BrightWater

Siting the Brightwater Treatment Facilities

Site Selection and Screening Activities

March 2001

KING COUNTY

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Executive Summary

Preparing for the Future

King County has embarked on a program called the Regional Wastewater Services Plan (RWSP) designed to address the region's long-term wastewater treatment needs. The County's regional wastewater collection and treatment system currently serves over one million customers in King and Snohomish counties. Rapid population growth is placing increasing demands on the system, particularly in north King and south Snohomish Counties. By 2010, King County's wastewater treatment system will have reached its capacity limits.

To ensure that quality wastewater services are in place to protect public health and the environment, including threatened and endangered species, the RWSP calls for constructing a new wastewater treatment facility by 2010 to accommodate growth in the north service area. In late 1999, King County began a three-year search for a site for the new Brightwater Treatment Plant. The name Brightwater reflects the project's goals of protecting public health and the environment, being a good neighbor and being a good investment for the region.

King County assembled a comprehensive, interdisciplinary Project Team to implement a three-phase approach to site the Brightwater Treatment Plant and its associated conveyance pipelines and marine outfall. The first two phases of the siting process use policy criteria and preliminary information gathered to help define the specific proposal and alternatives which will be studied in greater detail in the third phase and in a detailed supplemental environmental impact statement. Phase I of the siting process is summarized in this document. Lasting from November 1999 to May 2001, Phase I includes developing criteria, identifying potential land areas and selecting candidate sites for further analysis. Future phases will include more detailed review and an environmental analysis of the final candidate sites.

Working Together to Site Brightwater

Because the area to be served by the Brightwater plant includes portions of King and Snohomish Counties, King County Executive Ron Sims and Snohomish County Executive Bob Drewel agreed to work together on the siting process. The two Executives created a 24-member Siting Advisory Committee to help develop site screening criteria and provide project oversight. Committee members were drawn from all sectors of the community in both counties, including tribal governments, city and state governments, utility districts, business, and environmental advocacy organizations. In addition to the advisory committee, a technical committee, the Metropolitan Water Pollution Abatement Advisory Committee and a policy committee, the Regional Water Quality Committee, reviewed and helped shape the process.

Public involvement and community partnerships are critical to the success of the project. Brightwater's Public Involvement Plan was created to promote open communication with interested and affected community members, and to encourage their participation in the siting process. Interactive projects included a website, a speakers bureau, newsletters, mail-in feedback cards, public displays, workshops for the public and stakeholders, technical review, and media outreach.

Creating Policy Site Screening Criteria

The Project Team began by developing policy site screening criteria that would be used to select the best candidate sites. First, the Project Team developed a set of project goals to guide the process. Then, based on public comments, the Project Team developed draft policy criteria. These were refined by the advisory, policy and technical committees. Finally, the King County Executive forwarded the set of policy site screening criteria to the King County Council. The Council reviewed and revised the policy site screening criteria, and adopted them in February, 2001 in Ordinance 14043.

Searching for Sites

While the policy criteria were being developed, refined and approved, the Project Team also worked to identify land areas that might be suitable for the new facilities. 95 areas were identified using existing documentation such as the Geographic Information System (GIS), an industrial/commercial lands search, and community nominations. Five areas were nominated by community members and organizations through the Community Nominations Process, which took place in the summer of 2000.

Next, the 95 land areas were analyzed for serious engineering and environmental constraints that would limit the construction or operation of a wastewater treatment facility. Such constraints include steep slopes, long and narrow site shape, presence of developed national or state parks, active airport operations, landslides or unstable soils, flood zones, transmission towers, major pipelines, cemeteries, biological preserves or conservation areas, and unremediated Superfund sites. This analysis revealed that approximately 38 of the 95 land areas were largely unconstrained.

Applying Policy Screening Criteria

In order to apply the adopted Policy Site Screening Criteria systematically, the Project Team developed a set of Detailed Evaluation Questions, measurable questions that help evaluate how well a site meets the policy criteria. In Phase I, this included considerations such as site elevation, documented wetlands, and existing land use. Data sources for this level of site evaluation included published materials such as aerial photos, land use maps and plans, topographic maps, and publicly available resource databases, and "windshield surveys."

Based on the experience and professional judgement, of the Project Team and the data available at this stage, certain questions became key distinguishing siting factors, such as site size, estimated length of pipes to and from the site, and existing land use. These were given more emphasis at this stage in the evaluation and were used to preliminarily determine the most suitable candidate sites overall.

The Project Team applied the detailed evaluation questions, including key factors, for the approximately 38 sites. Using this evaluation process, the King and Snohomish County Executives selected seven proposed candidate sites (see Figure 1). The sites that are approved by the King County Council will continue to be evaluated in greater detail in the next phase of the siting process.

Table 1
Proposed Candidate Sites

Site Name	Site No.*	Total Area (acres)	Estimated Useable Area (acres)	Jurisdiction	Current Land Use
Edmonds Unocal	IND1/71	53	43	City of Edmonds, Snohomish Co.	Unocal operations; Inactive Tank Farm
Point Wells	30/CN5	98	29	Unincorporated Snohomish Co.	Chevron Asphalt Plant
Gun Range	33/CN1	80	80	Unincorporated Snohomish Co.	Kenmore Gun Range
Gravel Quarry	17	69	68	City of Bothell & Unincorporated Snohomish Co.	Gravel Quarry and Undeveloped Land
Thrashers Corner	19/25	144	63	City of Bothell, Snohomish Co.	Low Density Residential & Open Space
Route 9	IND9/64	108	104	Unincorporated Snohomish Co.	Numerous Businesses - Light Industrial
Woodinville	15	44	44	City of Woodinville, King County	Undeveloped – Residential Proposed

* Site number designations were developed as part of the lands area inventory. “IND” indicates its current use as an industrial site. “CN” indicates that the site was submitted as part of the community nominations process.

Investigating North Puget Sound and Its Shoreline

As part of the preliminary site evaluation process, the Marine Outfall Siting Study (“MOSS”) was created to investigate the physical and biological conditions of the northern basin of Puget Sound in order to identify a suitable site for the marine outfall for the Brightwater Facility.

Thus far, the MOSS team has compiled geographic information obtained from primary

research and determined the presence of underwater geophysical constraints (such as steep slopes, submarine canyons, ridges, slides, and substrate unsuitable for tunneling). It has also examined nearshore biological, shoreline public use, and hazardous materials constraints.

Eight potential outfall zones were identified at this preliminary stage (see Figure 2). These will undergo further analysis based on more detailed information.

Next Steps

There is lots of work ahead. After the candidate sites have been adopted by the County Council, work will continue to:

- Define conveyance pipeline corridors and methods of construction;
- Refine marine outfall zones;
- Assemble system packages (plant layout, conveyance, and outfall);
- Gather more detailed information on each site and conduct on-site investigations; and
- Seek input from the public, local communities and agencies regarding the candidate sites.

Once the final candidate sites are identified, a Supplemental Environmental Impact Statement will be prepared and reviewed by the public. Finally, the King County Executive will select the Brightwater system location.

Decision Timeline:

March 27, 2001	King and Snohomish County Executives announce seven **Proposed Candidate Sites**.
SPRING 2001	The King County Council will adopt **Candidate Sites** and **Site Selection Criteria** that will take us through the next round of more detailed analysis.
SUMMER 2001	Systems (including conveyance and outfall) will be developed for each candidate site. These systems will be analyzed using the adopted site selection criteria.
FALL 2001	The King County and Snohomish County Executives will announce two to five **Proposed Final Candidate Systems**.
END OF 2001	Based on the adopted criteria, the King County Council will then select and approve two to five **Final Candidate Systems.**
2002	Extensive **Environmental Review** will be done for the final candidate systems, including the conveyance routes and marine outfall.
EARLY 2003	The King County Executive will **Select a Site** for the Brightwater Treatment Plant, as well as a proposed conveyance system and marine outfall location.

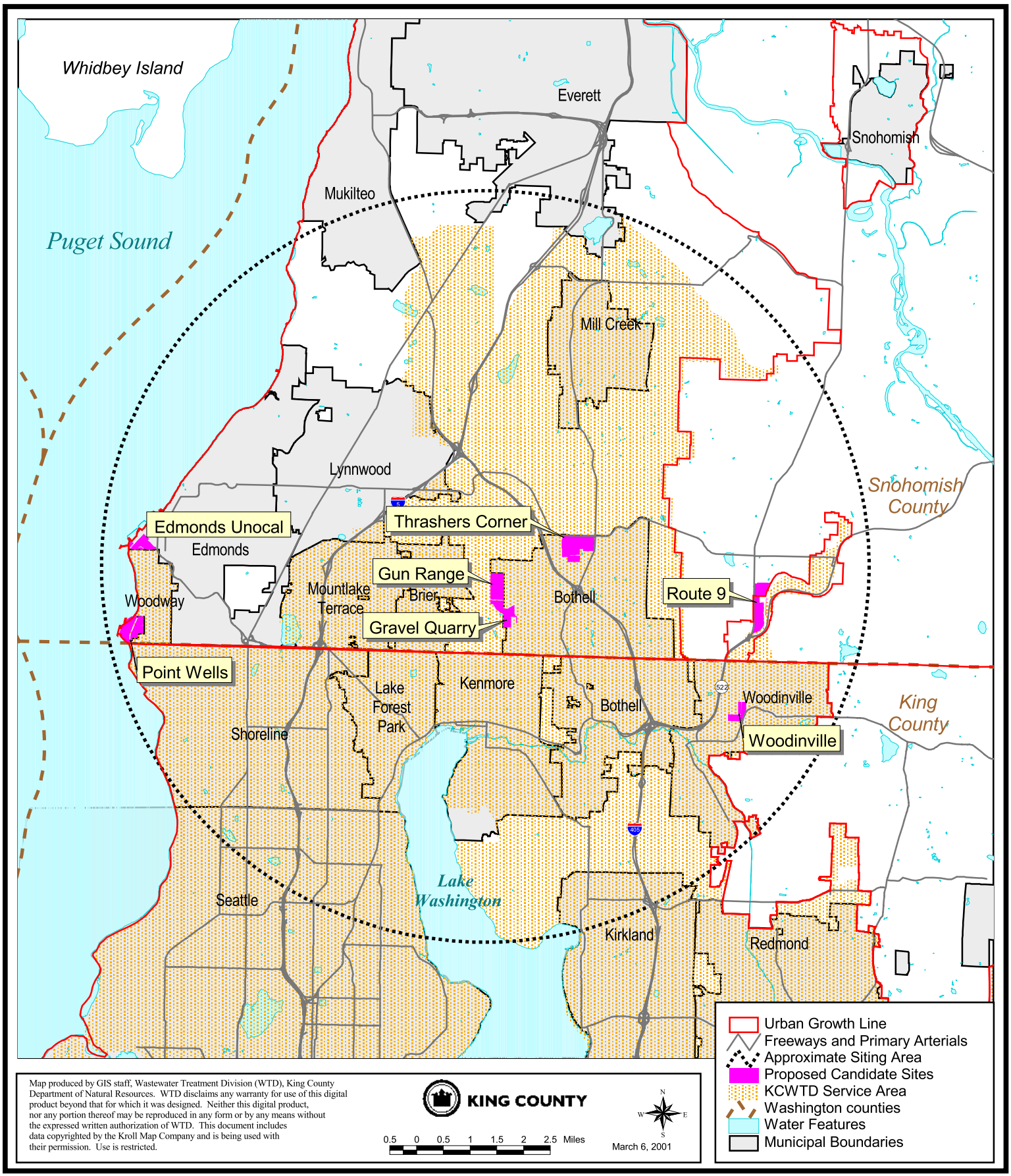

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Fig. 1 Proposed Candidate Sites

