conducted to evaluate the potential impact this sewage treatment plant will have on all the residents within a 1 mile radius of these sites. Until there is a guarantee that our property values will not be adversely impacted, we cannot sanction this sewage treatment plant to be built along 15th Avenue. 1
2. Another reason we feel this is not a proper place for this plant to be built is we have no guarantees from LOTT that this sewage treatment plant will not cause odors to permeate the area. In fact, in the SEIS dated March 2001 on page 1-10, Table 1 – 2, it states under Air Resources, "Odors related to wastewater breakdown during operation. Operational odors would be more pronounced due to rural neighborhood and greater number of residences near the site." Then, in the March – April issue of Hot LOTT News, under Summary of SEIS Findings, "Potential operating impacts and mitigation – Potential odors will be controlled by maximizing distance of buildings from closest neighbors and treating through a two-stage odor control process. Odors will be minimized by sending solids to the Budd Inlet treatment plant instead of treating them on site..." Minimize? What does that mean exactly? Just how minimal will the odors be? Will they be even as detectable as the ones emitting from the station at Martin Village? This is contradictory because the proposed sites, especially the preferred site, is right up next to homes on Livingston St. and Century Court. How is that maximizing distance? We want to know what will happen if the residents complain about the odors emitting from this sewage treatment plant. What will you do? Will the plant be closed and then relocated elsewhere? 2

alternative. I personally asked many people how they would feel about paying more. Everyone agreed that they would rather pay a little more than to have the plant put in their neighborhood. Mr. Sharar also mentioned that they would like to avoid extensive piping of sewage to a far away place because of risk of rupture. Let's be realistic. Is he saying that the engineers are incapable of doing the job? Have they even been asked to evaluate the possibility of such a proposition? I know that there are many other communities in the United States that, for one reason or another, have sewage treatment plants well outside the residential area. Raw sewage is piped for miles to a more remote area where the water is then treated, so as not to offend the locals. Why can we not do the same here? *I'm sure that the engineers could accomplish this feat is* asked to do so. We want to know why the Hawks Prairie landfill area, or another area out that way, where nobody lives nearby, has not been investigated. After all, we, living in this area, should not be asked to launder someone else's sewage and then ship the water somewhere else. We have no use for this water here and it's unfair to jeopardize this area for that reason.

7

We are not reassured when, recently, we experienced a rather significant 6.8 earthquake and we read that, apparently, one of the underground pipes in the vicinity of Budd Inlet beneath the Port of Olympia ruptured. It was not discovered immediately and released about 10 gallons per minute into the ground for an undetermined amount of time. We realize that the circumstances of this were different, i.e. type of water, types of pipes, but the potential for this kind of accident is in evitable in an area that is seismically unstable. What if a similar event occurred at the site on 15th Avenue? Can you imagine how this would impact the endangered salmon on Woodland Creek, to say nothing of how it would smell? How do you suppose it would impact wells in the area? What is your plan if this happens? How will you control this? What will the compensation be?

8

There are too many unanswered questions, unsatisfactory responses to our questions, *and unknown facts to feel that this is a good proposal for this area.*

9

At this time, we would also like to address a myth that has been circulating in the area. It seems some people are erroneously under the impression that this whole area will someday be forced to convert from septic tanks to LOTT sewer connections. I have done my research and there are not a greater number of septic failures in this area than any other area. The septic failure is happening at the same rate as all other neighborhoods in the area. The experts tell me that 90% of septic failures is directly related to homeowner ignorance and mismanagement of one's septic tank and not to geological issues. We live right on Woodland Creek. We take extreme measures to ensure our septic tank doesn't fail and we are no worse for it. It doesn't take too much effort either. To connect to sewer through LOTT is an expensive endeavor. Contrary to what some people think in the area, it is not part of the plan. Erroneously, some are convinced that LOTT will make sewer hook-ups available at a discount because of this sewage treatment plant. Maybe if it were offered for free or mitigated through the EIS we all might be interested. But the potential cost verses benefit is not worth it. We are doing just fine with our perfectly functioning septic tank. May we also remind you that

10

Letter No. 11 Nicole Mercier and Donald Schelter

1. Regarding property values, refer to Letter No. 6, response 4. Regarding comparing odors from the reclaimed water satellite plant and the Martin Way Pump Station, it is important to note that these are two different types of facilities, and that the pumping station has no treatment capacity on-site.