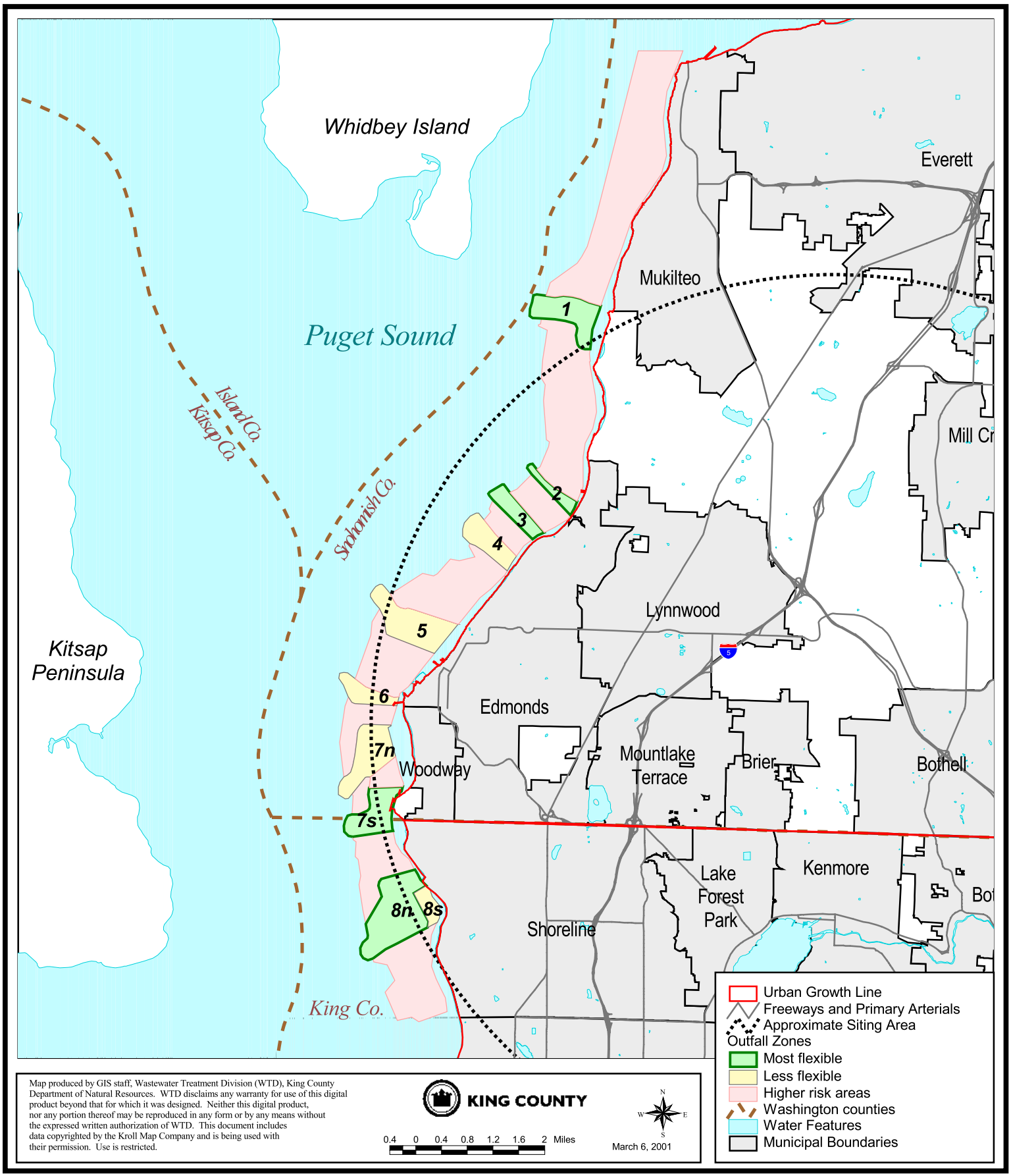

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Fig. 2 Proposed Outfall Zones

Introduction

King County's Regional Wastewater Services Plan was developed to protect public health and the environment by continuing to provide quality wastewater treatment as our region grows. A major component of that plan is the new Brightwater Treatment Plant. In late 1999, King County began a three-year process to find a location for the new plant. This document describes the Brightwater facility siting process and summarizes the methods, activities, products, decisions and actions taken during Phase 1 of the three-phase siting process. In Phase 1, the Project Team and the King County Executive, in partnership with the Snohomish County Executive, developed and applied the site screening criteria approved by the King County Council, to narrow the search for suitable sites from over 90 potential land areas to less than 10 proposed candidate sites. As a result, seven proposed candidate sites have been identified and put forward for King County Council approval. The County Council will conclude Phase 1 with a review of the proposed candidate sites and a decision on which sites to advance for further evaluation.

In Phase 2, the Project Team and Executive will, with ongoing input from the public, local communities and agencies, conduct a more detailed analysis of the remaining sites. At the conclusion of Phase 2, the Executive will recommend to the Council, for their review and approval, a limited number of final candidate sites. The final candidate sites will be assembled into system packages, that will include the plant, outfall and associated conveyance pipelines. In the third and final phase of the siting process, an EIS will be prepared and the Executive will select the preferred system package to be constructed.

The Siting Process Overview Section of this report provides an overview of Phases 1-3 of the siting process including the environmental review process and other related studies. The Public Involvement Program Section describes the multiple methods used to involve the public in the siting process. The Identifying Land Areas Section outlines how the inventory of potentially suitable land areas was developed. The Engineering and Environmental Constraints Analysis Section describes the set of engineering and environmental siting constraints (E&E constraints) used initially to evaluate the identified land areas and summarizes results of that evaluation. The Policy Site Screening Criteria Section presents the County Council approved site screening criteria, used in Phase 1 to evaluate the unconstrained land areas; and, the Level 1 Site Screening Evaluation Section contains the results of applying the site screening criteria and gives details about the characteristics of the proposed candidate sites. The Marine Outfall Siting Process Section explains the methods and results of the Marine Outfall Siting Study (MOSS) for identifying suitable marine outfall zones. The Next Steps Section presents the next steps in the Brightwater siting process. The Appendices to this document are bound separately – they include all the major reports prepared during Phase 1 that are pertinent to the siting process. Copies of specific appendices will be provided upon request.

Siting Process Overview

Background

King County needs additional wastewater infrastructure to respond to adopted Growth Management Act (GMA) comprehensive plans throughout King County and adjoining counties (such as Snohomish County). King and Snohomish Counties and the cities within them have adopted GMA plans that incorporate a 20 year projected population in each jurisdiction. On November 29, 1999, King County adopted the *Regional Wastewater Services Plan* (RWSP) in Ordinance 13680 (Appendix A).The RWSP serves as the County's long-term response to the GMA relative to wastewater treatment provisions. The RWSP supplements and updates the County's comprehensive water pollution abatement plan and insures adequate wastewater management facilities are available to serve future projected demands in the service area. The Ordinance also insures that the County continues to perform its wastewater function consistent with its agreements with local governments and in compliance with state and federal requirements. The Ordinance adopting the RWSP directs action on several projects and activities to expand and upgrade King County's overall system and service capabilities.

One of the chief projects called for in the RWSP is the construction of a new regional wastewater treatment system in north King County, or south Snohomish County, by the year 2010. There are three major components of the proposed wastewater system: pipelines to convey wastewater to the treatment plant; the treatment plant; and the outfall pipeline, which will convey treated effluent to Puget Sound for discharge. The plant site needs to be large enough to accommodate a 36-million gallons per day (MGD) plant facility and possible future expansions.

Following adoption of the RWSP, the Wastewater Treatment Division, of the County's Department of Natural Resources, assembled a team of staff and consultants to identify and evaluate potential sites for the treatment plant, associated pipeline corridors and marine outfall. Early in the process, the County selected *Brightwater* as the new name for the proposed north treatment facility. The name reflects the project goals of protecting public health and the environment, being a good neighbor and being a good investment for the region.

As a first step in defining the Brightwater Siting Process, the Project Team examined case studies of how other major public works and infrastructure facilities were sited across the U.S. These case studies are summarized in the *Siting Process Alternatives* report (Appendix B). Most of the case studies used successive screening of potential sites with progressively more refined selection criteria. In this way, critical siting constraints, easily identified from published sources, such as floodplains, fault zones, steep slopes and landslides (sometimes referred to as fatal flaws) were initially investigated to eliminate less suitable sites. Sites advanced to the next phases of evaluation will be examined using policy siting criteria that required on-site investigations or more costly methods of data collection. In this way, the process is made both cost-effective and efficient by focusing quickly on the most suitable sites.

Project Goals

The overall goal of the *Regional Wastewater Services Plan* (RWSP) is to protect public health and the environment. This has been expanded for the Brightwater facility such that the County's goal will be "to construct regional wastewater facilities that enhance the quality of life in the region and in the local community, and are not detrimental to the quality of life in their vicinity" (Ordinance 13680 -Policy EMP-4).

Following adoption of the RWSP, the Project Team worked with existing County documents to establish an overall framework and a set of goals to guide development of the policy siting criteria called for in the RWSP.

Draft project goals were developed by County staff and subsequently reviewed and refined by input from advisory committees associated with the project.

Environment / Public Health Goals

- **Preserve and Enhance the Natural Environment** – Preserve and enhance the natural environment at both the regional and local level. Avoid or minimize impacts to the natural environment.
- **Remain Consistent with Comprehensive Plans** – Remain consistent with the King County and Snohomish County Comprehensive Plans and the State Growth Management Act.
- **Protect Air and Water Quality** – Design the wastewater system to preserve and enhance air quality and water quality.
- **Protect Public Health** – Design the wastewater system to protect public health.

Technical Goals

- **Assure Efficient and Reliable Treatment** – Develop a wastewater treatment, conveyance and disposal system that is efficient and reliable.
- **Use Existing Public Facilities and Land** – Maximize existing public investment by maximizing the use of existing wastewater facilities and properties.
- **Meet the Schedule** – Select a preferred location for the new North Treatment Facilities by December 2002 and ensure that the facilities are operational by 2010.
- **Balance Risk, Flexibility and Long-Term Cost** – Balance cost with the risk of uncertainty and the flexibility to respond to changes in growth projections, technology and regulations.
- **Meet Regulations** – Ensure the wastewater system is designed and constructed to meet regulatory requirements.

Sustainability Goals

- **Encourage Reuse** – Strive to achieve beneficial reuse from the byproducts of the wastewater process, including recycled water, biosolids and methane.
- **Use Recycled Materials in Construction** – Design the north treatment facility utilizing the U.S. Green Building Council's Leadership in Environmental and Energy Design Rating program Criteria. Strive to achieve the program's silver rating.

Financial Goals

- **Maintain Reasonable Rates** – To minimize impacts on ratepayers and provide reasonable equity, design the wastewater system so that rates remain within projections developed in the RWSP.
- **Maintain the Budget** – Keep costs within budget.
- **Save Costs** – Look for ways to save or share costs.
- **Achieve Reasonable Lifetime Costs** – Achieve reasonable lifetime costs considering capital costs, operations and maintenance, and staffing.

Community Goals

- **Create a Public Amenity** – Create facilities that enhance the quality of life in the local community and minimize impacts to the social environment.
- **Seek Partnerships** – Seek partnerships with other public and private entities to maximize mutual benefit.
- **Site Facilities Equitably** – Strive to site essential public facilities equitably. Ensure that no racial, cultural or class group is disproportionately impacted by essential public facility siting or expansion decisions.

Project Advisory Committees

Siting Advisory Committee

Ordinance 13680 provides guidance for the siting, directing that policy criteria be established to comprehensively evaluate environmental, technical, financial and community needs and including procedures for involvement of the public at large and advisory committees in the process. The King County Executive was directed to establish one or more committees to aid in the siting of the new treatment plant. For this siting process the King County Executive and Snohomish County Executive jointly established the Siting Advisory Committee (SAC). The SAC is a 24-member committee composed of representatives of two tribal governments; eleven cities and towns located within the study area; three utility districts; environmental, labor, business, community and economic development organizations. The SAC will assist in the development of the policy criteria and provide oversight and input to the process.

Metropolitan Water Pollution Abatement Advisory Sub-Committee

The Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC) has also been engaged to assist by providing review and input to the siting process. MWPAAC is comprised of representatives from each of the 34 component agencies that have contractual agreements with King County to provide sewage treatment.

Stakeholder Committee

A stakeholder committee has also been identified to provide input to the siting process. The stakeholder committee is comprised of individuals representing various agencies and organizations with a specific interest in the project.

Project Schedule and Phasing

The Brightwater Project Team developed a three-phase siting process, based on a systematic approach to narrowing the number of sites under consideration. The general sequence of siting process activities is depicted in Figure 3. The timing, steps, and outcome (or expected outcome) of each phase are listed in Table 2. Through the three phases, the evaluation of potential project facility sites will be progressively more detailed and will constitute three *levels* of evaluation.

In Phase 1, a broad set of "land areas" that might be considered for potential plant sites were identified within the study area. These identified land areas were scrutinized for basic engineering and environmental constraints, and those sites found to be largely unconstrained were advanced for Level 1 evaluation. Level 1 analysis included a general assessment of site characteristics based on technical, environmental, community and land acquisition information. Level 1 results were used to assess the sites using Council approved policy site screening criteria. From the Level 1 evaluation the County Executive has proposed a set of candidate sites for King County Council approval. Council approval of the proposed candidate sites is scheduled for May 2001, which will conclude Phase 1.

In Phase 2, each proposed candidate site approved by the Council will undergo Level 2 evaluation using the approved policy site selection criteria. The Level 2 analysis will include a more detailed assessment of the site based on technical, environmental, community, financial and land acquisition information. In addition, field investigations to verify data from general sources will be conducted and basic site layouts and conceptual conveyance systems will be developed. The most suitable sites that emerge from the Level 2 evaluation will be proposed as final candidate sites (along with each site's associated conveyance system and marine outfall) in October 2001. In Phase 3, the approved final candidate sites will undergo SEPA environmental review in an EIS and Level 3 evaluation, focused on more detailed information including additional plant and conveyance layouts and cross sections; draft mitigation proposals; and more detailed cost estimates for facility construction, operation and maintenance. At the end of Phase 3 the County Executive will select the preferred Brightwater Plant site for project implementation.

FIG. 3 - KING COUNTY WASTEWATER TREATMENT DIVISION

Brightwater Siting Decision Process

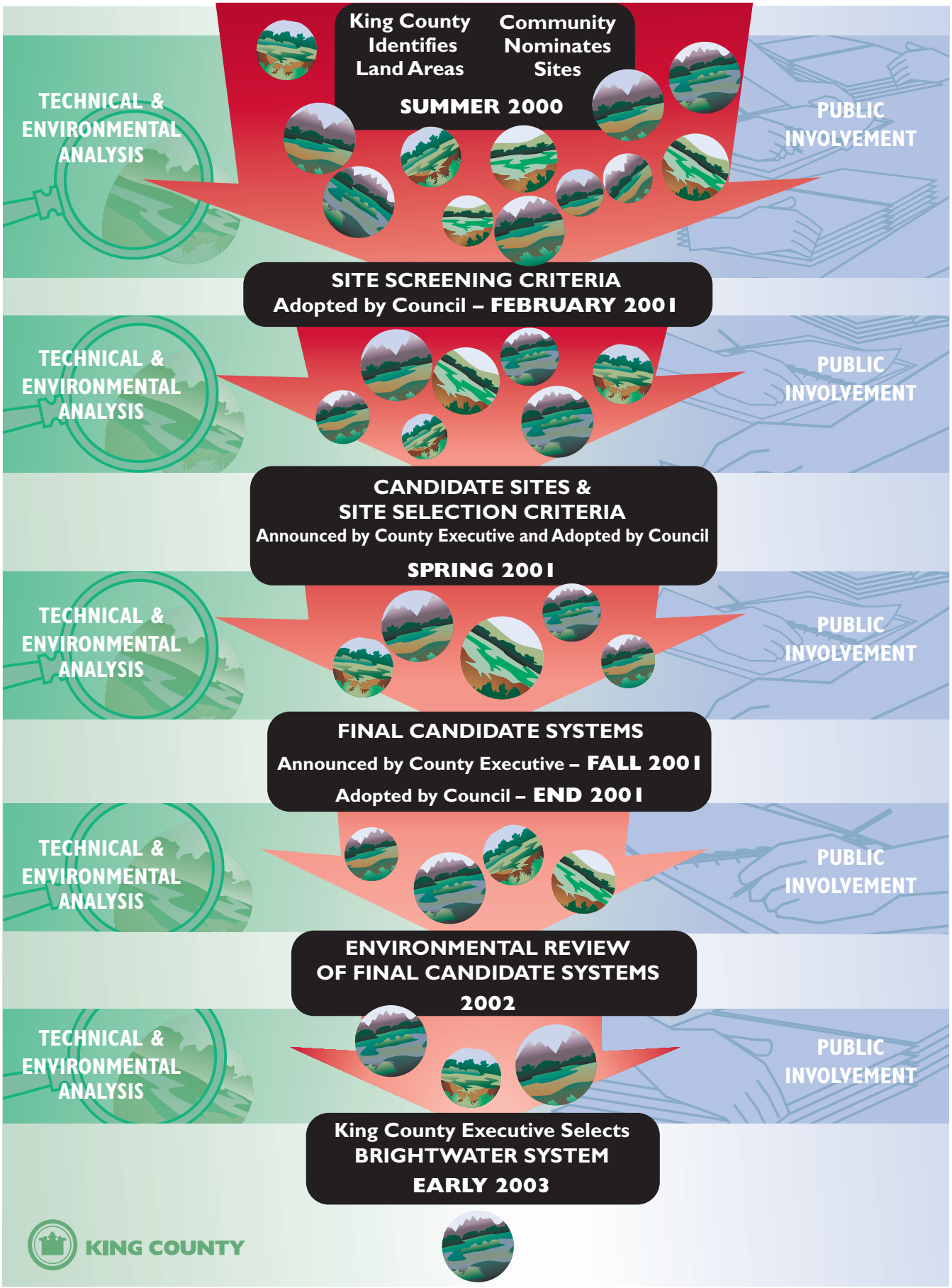

Table 2

Project Phasing

Phase	Steps	Expected Outcome
Phase I Nov 1999 – May 2001	• Establish Minimum Site Requirements • Identify Land Areas through: GIS / Parcel information review, Community Nominations process, and an Industrial Lands Search • Define Engineering & Environmental (E&E) Constraints • Conduct E&E Constraints Analysis • Draft Site Screening and Site Selection Criteria for Council review and approval • Conduct Level 1 Site Evaluation using the adopted Site Screening Criteria • Identify and conduct preliminary evaluation of potential Marine Outfall Zones • Initiate Public Involvement	• 95 land areas identified • 38 land areas found largely unconstrained. Two sites reconfigured to yield 36 sites for Level 1 evaluation • Siting screening and site selection criteria adopted by KC Council • Level 1 Evaluation using adopted Site Screening Criteria identified 7 proposed candidate sites • 7 proposed candidate sites sent to KC Council for approval and advancement to Phase 2 for Level 2 evaluation • 8 outfall zones identified
Phase II June 2001 – Dec 2001	• Define Conveyance Pipeline Corridors and Methods of Construction (including tunnels) for each candidate site • Refined Marine Outfall Zones • Assemble System Packages (plant site layout, conveyance and outfall) for each proposed candidate site • Conduct On-Site Investigations • Conduct Level 2 System Package Evaluation using adopted Site Selection Criteria • Continue Public Involvement activities	• 2 – 5 system packages approved by KC Council and advanced to environmental review and Level 3 analysis • EIS proposal defined and alternatives identified • EIS process initiated
Phase III Jan 2002 – Dec 2002	• Conduct Public Scoping and receive comments on Project • Refined development of project alternatives • Conduct Level 3 System Package Evaluation (additional feasibility assessment) • Develop conceptual Mitigation Plans • Prepare EIS on Brightwater System Package Alternatives • Continue Public Involvement activities	• KC Executive selects the preferred Brightwater project system alternative based on EIS findings and Level 3 analysis results

Environmental Review Process

Extensive programmatic environmental review under the State Environmental Policy Act ("SEPA") began during the adoption of the RWSP. The preliminary County siting activities and policy considerations described in Phases 1 and 2 are designed to (1) further define the specific Brightwater project proposal that will be evaluated in an EIS starting in 2002; and (2) produce a number of alternative system packages.

Consistent with SEPA policy that encourages incorporation of previous environmental analysis, the Brightwater siting process includes a phased review that builds on previous SEPA analysis. This phased review began with the SEPA review and analysis associated with adoption of individual Growth Management Act plans and policies at the regional, county and city level and was followed by an EIS for the Regional Wastewater Services Plan ("RWSP EIS"). The SEPA review conducted on the RWSP EIS analyzed the potential impacts of siting, constructing and operating a Brightwater system in general. Both the RWSP EIS and the RWSP itself identify possible Brightwater mitigation measures. Because the RWSP EIS has already evaluated the broad impacts of the new treatment plant at a programmatic level of detail (not at a project level), the next EIS will supplement this analysis, and is termed a Supplemental Environmental Impact Statement (SEIS).

The SEPA review for Brightwater includes adoption of the site screening and site selection criteria by the King County Council. Because many of the site screening criteria are based on the environmental policies and values found in adopted County and City GMA comprehensive plans and development regulations, the SEPA environmental checklist identified what are generally only positive long-term impacts on the environment resulting from the adoption of the site screening criteria. The criteria also address how significant adverse environmental impacts can be avoided or minimized by a rigorous site selection process. A Determination of Non-Significance (DNS) was issued based on this checklist (November 17, 2000).

In Phase 3, a SEIS will be prepared that builds on the programmatic RWSP EIS and analyzes the detailed environmental impacts and proposed mitigation of a limited number of Brightwater alternative system packages. Because the Project EIS will include detailed information on environmental impacts of the Brightwater project at specific locations, the public will have additional opportunities to participate in the Brightwater SEPA process at that time. Public input will be sought throughout the EIS process.

Endangered Species Protection

Habitat Conservation Plan

King County is creating a Habitat Conservation Plan (HCP) as an optional activity under the federal Endangered Species Act. The HCP will result in a long-term agreement between King County and either the U.S. Fish and Wildlife Service, National Marine Fisheries Service or both. It addresses impacts to federally "listed" or "proposed listed" species that could result from existing or potential future activities of the Wastewater Treatment

Division. A related supplemental environmental review process may be conducted for the HCP. The ultimate goal is to acquire an “incidental take permit” that recognizes unavoidable impacts to these species and reaches agreement on appropriate mitigation. Successful completion of the HCP should expedite obtaining permits from these agencies for the construction and operation of Brightwater facilities.

Public Involvement Program

The public involvement program for the Brightwater project was developed to inform and involve interested and affected constituencies in a manner that is open, far-reaching, and inclusive. Comments from the public, balanced with engineering and environmental considerations, will help the decision-makers reach a decision regarding the siting of the new treatment plant, conveyance route, and marine outfall.

The public involvement program has been designed to gather comments around the project's key milestones. In Phase 1, the primary goals of the public involvement program were to introduce the siting process to the public, assist with identifying land areas and develop criteria, seek potential development partnerships, and create a solid foundation for the ongoing engagement of the public throughout the three-year siting process.