2. Refer to Letter No. 5, response 3.

   In the event of odor complaints, LOTT will investigate immediately to determine the cause of the odor, and implement control measures as necessary.

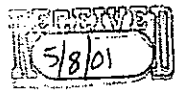
3. Construction projects, no matter where they are located, must comply with state and local erosion control measures. While there is no guarantee that these measures will be completely effective in stopping sediment from reaching nearby surface waters, they are highly effective at minimizing the amount of sediment that reaches surface waters. Erosion control measures and construction best management practices will be employed at every construction site in accordance with all state and City of Lacey requirements.

4. Small mammals, birds, and amphibians would be displaced from construction sites and adjacent areas during construction. Some may be able to relocate to nearby areas, however, these areas may already be occupied by other competitive individuals; consequently it may not be possible for disturbed individuals to relocate and they may be lost. Less mobile mammals, reptiles, and amphibians are likely to be lost. The loss of a few individuals at a site during construction will not impact the overall population of any species in the Hawks Prairie area. New habitat could be constructed as part of the mitigation, depending on community preferences for the buffer area around the plant.

5. The proposed reclaimed water satellite plant locations along 15th Avenue NE (Sites 2 Center, West, and East) would be sited near I-5 and away from 15th Avenue NE. A reclaimed water satellite plant would not be noticeable from 15th Avenue NE in this site configuration (refer to Figures R-3 and R-4). The presence of a reclaimed water satellite plant in this location would not alter the project area from rural residential to industrial. Only the site containing the reclaimed water plant would be used for industrial purposes. In addition, as described in section 5.1.11 of the SEIS, structures associated with a reclaimed water plant in this area would be designed to blend into the surrounding landscape through choice of exterior finishes, other architectural elements, and landscaping. The use of these types of design features would render the plant virtually indistinguishable from other structures in the area.

6. Comment acknowledged. Refer to Letter No. 6, response 2.

LETTER 12



Monday, May 7, 2001

LOTT Wastewater Alliance
2101 Fourth Avenue East #101
Olympia, WA 98506-4729

Dear Board Members:

When I spoke at the meeting on May 2 at the Department of Ecology building, I mentioned that I had conducted a survey in the area adjacent to the sites on 15th avenue. Karla Fowler asked if I could give her a copy. After the meeting I was talking to several people and forgot to have her make copies of the form. Please make sure that this is attached to my comments letter, which I addressed to you on Thursday regarding the sewage treatment plant.

Thank you,

Nicole Mercier

Nicole Mercier
2110 Mark St. NE
Olympia, WA 98516

Not home ~~||||~~ ~~||||~~ ||||

Opposed to sign |

1 As residents living in proximity to 15th Avenue, we would like to protest the placement of the proposed sewage treatment plant by LOTT anywhere along 15th Avenue. We request that another, less sensitive site, be chosen than this one, which is close to many homes and near woodland areas. We fear that this will adversely impact our property values and destroy the pristine area around us.

	NAME	ADDRESS	PHONE NUMBER
1.	[illegible]	909 Century Ct. N.E.	412-9267
2.	J. Q. [illegible]	905 Century Ct NE	412-1383
3.	Michael Cobb	805 Century Ct NE	456-4436
4.	Frances Cobb	805 "	"
5.	Rodney Cobb	805 "	"
6.	Mary Scott	805 "	"
7.	[illegible]	801 Century Ct NE.	486-0627
8.	[illegible]	801 Century Ct NE	486 0627
9.	~~[illegible]~~	" " "	" "
10.	William Dodge	701 Century Ct NE	456-6447
11.	Donna Dodge	" " " " "	" "
12.	Joan E. Champagne	710 Century Ct.	456-6405
13.	Richard L. Champagne	710 Century Ct	" "
14.	Rebecca Cody	714 Century Ct. NE	491-5420
15.	[illegible] J. Cody	" "	"
16.	HARLAN SMITH	810 CENTURY CT. N.E	491-7625
17.	Liana Dupont	810 Century Ct NE	491-7625
18.	Laurene Brown,	814 Century Ct NE	459-2599
19.	[illegible] O'Brown	814 Century Ct NE	459-2599
20.	Winnie Shull	1911 Crestline Blvd	352-7846
21.	Claudine Runnotte	1432 Livingston Ct NE	493-1565
22.	Creighton Runnotte	1432 Livingston Ct NE	493-1565
23.	[illegible] Hellman	1412 Livingston Ct NE	493-1641
24.	Glen Hellman	1412 Livingston Ct NE	493-1641
25.	Lamont Peabody	1442 Livingston St NE	413-7493
26.	Corinne Peabody	1442 Livingston St NE	413-7493