A number of methods were used to achieve these goals. Methods were selected to facilitate open communication among all participants, including King County, Snohomish County, the general public, and other constituent groups. The County set out to develop a program that reached a broad range of audiences and facilitated in-depth discussion of the issues. All activities were designed to facilitate active discussion and two-way communication. For example, the Fall 2000 and Spring 2001 newsletters included mail-back comment cards. A summary of the results of these efforts is included in the *Public Involvement Summary for Phase 1 of the Siting Process* (Appendix C). Phase 1 public involvement activities are summarized below:

Table 3
Phase I Public Involvement Activities

In-depth Discussion Activities	Far-reaching Activities
• Community Leader Interviews	• Focus Groups
• Briefings to Elected Officials	• Speakers Bureau
• Siting Advisory Committee (SAC)	• Introductory public workshops in Bothell, Mill Creek and Shoreline
• Workshops for Regional Stakeholders	• Newsletters (3)
• Metropolitan Water Pollution Abatement Advisory Council (MWPAAC) review	• Website
• Community Nominations	• Project displays in public places
	• Media Outreach

Program Components

Public Involvement Plan

A working *Public Involvement Plan* was developed to guide the public involvement process through the entire project. It was designed to be flexible to respond to changing issues and needs. A copy of this plan is included as Appendix C.

In-depth Discussion Activities

A number of activities facilitated in-depth discussions with leaders and stakeholders throughout the siting area and the region. Early discussions helped shape the process and future public involvement activities. Subsequent conversations were essential to develop the site screening criteria, which were used to identify the proposed candidate sites.

To begin the process, the siting team interviewed approximately 100 leaders from King and Snohomish Counties and gathered comments on the siting process and the composition of the Siting Advisory Committee. These conversations are recorded in the *Siting Advisory Committee Summary for Phase 1 of the Siting Process*, Appendix D.

The results of these conversations lead to the formation of the Siting Advisory Committee (SAC), a group of 24 high-level officials and community leaders representing tribes, local jurisdictions and environmental groups. The role of the SAC is to assist King County Executive Ron Sims, and Snohomish County Executive Bob Drewel in developing site screening and site selection criteria and comment on how they have been applied. The SAC also serves as a "quality check" to provide suggestions on how to improve the siting effort and the accompanying public involvement program. The SAC's work in Phase 1 included a review of the proposed siting process and a significant effort refining the site screening criteria. The SAC's recommendation on the site screening criteria is included the *Public Involvement Summary for Phase 1 of the Siting Process* (Appendix C).

In-depth conversations also occurred with a diverse group of stakeholders with specific interests in this project and with the members of the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC), a committee made up of representatives of local sewerage agencies in King County's wastewater service area. These groups reviewed and helped shape the site screening criteria. A summary of the Stakeholders' workshop and a copy of MWPAAC's recommendation on criteria are available in the *Public Involvement Summary for Phase 1 of the Siting Process* (Appendix C).

The Community Nominations Process was an effort to involve individual community members or groups in identifying potential sites and to actively seek potential development partnerships and sites. A call for nominations was issued in July 2000. The County mailed 350 applications to local governments as well as brokers, real estate professionals, land and business owners in the siting study area. In addition, County staff placed a request for nominations in local newspapers. The County received five site nominations from community members – four in Snohomish County and one in King County.

As the sites are identified, special efforts will be made to reach neighbors and landowners. All neighbors within a certain radius of each site will be invited to the public meetings. Owners of proposed candidate site properties will be contacted by mail and phone before any public announcements are made. Project staff will meet with individual owners or, in some cases, small groups of landowners to answer their specific questions.

Far-reaching Activities

A number of public involvement activities were designed to allow a wide range of individuals and groups to be involved in the process and help shape the site screening criteria. The activities were designed to allow people to choose the way that they preferred to participate. Focus groups and public meetings allowed discussion with the general public. Newsletters, displays in public places, and a website (http://dnr.metrokc.gov/wtd/brightwater) allowed individuals to learn about the project at their own pace and at their own convenience. A speakers' bureau was developed so that groups could participate in the project through their own agendas. Postage-paid comment cards and e-mail connections gave members of the public a way to respond to what they learned. Detailed reports of these activities are included in Appendix C.

Media relations were also used to reach a broad audience. During Phase 1, the Project Team managers met with local reporters and editorial staff of major newspapers, media events were held to highlight ongoing scientific research and reporters were encouraged to meet with project staff. Appendix C contains a summary of the media plan and several of the articles printed in area newspapers.

A series of interviews with community resources such as historical societies, called the Discovery Process, provided detailed background on the communities in the siting area and led to the creation of a book called *Searching for Brightwater* (Appendix E). The book is a creative and beautiful look at the region and our relationship to clean water.

Identifying Land Areas

In November 1999, after adoption of the RWSP, the County began to develop an inventory of potentially suitable land areas for siting the Brightwater treatment plant. The objective was to compile a comprehensive list of potentially suitable land areas in the study area. Several approaches were taken using different methodologies and assumptions to arrive at the preliminary list of identified land areas. The preliminary list was reduced by filtering out sites based on "excluded uses", defined as parcels that were substantially comprised of improved parks, cemeteries, developed school sites and golf courses.

The first step was to define a study area in which to search for suitable sites. As shown in Figure 4 the project study area was defined to encompass the vicinity of the existing northern service area extending from Puget Sound in the west, to Juanita Bay on Lake Washington in the south, and to the boundary of the Cedar River / Lake Washington Watershed in the northeast. Within the study area, potential land areas were identified in four ways:

- Previous Studies – selected site information was taken from five reports prepared between 1996 and 1998. The reports included real estate surveys, siting studies and land supply/demand studies.
- GIS Analysis - largely underdeveloped land areas were delineated on the County's Geographic Information System (GIS) using digital aerial photos (1996) and digital assessor parcel information (Feb-Mar 2000).
- Community Nominations – solicitations for sites were sent to 350 brokers, real estate professionals, land owners, business owners and local governments in the study area.
- Industrial Lands Search – a commercial real estate broker identified commercial and industrial parcel assemblages in or near the study area.

Geographic Information System Analysis

The Geographic Information System (GIS) analysis began in December 1999 and was completed in June 2000. A complete record of the analysis can be found in the *North Service Area Preliminary Unverified Lands Inventory* (Appendix F). Selected sites from the previous studies were delineated using the GIS. Additional sites were identified using the search factors listed below. A total of 75 land areas were identified using GIS analysis. Search factors included:

- Study Area – all potential lands areas were located in or near the defined study area
- Site Size – potential land areas were single parcels or assemblages of parcels totaling at least 25 acres

- County Assessor Database Approach – based on Assessor information, identified parcels no smaller than 5 acres and 40% or less improvement value (defined as the ratio of assessed structural improvement value to the total assessed value). This was selected as a reasonable measure of land vacancy in order to produce a manageable number of sites.
- Aerial Photo Analysis –vacant or underdeveloped lands areas were identified based on visual interpretation of 1996 digital color orthophotos. Areas identified contained parcel assemblages totaling at least 25 acres regardless of individual parcel size or percent developed ratio. In addition, 1998 black and white orthophotos were used to update surrounding lands uses.

Once the sites were identified using the methods described above, basic information was gathered for each area. The Lands Inventory contains the following information compiled for the original 75 land areas:

- Location and Size – area number, jurisdiction, township/range, site acreage, number of parcels, largest single parcel, Thomas Bros. Guide page no/grid coordinates, and distance to Puget Sound.
- Land Use Controls and Characteristics – area number, acres, jurisdiction, land use, zoning, surrounding land use.
- Environmental Characteristics/Sensitive Areas – elevation range, mean elevation, slope, flood hazard (FEMA 100-year), wetlands (National Wetlands Inventory) drainage basin (watershed sub-basin).
- Assessed Property Values – area, number of parcels, largest single parcel, total assessed value, highest assessed value for a single parcel.
- Site Drive-by Survey Information – selected land areas were viewed. Data included: topographic characteristics (slope, creeks, wetlands), vegetation, posted signs, road accessibility, surrounding land uses and other information (abandoned structures on property, on-site construction or development, schools nearby, etc.)
- Confirm Presence of Contaminated Sites – the location of contaminated sites were identified within the study area as a means of finding potential brownfield remediation sites suitable for treatment plant development. Six of the previously identified land areas matched known contamination sites identified by the State Department of Ecology.

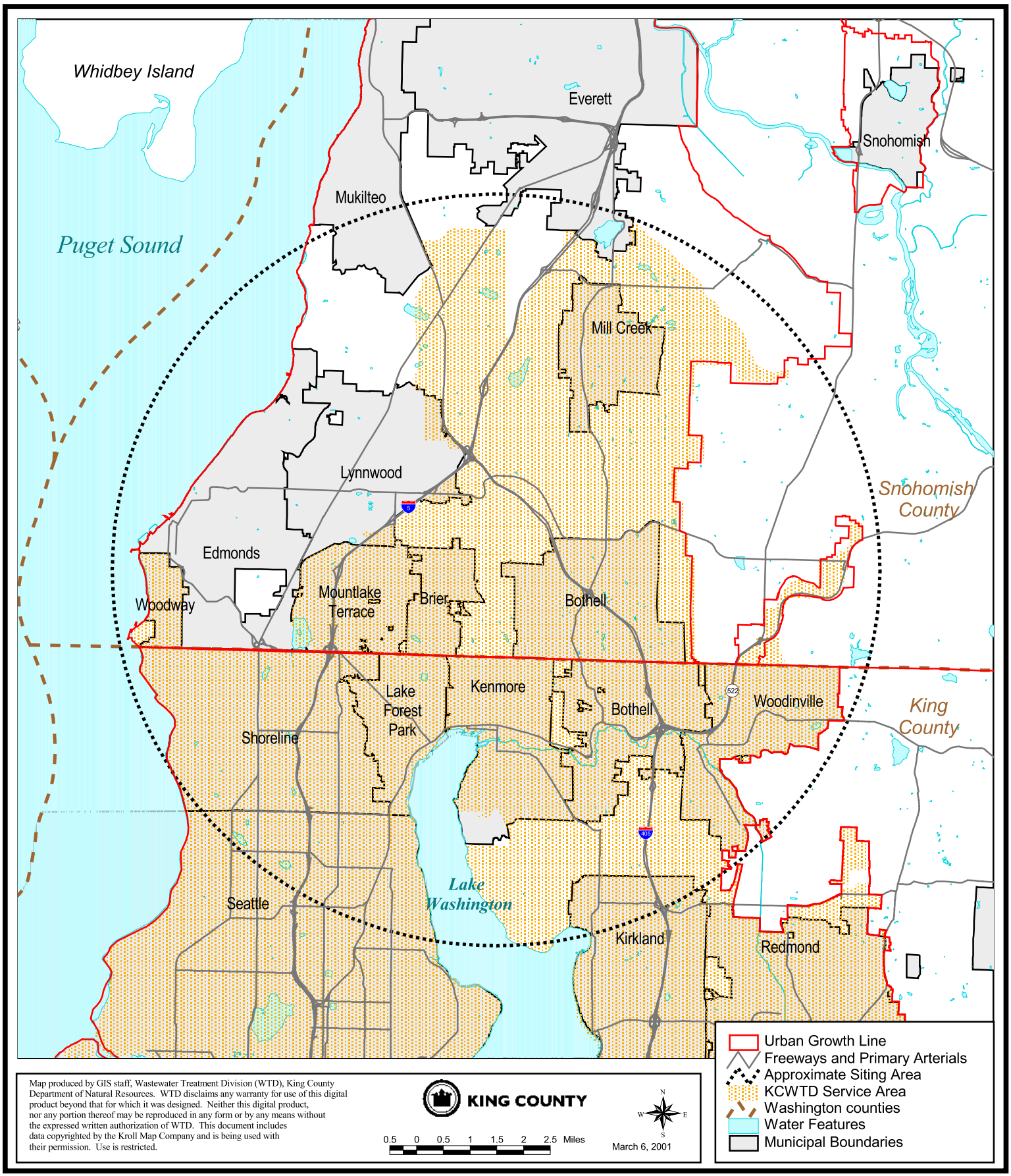

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Fig. 4 Project Study Area

Community Nominations Process

The concept of a community nominations process was developed as a means of providing individual community members or groups the opportunity to identify potential sites and for the County to actively seek potential development partnerships and sites. A Request for Nomination of land areas totaling at least 25 acres in or near the study area was issued on July 17, 2000 (Appendix H). The request was not limited to land owners but was widely distributed to local governments and real estate professionals; solicitations were published in local newspapers. The County received five nominations on August 26, 2000 from community members – four in Snohomish County and one in King County. Three of the nominated land areas were also identified by the County using GIS analysis.