As residents living in proximity to 15th Avenue, we would like to protest the placement of the proposed sewage treatment plant by LOTT anywhere along 15th Avenue. We request that another, less sensitive site, be chosen than this one, which is close to many homes and near woodland areas. We fear that this will adversely impact our property values and destroy the pristine area around us.

	NAME	ADDRESS	PHONE NUMBER
1.	[illegible]	1711A [illegible]	360-455-0582
2.	Michelle Cobb	805 Century Ct NE	360-456-4436
3.	[illegible] K.R. French	717 Century Ct NE	360 923 1847
4.	Alina Wyatt [illegible]	717 Century Ct NE	360 923 1847
5.	[illegible] Wallace	806 Century Ct. N.E.	360-412-1640
6.	[illegible] Wallace	" " " " "	360-412-1640
7.	Anthony J [illegible]	905 Century Ct SE	360-491-3121
8.	[illegible] L. Brown	809 Century Crt NE	360-491-4159
9.	[illegible]	913 Century Ct NE	360 456 4720
10.	[illegible]	913 Century Ct NE	456 6830
11.	Fred Lacontie	914 Century Ct NE	923-2465
12.	William D Franklin	902 Century Ct NE	438-0213
13.	Joan E. Bouck	1238 Hensley St NE	459-5196
14.			
15.			
16.			
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ORIGINAL

RECORD OF PROCEEDINGS

HAWKS PRAIRIE RECLAIMED WATER PROJECT

Draft Supplemental Environmental Impact Statement

PUBLIC HEARING

MAY 2, 2001

7:00 p.m.

Lacey, Washington

JANE JOHNSON, Court Reporter, Olympia, WA (943-7698)

a couple days ago and so we just more or less wanted to come and listen and get more information, but our concern is bad smell and this going into the water table, the ground water or the creek and those types of things. But as I say, we're getting into the process kind of late here and I need to probably get up to date on the information.

2

MS. GADBAW: Thank you, Carol.

The next person is Nicole Mercier.

MS. MERCIER: My name is Nicole Mercier, M-E-R-C-I-E-R. I live at 2110 Mark Street in Woodland Creek. This evening I had planned on making a speech as to why my husband and I are opposed to the sewage treatment plant being built on 15th Avenue. I got to thinking about how to find out how people in these neighborhoods feel. I decided to do a survey. Of the 62 homes I visited, 41 families were home; 38 people signed my petition. One of the people who didn't sign was Vietnamese and did not speak English. The other person was afraid of retaliation. She was also a foreigner.

3

Most were unaware that this project was as far along as it is. They were unaware of the location of the project. They don't remember ever receiving anything in the mail telling them that this project was near their home -- from LOTT. Most of them could not be here tonight either because they either work, go to school

4

is my petition and if you would like to have a copy of that, there are two others out that the people either are not here or have not turned them back to me that were also gathering signatures in their neighborhoods.

Thank you.

MS. GADBAW: We could take a copy of the petition if you would like to leave it.

MS. PARSONS: What does it say?

MS. MERCIER: It says as residents living in proximity to 15th Avenue, we would like to protest the placement of the proposed sewage treatment plant by LOTT anywhere along 15th Avenue. We request that another less sensitive site be chosen than this one which is close to many homes and near woodland areas. We fear that this will adversely impact our property values and destroy the pristine area around us.

UNIDENTIFIED SPEAKER: Could we sign that also if we weren't notified?

MS. MERCIER: Yes.

MS. GADBAW: The next person signed up to testify is Phil -- Rottin?

MR. ROTH: Roth, R-O-T-H.

MS. GADBAW: Roth, I'm sorry.

MR. ROTH: My name is Phil Roth. I live at 7848 Jenny Street Northeast. We are property owners on

MR. JONASON: My name is Chuck Jonason, last name J-O-N-A-S-O-N. I reside at 1320 Merkel Street, M-E-R-K-E-L.

My objection, number one, I'll go with Mr. Roth that notification on this seems to be rather sporadic if you don't happen to find a little bitty announcement in The Daily Olympian. I only found out about it through a neighbor who attended the last meeting, which I hadn't noticed. Gee, anything else going on in our area, if there is a development going on, it seems like property developers, private developers, have to give every kind of written notice in the world to property owners. 11

Number two, when I came in tonight and looked at the aerial view of Site 1, which I strenuously disagree with, I was told that, well, out of the property that was available and shown on the map, you wanted about four acres. And then the comment came that, well, we don't want to put it on Martin Way; that's good commercial property. This is the back of the property. 12

I contend, number one, the environmental impact for air, we've got enough smells in that neighborhood now. We've got an occasional bit from the mushroom farm. We have a landfill and now you want a sewage plant that would back up to somebody's back fence.

very poor. We got one but our neighbors didn't and none of our friends did who live in the area bordering this area. We don't take The Olympian, so putting something there doesn't do it either. So I just underscore their comments.

13

The need for additional information. I'm not aware that you're aware that there is supposed to be an underground river running through -- through Area 2 there. I have this on the advice of my neighbor who is one of the few people who owns water rights and has done an awful lot of work in this area. So I raise this as an issue, that you need to investigate that. I don't know how you do that, but that that might be an impact.

14

I'm not aware of contingency plans for -- you know, you have inflow and outflow and what happens if something goes wrong and you can't stop the inflow and it has to go somewhere and that? I understand that there wouldn't be water going down into the ground at the treatment plants excepting what happens if you can't stop the inflow and you can't send it out and there's an underground river there? So that's something to be looked at I think. So I'm raising an issue for you to investigate.

15

As to the merits of the alternatives, being a -- having a mathematics and scientific background,

16

order to do that.

At the last meeting I came to, one of the issues that I had was can we trust the people involved, because there's oftentimes a different result than what's promised. We say our plans are to do this and, in the end, the result is different. And I've addressed the point of accountability. I came away from that meeting feeling like I don't trust the people who are involved here.

18 First of all, my issue was completely brushed aside. It was made fun of. It was made laughable and it was basically said, "Well, you can't do that." I raised the issue of the fact that promises have been broken to me by the City of Lacey and they were brushed aside. They were treated lightly and then they were treated with misinformation.

My property is 350 feet wide and we brought city water into our property. In order to do that, you have to go from where it is and pay per foot to bring it to the far side of my property. So I had to pay for 350 foot of water line, plus to cross my neighbor's property because it was on the other side of his. That cost about $7,000. We put in an oversized water main. We were told that if anyone on the other side of the street connected, they would have to pay late-comers' fees.

also feel that in addition to an Environmental Impact Statement, that we do need an economic impact statement as to how these -- building something as enormous as this will impact the homeowners. I cannot believe that our values will not be impacted. That would just be ridiculous to believe that and I have a hard time believing anybody who tells me that they won't. It just doesn't make any sense that somebody would come in and buy our house in a few years and pay the same amount if we had a sewage treatment plant across the street or behind our house.

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I also feel like 10 years of construction would be rather disruptive in anybody's neighborhood and I don't think this is the sort of thing that should be, as the previous man said, zoned for a residential area that has nothing in it but houses at this time. I guess what I would like to say is I would like to be able to look each of you in the eye one at a time and have you tell me that you would be happy to have this same thing built across the street from your house or behind it, that you would guarantee no impact whatsoever on the value of our homes, that if the values are impacted, that the property owners will be compensated and that there would be some sort of assurance that we would have accountability.

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I also am concerned about overflow and

MS. GADBAW: We have David Cody and then we'll have Thomas Cook.