Industrial/Commercial Lands Search

Given the industrial nature of the proposed wastewater facilities, a separate effort was initiated in early September 2000 to identify sites in industrial and commercial zones. A commercial real estate broker was retained to identify parcels in industrial/commercial zones that might not have been identified by the other search methods employed. The broker was directed to seek large, undeveloped, partially developed or fully developed industrial/commercial areas that could be assembled into potential sites for further consideration. Potential site assemblages were identified using several methods including:

- Identifying all parcels in the study area larger than 25 acres (with adjacent parcels greater than 10 acres)
- Screening to identify all parcels zoned for light, medium, or heavy industrial or commercial use
- Reviewing aerial photographs
- Applying professional knowledge of the siting area and consulting with other professionals
- Conducting selected site visits
- Consulting the Commercial Brokers Association database for properties offered for sale

The broker reviewed the search results and eliminated those sites already included in the lands inventory or those disqualified based on the land use exclusions previously established (See Section 5.1). In late September 2000, preliminary results of the search yielded 12 land areas. The complete *Industrial and Commercial Lands Search* is documented in Appendix I.

Identified Land Areas

A total of 95 land areas were identified using all of the methods described above. The location and distribution of the land areas is shown in the Figure 5. Data collected on the final pool of land areas included: assessor parcel delineations, aerial photos, and data tables.

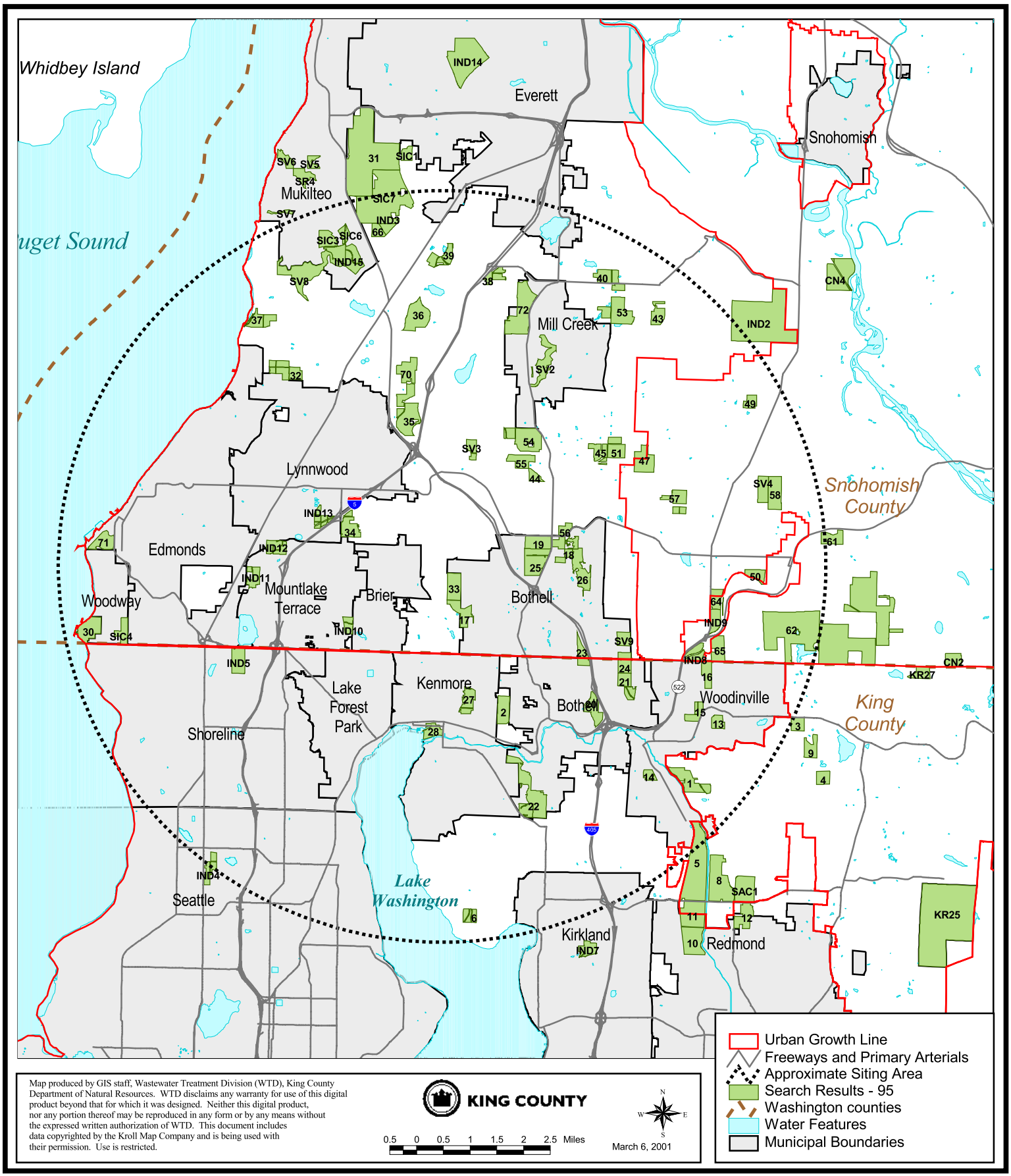

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Fig. 5 Land Area Search Results

Engineering and Environmental Constraints Analysis

Once the final set of land areas was identified, the next step in the siting process was to eliminate land areas that had engineering and environmental constraints. In order to winnow out such sites, the Project Team developed a set of 13 fundamental engineering and environmental constraints (referred to as E&E Constraints) which if present on the buildable area[1] would seriously limit construction or operation of a treatment plant. Given the serious nature of these constraints, Wastewater Treatment Division (WTD) management and staff determined that the presence of any single constraint on the buildable area would preclude the land area from further evaluation. If the site contained unconstrained areas of 25 acres or more, it would remain under consideration.

Using broadly available physical, geographic, land use and resource inventory databases, maps and aerial photos, the Project Team prepared E&E constraint maps for all the land areas. A total of 38 land areas were found to be largely unconstrained. Two of the land areas were subsequently optimized and combined resulting in 36 total land areas that were then carried forward. These land areas were considered most suitable for advancement to Level 1 analysis in which detailed, County Council approved site screening criteria would be used for evaluation. A complete summary of the initial E&E constraint analysis, including a written rationale for the development and application of the approved constraints, is provided in the *Engineering and Environmental Constraint Analysis* (Appendix J).

Engineering Constraints

The engineering constraint analysis evaluated each land area based on six technical features, or constraints, that would affect the engineering and construction of the Brightwater Treatment Plant. The six engineering constraints are:

- Size less than 25 acres
- Shape with a length to width ratio greater than 10 to 1, or an irregular shape
- Location within 0.5 kilometers from a documented seismic fault
- Slopes greater than 30 percent
- Known landslides and/or high potential for slope instability
- Location within a zone of deep liquefiable soils and lateral spreading

The most prevalent engineering constraint was the presence of known landslides and high potential for slope instability. The second most common constraints found among the 95 land areas evaluated were those regarding the size and shape of the site.

[1] Buildable area is referred to as Useable Area in the appendix documents.

The presence of liquefiable soils was initially considered as a limitation, but insufficient data was available to determine if the depth of the liquefiable soils would be a real constraint. If the liquefiable soils were shallow in depth, construction of the treatment plant facilities and associated tankage could be accomplished with minimal, if any, increase in construction cost; if medium depth, siting would still be possible, however, additional construction cost would be incurred. The presence of deep liquefiable soils throughout a majority of the land area could make construction difficult or infeasible. Further investigation during Level 2 and Level 3 evaluations will be conducted to determine if the specific soils at a candidate site are suitable.

Environmental Constraints

The constraint analysis also evaluated each land area from an environmental perspective. The seven environmental constraints are:

- Presence of Class 1 wetlands
- Location in the 100-year floodplain
- Presence of a Superfund site
- Location on an active airport area and/or clear runway protection zone
- Presence of designated agricultural or forest land or land held in trust
- Presence of designated wildlife preserve or conservation land
- Presence of parkland with officially designated habitat/natural areas

Two environmental constraints were most common on the 95 land areas reviewed: presence of Class 1 wetlands, and location within a 100-year floodplain. Land areas containing parklands with officially designated habitat and natural areas was the second most common constraint.

Results of Engineering and Environmental Constraints Analysis

Of the 95 land areas evaluated and screened, 57 were identified as having engineering and/or environmental constraints and 38 as largely unconstrained. The location of the largely unconstrained sites are shown in Figure 6.

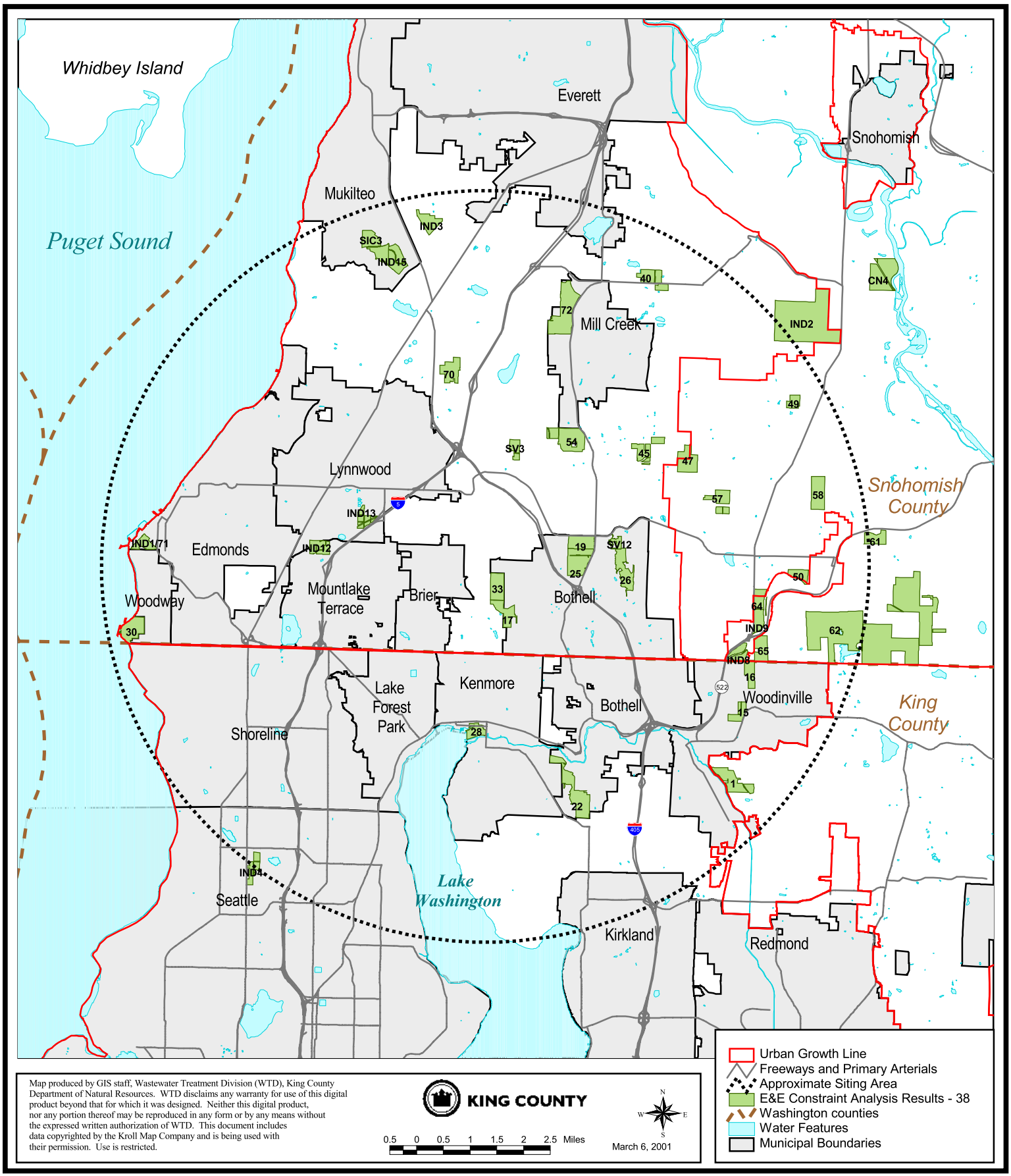

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Fig. 6 Engineering and Environmental Constraints Results

Policy Site Screening Criteria

Overview

One of the principles for guiding the siting process given in Ordinance 13680 and the *Executive's Preferred Plan for the RWSP* (April 1998) is that: "Criteria for a site will comprehensively evaluate environment, technical, financial and community needs". Adopted County wastewater treatment plant policy TPP-9 (see Appendix A) sets forth how the criteria and screening process are to be reviewed and approved, including procedures for involvement of advisory committees. From late April through late June, 2000, the Project Team worked on developing and refining a comprehensive set of draft policy siting criteria with input from the public. The policy criteria were reviewed by the Siting Advisory Committee (SAC), a 24-member committee jointly appointed by the King County and Snohomish County Executives.