MR. CODY: Good evening. My name is David Cody. I live at 714 Century Court, that west section there with approximately 40 to 50 homes where I reside, about a hundred feet from where this monstrosity will occur, right out my front door. I'm really concerned. I get the feeling that Mike said at the first meeting that LOTT couldn't condemn our property and that's unfortunate because then we would get fair market value. But LOTT can sure as hell affect the value and you know that.

I've lived there since 1989 and have got a historical record that it appreciates five percent a year and frankly, like everybody here, we live on our savings account. That's our equity. And I can't help but think that -- in fact, this seems so hair brained, I thought, "What a loony idea. Let's put a sewage treatment plant in the middle of a residential area. That sounds like a great idea." I thought some guys in the tavern came up with that. I couldn't believe it.

But, anyway, it has appreciated five percent a year and I can't help but think you're going to steal part of that equity no matter where you go with it frankly. I'm getting a double whammy because I think your -- what do you call it, a finishing pond? I love that

MS. GADBAW: Thanks, David.

We're moving on to Thomas Cook and after that we'll have John W. Lowder.

MR. COOK: Hi, my name is Thomas Cook and I reside at 652 Sandra Lee Court Southeast, Olympia, Washington. And I've reviewed the Supplemental EIS and I have a concern with the lack of hard ground water and hydrologic data in the area where the ground water recharge basins are proposed to be located, including the area between the proposed site and the McAllister Creek bluff. The environmentally sensitive McAllister Creek bluff has unstable slopes and has had significant landslides occur during the winter of 1996 due to heavy rains and increased ground water pressures.

25 The increase in net inflows of large volumes of water into the recharge basins behind the bluffs as proposed only increases my concerns that the bluff and homes in the area and McAllister Creek will be adversely impacted. Without a comprehensive ground water and hydrologic study of the area from the recharge basins up to and including the McAllister Creek bluff, sufficient, hard information has not been provided in the Supplemental EIS to determine if this proposal is likely to have a potential significant adverse environmental impact.

right next to the freeway. Within that I was concerned with the infiltration of the water in that area and I went to the county over it and they have went through and they went out and dug, taken samples of the area out there, and they determined that the storm water retrofit program will not work in that area because the water will not penetrate.

This not only goes for the area that's between our neighborhood and Hawks Prairie -- Hawks Prairie Mall, which is a camel's -- SeaFirst property, which they have set their storm water runoff adjacent to the neighborhood there and the county has notified Lacey that that storm water runoff system will probably fail and in that area, all that entire area is septic tanks and drain fields, which means that there's a possibility that these runoffs will actually interfere with our drain fields and saturate our drain fields.

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Now my concern is that -- and I realize that in that area it's a treatment plant, not an infiltrating plant, but at the same time has the treatment plant went out and actually did a core samples to the areas they want the infiltrate ponds to go in to see if that area out there is the same as underneath the entire area in that area. This is one thing I'm concerned with right there.

MR. SMITH: My name is Harlan Smith. I live on Century Court. Everybody here has pretty much covered what I would say.

Everybody I've talked to in that area is under the assumption that that property to the west couldn't be developed for residential because of the wetlands. I just don't understand how you can put a sewage treatment plant there. I, like everybody else, don't want the smell or the 10 years of construction just to put up a big warp in the middle of a residential area. So along with the property value and everything else, it's just what we're concerned about. That's about all I have to say.

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MS. GADBAW: Thank you, Harlan.

Tom Brown and then Suzanne Hellman.

MR. BROWN: My name is Tom Brown and I live at 5528 15th Avenue Northeast. I wouldn't want this plant on my property and I wouldn't want it on my neighbor's property. I wouldn't want it anywhere around where I could smell the thing.

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There are several concerns that I have on this. I think one of the most important ones is particularly with the sites of two east and two central and your pond number D or letter D. They are all too close to Woodland Creek, roughly a thousand feet away, and

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there's no wetlands in the area, but I do have some property right across the street from both two east and two central that's got about two acres of water. There's also a plot next to two central on the other side that shows two acres of water or better. So I'm concerned about fog in the winter from this low-lying area and emissions that come out and get into the fog. We all know there is no wind at that time and that whole area from Woodland Creek around is just going to be one stinky mess. 33

I am concerned about declining property value and I think Mrs. Cody put it very well. We're all concerned here about declining property value and being forced out of our homes because it's not a livable situation. We either have to accept a reduced living standard or sell our property at less than value. I would even accept right now a price -- if I could get the price the county assessor has it assessed at, I would move. I have some neighbors that would move. It's just the threat of the thing just coming in. A lot of it is the unknown and not knowing. 34

And I think part of the problem with that is that there is no experience in LOTT in operating these kind of plants. There is none within the state of Washington. They've gone to Arizona where the climate and the weather is different than here. They don't have the 35

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understand why we would have a treatment plant in Lacey when not that much of our waste is treated by LOTT. And I also understand that that is considered to be a wetland and I wonder why you can build on it if the owner of the property can't build on it. I understand that's why he offered this up and that's a concern of mine.

There's a lot of wildlife out there. There's deer, raccoons, all kinds of squirrels. There's all kinds of birds. There's hawks that nest out there. I'm concerned about the wildlife because I try to take care of them and, you know, I've made my yard into a little haven for them.

And I also don't understand why you would put this in a developed neighborhood when there's a lot of land around here that isn't developed yet and if people want to build next to a plant like that, then they could. And I'm concerned with the smell, the property values, but I don't know why you would select the site in the middle of a developed neighborhood.

Thank you.

MS. GADBAW: Thank you, Suzanne.

Don Herzog followed then by Lorene Boren. Don Herzog is next.

MR. HERZOG: I pass.

MS. GADBAW: You pass, okay.

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of people that are concerned about.

Also, it's a little odd that -- how can a sewage treatment plant that supposedly is supposed to go to 22,000 square feet, is what I've heard -- you know, they couldn't build back there because there were wetlands and so now you're going to put this structure there that isn't even environmentally friendly -- or I can't say that. I know it's needed, however, we're talking about,

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-- we have a residential area. And then to hear that this water that's being treated is not even going to be for our area, is -- well, again, this is -- this is -- you know, we've heard that it is going to be pumped to other areas to treat, you know, for watering golf courses or whatever and it's -- it's going to be piped a long distance away from everyone that lives close by to the sewage treatment plant. So again it's fairly disturbing.

Of course, we're concerned about the odor, concerned about the habitat. You know, whoever just spoke. You know, there is a tremendous amount of animals

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and that were already displaced at one point because of the clearing of that land that ended up abruptly stopping when they determined they were wetlands and it was going to cost a tremendous amount to develop.

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So again, you know, I think as you've heard, I think we're totally against it and really wish

have our own treatment plant. I'm sorry, but the water really stinks. We use it to water the plants and the vegetation within -- on our property and you can smell it. You can still smell it in the air and it's kind of one of those things where if you don't think about it, you could probably maybe get used to it but for the most part it's there. You know it's there. You know what it is. You don't want it to touch you. When they're watering the fields and stuff, you don't want to get it on your car, you don't want to be near it and you definitely don't want to smell it.

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Within my research also some of the things that I've looked at, you have things that -- you have runoff that goes into the ground. You have the possibility of running into problems as far as the people living there, whether they are going to get sick, whether they're going to become infertile. This might sound really stupid but in Florida they did a study on one of these things. The alligators down there were becoming infertile. Eggs were not producing. You know, I don't know that they've actually done studies on humans or anything like that but that is a concern. It's something that we all need to think about.

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Treatment plants, they're not pretty to look at. They're not pretty to smell. It is not

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have been a little bit more prepared coming here. I actually left school early so I could get here and come talk to you and say my piece. It's just a very big thing with health concerns and property values and just not -- 50
there's just too many downfalls I think and I think that we've put a lot more at risk than we do as far as the advantage-wise. There's a lot better places, more industrialized than the residential area where you guys are thinking of putting it.

Thank you.

MS. GADBAW: Liana, could you tell us where you work and where they reuse this --

MS. DUPONT: I work at the prison in Shelton and so we have our own treatment plant out there and they water the trees and the fields and the acreage that we have surrounding us. And, you know, to tell you the truth, that's another thing where at one point we had a 51
scare with the water. Nobody wants to drink the water out there even though they swear up and down that the water is clean and it's fine and it's drinkable and it is of quality but, you know, you can't believe it when you know your water in the sink is all of a sudden turning brown and nobody knows why.