In addition to the policy siting criteria, Detailed Evaluation Questions were developed by the Project Team as a practical way to apply and evaluate each of the sites against the criterion. The SAC made a number of recommendations regarding the content, directive nature, and organization of the proposed draft policy criteria and Detailed Evaluation Questions (Appendix K). These changes were largely incorporated into revised draft criteria and questions. The SAC fully endorsed the revised criteria, which were then sent to the King County Executive (see Appendix D for the SAC letter of endorsement).

In addition, the draft policy siting criteria were reviewed by the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC). The Committee was most interested in the long-term operation and financing of the new Brightwater facilities and on the wording of the technical criteria. MWPAAC also endorsed the criteria as sent to the King County Council (see Appendix C).

On September 27, 2000, the Draft Policy Siting Criteria were transmitted to the King County Council where they were assigned to the Committee of the Whole for their review and recommendations. The County Council redefined how it would adopt and apply the policy siting criteria, re-labeling the initial policy criteria as "site screening criteria" and provided for an additional policy screening opportunity to adopt and apply refined "site selection criteria" in Phase 2 of the siting process. On February 12, 2001, the King County Council adopted the amended site screening criteria for Phase 1, in Ordinance 14043 (Appendix L), by a vote of 13 to 0.

A list of the actions and events that occurred during development of the policy siting criteria and Detailed Evaluation Questions is shown below:

Table 4
Policy Site Screening Criteria Development Activities

- Project Team develops draft policy siting criteria and Detailed Evaluation Questions.
- Draft Policy Criteria and Detailed Evaluation Questions introduced to SAC
- SAC provides recommendations on draft policy criteria and questions
- SAC endorses draft policy siting criteria
- Stakeholders review draft policy siting criteria
- MWPAAC reviews and endorses the draft policy siting criteria
- Draft policy siting criteria submitted to the Regional Water Quality Committee for review
- Draft Ordinance for Policy Siting Criteria forwarded to King County Council Committee of the Whole
- The King County Council approves site screening criteria for Phase 1 evaluation through adoption of Ordinance 14043

Adopted Site Screening Criteria

The following is a list of King County Phase 1 *site screening criteria* adopted by ordinance on February 14, 2001 (Ordinance 14043, Sections 5 – 8 in Appendix L). These criteria apply to selection of the Brightwater treatment plant, outfall, and associated conveyances (referred to as "north treatment facilities" or "NTF" in the ordinance). Potentially suitable land areas that passed the E&E Constraint Analysis were evaluated based on these site screening criteria. It is important to note that where the criterion states that King County "shall seek", it means that the County hopes to find a candidate site that meets the criteria, but may select a candidate site that does not meet all criteria, if the site has other favorable features. Where the criterion states that the County "shall select," it means that any candidate site that is selected shall meet the criterion. For subsequent site evaluations, the County Council will adopt policy criteria, called S*ite Selection Criteria* in Ordinance 14043.

Community policy site screening criteria

Community impacts

- King County shall seek NTF sites that can be appropriately developed and mitigated to be compatible with surrounding land and marine uses.
- King County shall seek NTF sites that can be appropriately and effectively mitigated for potential impacts to the community such as noise, visual, odor and traffic effects.
- King County shall select NTF sites in a manner consistent with the Growth Management Act.

Cultural resources

- King County shall seek NTF sites that minimize impacts to known significant cultural resources.

Community amenity

- King County shall seek NTF sites where it is possible to enhance and provide benefit to the community, through appropriate and effective mitigation.
- King County shall seek opportunities to enhance and provide benefit to the environment, such as habitat, wetlands, surface waters, groundwater, or cultural resources through appropriate mitigation of project impacts.

Technical policy site screening criteria

Size, shape and topography

- King County shall select NTF sites that provide sufficient area to accommodate the proposed facilities, an appropriate buffer, and at the treatment plant, room for future treatment process upgrades.
- King County shall seek NTF sites that do not require extensive alteration due to either steep slopes or hazard mitigation, or both.
- King County shall seek a north treatment plant site that is located at an elevation that allows efficient use of energy for conveyance of sewage to the plant and conveyance of treated effluent to Puget Sound.
- King County shall seek NTF sites that provide opportunity for water reclamation and reuse.

Geology, soils and groundwater

- King County shall seek NTF sites that minimize exposure to geologic hazards, poor soil conditions and unsuitable subsurface geology.
- King County shall seek NTF sites that minimize the need for dewatering during facilities construction or operation.

Site access and utilities

- King County shall seek NTF sites with adequate vehicle access to and from major roadways or sites where adequate access can be developed.
- King County shall seek NTF sites with adequate, reliable and cost-competitive power supply or for which the County can obtain adequate supply.
- King County shall seek NTF sites with adequate emergency response services, such as fire and medical, or for which the County can develop or obtain adequate services.

Conveyance routes

- King County shall seek conveyance routes that minimize the complexity of conveying flows to and from the north treatment plant site.

System reliability

- King County shall seek NTF sites that can be developed and mitigated with effective flow management during emergencies.

Sustainability

- King County shall seek NTF sites that support opportunities for reuse of treatment process by-products.

Land acquisition, easements, rights of way

- King County shall seek NTF sites that minimize acquisition complexity in order to avoid or minimize risk of project delay and cost overruns.

Environmental site screening criteria

Biological resource protection

- King County shall seek NTF sites that can be developed and mitigated to minimize adverse effects to biological resources including: threatened, endangered and candidate species listed under the federal Endangered Species Act; endangered, threatened, sensitive and candidate species listed under the Washington Department of Fish and Wildlife's Priority Habitats and Species, and Species of concern; and any officially designated local natural resources.
- King County shall seek outfall locations that can be developed and mitigated to minimize effects on sensitive near-shore and offshore marine resources.

Water resources protection

- King County shall select NTF sites where it is feasible to construct and operate facilities in a manner that protects municipal drinking water wells and potable groundwater resources.
- King County shall seek NTF sites that can be developed and mitigated to minimize adverse effects to local surface waters.
- King County shall seek NTF sites where it is feasible to construct and operate facilities that will not be at risk during a flood event.

Human health

- King County shall select NTF outfall locations that can be developed and mitigated in a manner that will meet state and federal laws that protect public health related to recreations, fishing, shellfish harvesting, seafood consumption, tribal usage or other human use activities.

Contamination

- King County shall seek NTF sites that can be developed and mitigated in a manner that minimizes disruptions or mobilization of hazardous materials into the environment.

Financial site screening criteria – overall system cost

Lifetime costs

- King County shall seek NTF sites that will result in reasonable lifetime costs for the plant, conveyance activities and outfall, through consideration of acquisition costs, capital costs, operations, maintenance and mitigation.

Financial security and bonding

- King County shall select NTF sites that can be developed and mitigated within the financial security and bonding capacity for the wastewater system consistent with the County's legal and contractual commitments regarding the use of sewer revenues to pay for sewer expenses.

Level 1 Detailed Evaluation Questions

The adopted site screening criteria set policy direction for evaluation of candidate sites for the Brightwater treatment plant facilities. In order to implement and systematically apply the adopted criteria, the Project Team developed Detailed Evaluation Questions (DEQs)[2] that address measurable characteristics regarding each site's potential constraints or opportunities for siting the Brightwater Treatment Plant.

The first round of site evaluation using the DEQs, called Level 1, was intended to be a general assessment of basic site characteristics. A total of 33 DEQs were posed in a manner that could be answered through interpretation of aerial photos and parcel maps, from observations made during 'windshield surveys' of the sites, and from available information on physical, natural and community resource issues. Appendix K provides a detailed explanation of the DEQs and the scales used to measure them.

[2] DEQs were largely based on the adopted site screening criteria.

Level 1 Site Screening Evaluation

Process Overview

In fall 2000, the Project Team began to develop information needed to answer the Level 1 Detailed Evaluation Questions and then proceeded to prepare preliminary evaluations of the sites. After processing the preliminary results, the team identified which sites were least constrained in each major category: Community, Environmental, Financial and Technical.

At this stage of the evaluation, specific cost estimates were not developed for each of the sites. Instead key factors that affect the relative cost of one site compared to another were considered, including site elevation, total length of conveyance pipelines, and number of pump stations required. Both construction cost and annual operations and maintenance cost are directly proportional to these factors, i.e., the longer the pipeline and the more pump stations the greater the operation, maintenance, and energy costs.

The Project Team decided, based on experience and professional judgement, that certain DEQs represented key siting factors that should be given more emphasis in the evaluation. From among the 33 Detailed Evaluation Questions applied in the Level 1 Analysis, the Project Team identified specific issues that represented key factors for siting a new treatment plant. The basis for selecting certain DEQs as key factors included:

- Importance – factors that were most important in determining site suitability
- Best Discrimination – factors that clearly distinguished between sites
- Independence –factors that were unique measures of suitability
- Significant – factors that represent constraints not easily mitigated
- Available Data – factors than can be clearly determined at this level of analysis.

The selection of key factors was designed to focus the Level 1 site evaluations on the most significant factors that provided the most reliable information. By answering the DEQs, the Project Team determined which sites were more suitable with respect to key factors, which sites were less suitable, and which sites were neutral. The results of this key factor approach were used to determine, preliminarily, the most suitable candidate sites overall. Site-specific information was used, in some cases, to refine the configurations of certain candidate sites. Complete documentation of the Level 1 site evaluations can be found in Appendix K – the appendix contains refined site constraint maps, parcel maps overlain on updated aerial photos, and all the individual site evaluation matrices of DEQ ratings for each subject area. A list of Level 1 evaluation activities is shown in Table 5:

Table 5
Level 1 Evaluation Activities

- Project Team develops preliminary conveyance corridors
- Project Team acquires site information and completes preliminary site evaluations
- Preliminary results processed
- Project Team preliminarily determines key factors and sites that best meet key factors in each category
- Site windshield surveys
- Project Team preliminarily considers overall site suitability
- County Executive recommends proposed candidate sites to Council for further review in Phase 2
- King County Council approves proposed candidate sites (May 2001)

Key Factors

The key factors and reasons for selection are listed below:

Community Key Factors

Existing Land Use

Reflects community's vision of itself at this stage, before specific conversations with potentially affected communities can occur. Indicates potential compatibility with surrounding land and marine uses.