I mean there's a lot of different things that have happened and I haven't been there all that long,

can be done in the treatment plant. I think that there are things that can be done that -- I don't have some of the fears that some of the other people do have -- if we do everything that is committed to be done.

But one comment that someone made, and I don't know if it went on your list of items, so I wanted to be sure it did. This treatment plant will add paving and rooftops and things of this nature which will then cause less ground to absorb the water and, you know, run off that shed. So I just wanted to be sure that the Thompson place issue, if they already have a problem, that the impact of that gets on your list of concerns to address. 53

No one mentioned about the trucking of solid waste and the traffic that that will cause. And I also just want to put on the record that at the last meeting we were to, we were shown beautiful pictures of treatment plants in various locations. One of them looked like a Spanish hacienda and we were told that something like that could be done here. And some place else -- I don't know whether it was on the CD or where -- we had these pictures of very nice looking things, but what we saw tonight was ugly and it was big and that and this is a kind of bait and switch thing to me to, you know, show one thing. And that's why I talked about accountability and 54

UNIDENTIFIED SPEAKER: Can we ask questions tonight? Is this a forum where we can ask questions?

MS. GADBAW: Are there other people that want to ask questions or -- I have to close -- we would be glad to answer your questions if you stay around afterwards. We would be glad to answer your questions then but this is to get things on the record. So we'll close the public hearing and then if you have questions, please come forward and we'll try to answer them.

So if there is no one else to testify, we will be taking written comments until 5:00 o'clock on Friday, May 4th. You can submit them in person or by mail or fax or E-mail. In the handouts that were here tonight there is the address if you want to send them or E-mail them and our fax number. We also have a form in the back if you want to record comments. Any of us or Jason, who is sitting here in the corner, give it to him and he can make you a copy.

We appreciate all of you coming and providing testimony. I am going to close the public hearing now. It is about 8:14. And if you have further comments, please get them to us in any of the ways that I've mentioned. And if you have questions, we're here and available to answer those individually.

The public hearing is closed.

Public Hearing Transcript, May 2, 2001

1. With regard to Site D, refer to Letter No. 10, response 9. With regard to reclaimed water odor, refer to Letter No. 10, response 3.

2. With regard to treatment plant odor, refer to Letter No. 5, response 3. With regard to groundwater, refer to Letter No. 8, response 1.

3. The petition is included as Letter No. 12.

4. Refer to Letter No. 7, response 1.

5. *Comment acknowledged.*

6. With regard to property values, refer to Letter No. 6, response 4. With regard to odor, refer to Letter No. 5, response 3. With regard to the industrial nature of the facility, refer to Letter No. 11, response 5. With regard to the facility siting criteria, refer to Letter No. 7, response 3.

7. The area is located within the Hawks Prairie Resource Management Basin. This basin is one of four basins within the LOTT service area that were defined in 1998 as part of LOTT's long-range plan, also known as the Highly Managed Alternative. The Highly Managed Alternative is a resources-based approach that relies upon matching areas acceptable for groundwater recharge and potential demand for alternative water sources with the wastewater supply. Implementation of this approach is made easier by dividing the LOTT service area into smaller units which relate to drainage basins, opportunities to use reclaimed water, and opportunities to recharge groundwater.

8. *Comments acknowledged. The petition is included as Letter No. 12.*

9. Refer to Letter No. 7, response 1.

10. Refer to Letter No. 7, response 2. Any pipelines that are constructed will be constructed in existing easements. At this time, no new pipeline easements are anticipated to be necessary.

11. Refer to Letter No. 7, response 1.

12. With regard to odor, refer to Letter No. 5, response 3. With regard to siting the reclaimed water satellite plant at the landfill, refer to Letter No. 11, response 7.

13. Refer to Letter No. 7, response 1.

14. The sites in Zone 2 would only be used as a reclaimed water satellite plant; groundwater recharge would not be conducted at any of the Zone 2 sites. Construction of a reclaimed water satellite plant would not impact groundwater flow through the area. With regard to potential groundwater impacts from a groundwater recharge basin and additional investigations that will be conducted prior to implementation, refer to Letter No. 8, response 1.

27. Refer to Letter No. 8, response 1.

28. LOTT is committed to constructing and operating the reclaimed water satellite plant in a manner that results in minimal impacts to neighboring properties. State-of-the-art features are being incorporated into the plant design to ensure that it operates with minimal noise and odor. Modern treatment facilities operate with very low off-site transmission of odor. Treatment facilities in other residential urban areas, including Edmonds, Washington, operate with very low odor. This facility is surrounded by high-density, high-value residential units.

29. With regard to property development, refer to Letter No. 2, response 1, and Letter No. 6, response 2. With regard to odor, refer to Letter No. 5, response 3. With regard to construction timing, refer to response 20 above. With regard to property values, refer to Letter No. 6, response 4.

30. Comment acknowledged. Refer to Letter No. 5, response 3.

31. Sections 5.1.3 and 6.1.3 of the SEIS describe the potential surface water-related impacts associated with a reclaimed water satellite plant, and constructed wetlands/groundwater recharge basin, respectively.

32. With regard to potential impacts to Woodland Creek, refer to sections 5.1.3 and 6.1.3 of the SEIS. With regard to odors, refer to Letter No. 5, response 3.

33. Increased moisture (humidity) increases odor sensitivity (the same odor concentration will cause increased detection in humid conditions). Air stagnation and inversions can increase the concentration resulting from lack of dilution. The fact that fog accompanies these conditions is not a cause, but an effect. Air inversions and fog will increase odor detection. The reclaimed water satellite plant and the Martin Way pump station system will be designed to meet the odor requirements at the fence line during expected meteorological conditions. Refer also to Letter No. 5, response 3.

    With regard to wetlands, refer to Letter No. 2, response 1.

34. Refer to Letter No. 6, response 4.

35. Wastewater treatment plant processes are similar to those currently applied at LOTT and many industrial and municipal facilities throughout Washington. LOTT operating staff will undergo extensive training during the design and startup of the reclaimed water satellite plant. LOTT staff are participating in the design development of the plant and will be well acquainted with the operating requirements.

36. Refer to sections 5.1.5 and 6.1.5 of the SEIS for a discussion of potential impacts to wildlife resulting from construction and operation of a reclaimed water satellite plant and constructed wetlands/groundwater recharge basin.

37. The City of Lacey is one of the LOTT partners. One hundred percent of Lacey's sewered population is served by LOTT. The City of Lacey has 13,314 equivalent

50. Comments acknowledged. With regard to treatment facility façade design, refer to Letter No. 6, response 2. With regard to odor, refer to letter No. 5, response3. With regard to property values, refer to Letter No 6, response 4. With regard to facility siting, refer to letter No. 7, response 3.

51. Reclaimed water is not used for drinking water purposes (refer to section 7.2.3 of the SEIS for a listing of acceptable uses for reclaimed water). In addition, reclaimed water is conveyed in purple-colored pipes so that it cannot be confused with potable water sources. It is difficult to speculate about conditions that could be occurring at the DOC facility in Shelton that are causing discoloration of drinking water. Refer also to response 48 above.

52. As noted in section 4.4.2 of the SEIS, preliminary site-specific hydrogeologic investigations have been conducted for the candidate groundwater recharge sites (Sites A through E). Site 2 will not be used for groundwater recharge. These preliminary investigations confirmed the presence of anticipated conditions. As described in Letter No. 8, response 1, once a groundwater recharge property has been secured, LOTT will conduct a six to 12 month pilot test to define the long-term sustainable groundwater recharge rates (using reclaimed water), and define the area of influence to minimize the potential groundwater impacts.

53. Comment acknowledged. Section 5.1.3 of the SEIS identifies that the reclaimed water satellite plant will result in increased impervious surface area. Runoff will be controlled with a site-specific runoff control plan designed per the Drainage Design and Erosion Control Manual for Thurston County (DDECM). Stormwater runoff will be contained on site. Work that was conducted in the vicinity of Thompson Place confirmed that local soils are highly variable, and underscore the need for site-specific investigations per the DDECM.

54. Refer to section 5.1.13 of the SEIS for a discussion of truck traffic associated with the operation of the reclaimed water satellite plant. Refer to Figure R-2 for graphic depictions of possible facility facades and Figures R-3 and R-4 for facility location on a site with different buffer options.