Size for Community Compatibility

Site size affects ability to design mitigation that accommodates community needs

Environmental Key Factors

Endangered Species Act Compliance

- Critical resource protection issue with extensive permitting considerations

Wetlands

- Constraint to site development, important resource protection issue, accompanied by extensive permitting considerations

Engineering Key Factors

Useable Area

- Affects treatment plant efficiency, flexibility, construction and Operations and Maintenance (O&M) cost

Elevation

- Affects system design, construction and O&M costs

Length of Conveyance

- Affects conveyance construction and O&M costs

Number of Pump Stations

- Affects conveyance construction and O&M costs

Preliminary Conveyance Systems

Most of the Level 1 Detailed Evaluation Questions addressed the suitability of a site for treatment plant development. A key objective of Phase 1 was to narrow the number of potential candidate plant sites to a manageable number so that complete "system" alternative (combining each candidate plant site with potential conveyance corridors and a marine outfall location) could be assembled and evaluated in greater detail in Phase 2. For the Level 1 analysis, two of the technical engineering questions dealt with the conveyance system. These questions served in part as surrogates for cost, since both construction and annual operation and maintenance costs are directly proportional to conveyance system factors. One question was used to evaluate the total length of conveyance (pipelines to convey raw wastewater to the plant and treated effluent to Puget Sound). The other was used to evaluate the number of pump stations required in the total conveyance system. The engineering team determined the likely size of system pump stations and the feasibility of tunneling (Appendix G). Based on these analyses, the engineering team developed preliminary conceptual route corridors for conveyance systems to and from the 36 sites under consideration. Maps showing the broad preliminary conveyance corridors and number of pump stations used for Level 1 evaluation can be found in Appendix G. These preliminary conveyance corridors will be modified and refined when a smaller set of candidate sites are evaluated in Phase 2.

Candidate Sites Recommended for Advancement to Phase 2 Analysis

Through an iterative process, the Project Team came to agreement on proposed candidate sites that offered the best potential for further evaluation. These sites, shown in Figure 7, were reviewed for overall consistency with the adopted policy site screening criteria. Table 6 below lists the candidate sites recommended for advancement to Phase 2 analysis. The engineering, environmental, and community characteristics of each proposed candidate site are provided in site summaries that follow the table.

Table 6
Proposed Candidate Sites

Site Name	Site No.*	Total Area (acres)	Estimated Useable Area* (acres)	Jurisdiction	Current Land Use
Edmonds Unocal	IND1/71	53	43	City of Edmonds, Snohomish Co.	Unocal operations; Inactive Tank Farm
Point Wells	30/CN5	98	29	Unincorporated Snohomish Co.	Chevron Asphalt Plant
Gun Range	33/CN1	80	80	Unincorporated Snohomish Co.	Kenmore Gun Range
Gravel Quarry	17	69	68	City of Bothell & Unincorporated Snohomish Co.	Gravel Quarry and Undeveloped Land
Thrashers Corner	19/25	144	63	City of Bothell, Snohomish Co.	Low Density Residential & Open Space
Route 9	IND9/64	108	104	Unincorporated Snohomish Co.	Numerous Businesses - Light Industrial
Woodinville	15	44	44	City of Woodinville, King County	Undeveloped – Residential Proposed

* Site number designations were developed as part of the lands area inventory. “IND” indicates its current use as an industrial site. “CN” indicates that the site was submitted as part of the community nominations process.

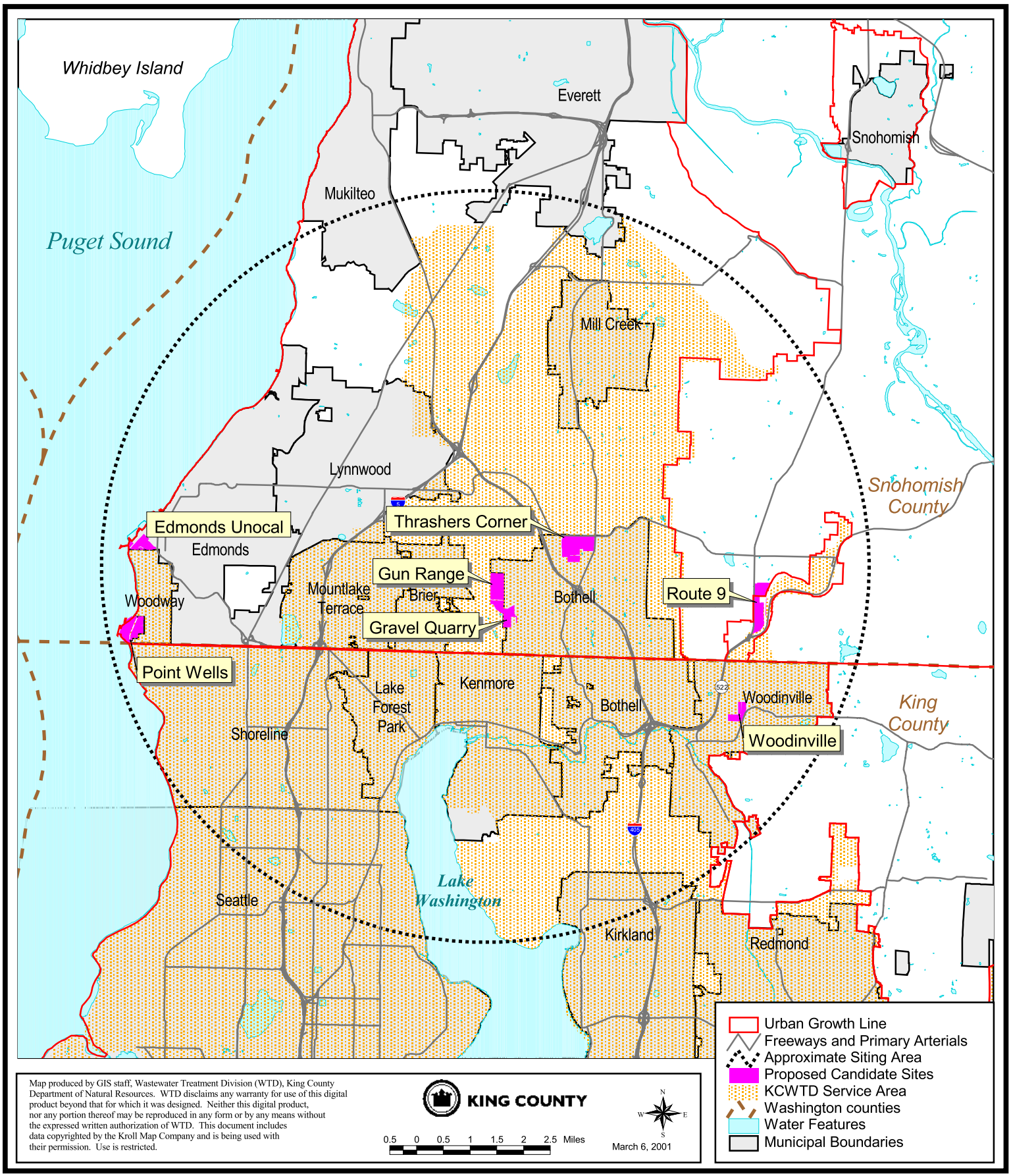

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Fig. 7 Proposed Candidate Sites

Edmonds Unocal

Overall

- The Edmonds Unocal site is located in the City of Edmonds, southeast of the Port of Edmonds marina. The site use is industrial but inactive, and is owned by Unocal.
- This coastal site has minimal conveyance length and is at an elevation that may allow gravity discharge for the outfall.
- The site is steeply sloped and located on a visible hill above Edmonds commercial district. It is directly adjacent to residential development to the south.
- A marsh and stream corridor are onsite. These could serve as habitat protection / enhancement zones.
- The site is considered suitable because of its industrial zoning, current inactive use, size, elevation, conveyance requirements, community partnership opportunities and habitat restoration potential.

Engineering

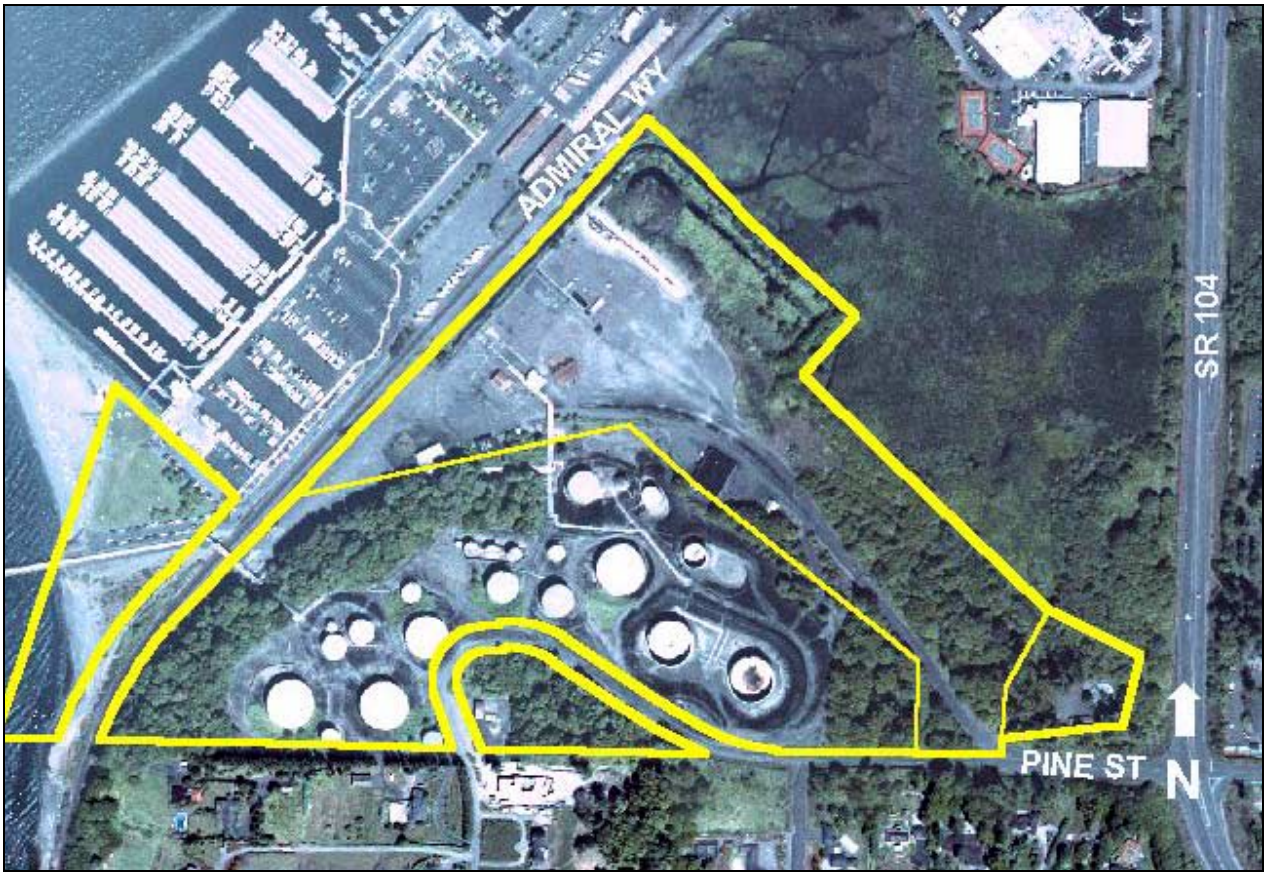
- Ease of access to the site is less suitable with the nearest freeway located 4.0 miles away.
- This site would require an estimated 67,000 feet of conveyance and four pump stations.
- Approximately one half of the useable area is sloped at 10% to 30% and about one third of the site has soils susceptible to liquefaction. A small portion of the site is unusable due to landslide potential.
- The depth to groundwater is estimated as variable over the site (5 to 50 feet deep) and artesian groundwater is likely to be present.

Site Name: Edmonds Unocal

Site No.	IND1/71
Location	Edmonds (Snohomish County)
Estimated Total Area	53 acres
Estimated Useable Area	43 acres
Mean Elevation	70 ft.
Conveyance Length	67,000 ft.
No. of Pump Stations	4

Environmental/Community

- The Edmonds Zoning Code allows a wastewater treatment facility as a conditional use.
- The Unocal Marsh occupies a large portion of the lower site, and a heron roost is located on the hillside between the developed upper area and the marsh. The large marsh offers habitat enhancement potential.
- The existing site character is industrial; medium density residential development and waterfront commercial uses surround the site.
- A portion of the site is considered unusable for construction due to the presence of wetlands and Deer Creek.
- A portion of the site is located along Puget Sound shoreline; however, project development is likely to occur outside the regulated shoreline area.
- A portion of the site contains contaminated soils. The site contains archaeological resources in the marsh area adjacent to Deer Creek; however, it is unlikely that site development would affect these resources.



Point Wells

Overall

- The Point Wells site is located on Puget Sound in unincorporated Snohomish County. The current site use is industrial; it is owned and operated by Chevron for asphalt production and an oil storage facility, utilizing a deep water port.
- This coastal site requires an estimated 61,000 ft of conveyance length and has a low elevation.
- A portion of the site is steep and considered unusable for construction. A portion of the site located west of the railroad tracks is considered buildable, although soils are subject to liquefaction.
- The site provides opportunities for both upland and wetland enhancement, and the shoreline location provides opportunities for marine habitat enhancement and increased public access.
- Use of the Shoreline Zone (i.e., for an outfall) would trigger a permitting process that may apply to the upland areas as well.
- King County operates a pump station nearby at Richmond Beach and that property could augment this site or provide more flexibility.
- This site was nominated by the Town of Woodway; however, the neighboring town of Shoreline prefers uses other than a treatment plant.

Overall (continued)

- The site is considered suitable because of its conveyance length, industrial use, enhancement opportunities and community nomination.

Engineering

- Portions of the site are not useable due to location within the 200-foot shoreline zone, landslide potential, and railroad right-of-way. All of the useable area west of the railroad has soils that are susceptible to liquefaction.
- The depth to groundwater is estimated as variable over the site (5 to 50 feet deep) and artesian groundwater is not likely to be present.
- Ease of access to the site is less suitable with the nearest freeway located 3.5 miles away.

Environmental/Community

- The Snohomish County Code allows a wastewater treatment facility on the site as a conditional use.
- The site, located along the Puget Sound shoreline, is surrounded by residential development.
- The existing character of the site is industrial.
- Portions of the site contain documented soil contamination.
- The site does not contain documented high-quality wetlands or streams, and it provides opportunities for both upland and wetland enhancement.
- The site is visible from adjacent neighborhoods, but site design and/or plantings could provide visual buffers.

Site Name: Point Wells

Site No 30/CN5
Location...Unincorp. Snohomish County
Estimated Total Area..... 98 acres
Estimated Useable Area..... 29 acres
Mean Elevation..... 25 ft.
Conveyance Length ..... 61,000 ft.
No. of Pump Stations.....5

Gun Range

Overall

- This site is located in unincorporated Snohomish County. The site is occupied by the Kenmore Gun Range surrounded by heavily wooded areas.
- The site is relatively close to the center of the wastewater area served; however it is relatively high in elevation and requires a moderate number of pump stations.
- The gun range is a relatively unique land use that may be difficult to relocate.
- The gun range was nominated for consideration through the community nominations process.
- This site is considered suitable due to its central location, large useable area for both treatment plant development and habitat enhancement, visual screening and buffer provided by the wooded area.

Engineering

- The useable area of the site is 80 acres with a mean site elevation of 340 feet. Over 60% of the site is sloped from 10 to 30%.
- There is no known landslide potential or liquefiable soils present on the site.
- The depth to groundwater is estimated as variable (5 to 50 feet deep). Artesian groundwater is likely present at the site.
- Ease of access to the sites is moderate with the nearest freeway located 1.5 miles away.
- An estimated 77,000 feet of conveyance is required and six pump stations.

Site Name: Gun Range

Site Number	**33(CN1)**
Location	**Unincorp. Snohomish County**
Estimated Total Area	**80 acres**
Estimated Useable Area	**80 acres**
Mean Elevation	**340 ft.**
Conveyance Length	**77,000 ft.**
No. of Pump Stations	**6**

Environmental/Community

- Much of the site is forested; preliminary investigations did not identify any significant wetlands, streams or sensitive natural resources on the site.
- The site is located in Snohomish County and is zoned residential. The Snohomish County Code allows a treatment plant as a conditional use.
- Approximately 40 acres of the site are subject to current use taxation as open space.
- The area surrounding the site is medium-density residential to the west and east, a gravel quarry to the south, and undeveloped forested area to the north.
- The forested nature of the site would provide visual buffer from the surrounding neighborhoods, and the site size provides adequate area for community and/or habitat enhancement.

Gravel Quarry

Overall

- This site is located in both the City of Bothell and unincorporated Snohomish County. A portion of the site is occupied by the Fruhling gravel quarry.
- The site is relatively close to the center of the wastewater area serviced, however it is relatively high in elevation and requires a moderate number of pump stations.
- Steep slopes occur on the quarry site.
- This site is considered suitable due to its central location, large useable area for both treatment plant development and habitat enhancement and visual screening and buffer provided by the wooded area.

Engineering

- The site is terraced due to the gravel operations and over 90% of the site is sloped from 10% to 30%.
- There is no known landslide potential or liquefiable soils present on the site.
- The depth to groundwater is estimated as a low constraint (greater than 20 feet deep). Artesian groundwater is likely to be present at the site.
- Ease of access to the sites is moderate with the nearest freeway located 1.5 miles away.
- An estimated 77,000 feet of conveyance is required and six pump stations.

Environmental/Community

- Preliminary investigations did not identify any significant wetlands, streams or sensitive natural resources on the site.
- The site is located in both Snohomish County and in the City of Bothell and includes a mixture of zoning. The Snohomish County Code allows a treatment plant as a conditional use. The Bothell Municipal Code does not currently allow a wastewater treatment facility, therefore, a re-zone might be required.
- The area surrounding the site is low- and medium-density residential.
- The forested nature of the site would provide visual buffer from the school and surrounding neighborhoods, and the site size provides adequate area for community and/or habitat enhancement.

Site Name: Gravel Quarry

Site No.	17
Location	Bothell and Unincorporated Snohomish County
Estimated Total Area	69 acres
Estimated Useable Area	68 acres
Mean Elevation	340 ft.
Conveyance Length	77,000 ft.
No. of Pump Stations	6

Thrashers Corner

Overall

- Located within the City of Bothell, this site is located in Thrashers Corner, just southwest of the Filbert Road and Highway 527 intersection.
- The site is very close to the center of the wastewater area served and is at a relatively low elevation.
- This site offers ease of access, adequate useable area, gentle slope, and adequate soils.
- A large portion of the site contains wetlands associated with North Creek; the groundwater table is high.
- Mature vegetation provides visual screening on portions of the site.
- Part of the site includes low-density residential relocation would likely be necessary.
- This site is considered suitable due to its location, elevation, useable area and opportunities for habitat enhancement and community partnership.

Engineering

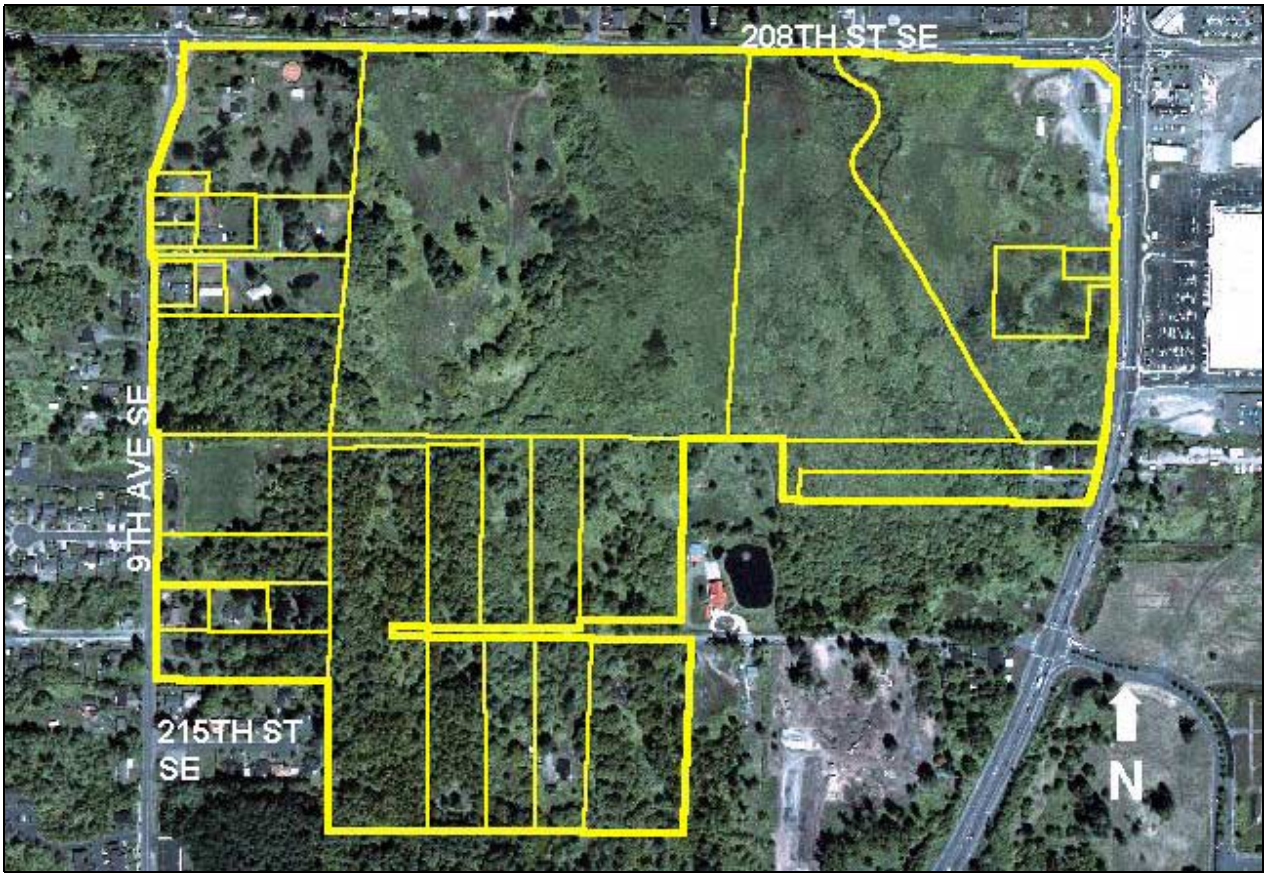
- The useable area has a gentle (less than 10%) slope upward to the west.
- There is no landslide potential or liquefiable soils present on the site.
- An estimated 87,000 feet of conveyance is required and four pump stations.
- The depth to groundwater is estimated as high (less than 5 feet deep) and artesian groundwater is likely to be present.
- Ease of access to the sites is good with the nearest freeway 0.9 miles away.

Environmental/Community

- The Bothell Municipal Code does not allow a wastewater facility on a portion of the site, but portions of the site zoned Light Industrial allow wastewater facilities.
- Bothell recently purchased over 50 acres of the northern portion of the site for a passive park.
- A large portion of the site contains wetlands and salmonid-bearing North Creek, but adequate upland area appears available.
- The area to the west includes low-density residential development.
- North Creek, which flows through the site, is a regulated shoreline, however adequate usable area remains outside the buffer with the extended area.
- Mature vegetation provides opportunities for visual screening on portions of the site, and the large wetland and riparian area provides habitat enhancement opportunities.

Site Name: Thrashers Corner

Site No.. .....19/25
Location.....Bothell, Snohomish Co.
Estimated Total Area..... 144 acres
Estimated Useable Area..... 63 acres
Mean Elevation..... 130 ft.
Conveyance Length .....87,000 ft.
No. of Pump Stations……4



Route 9

Overall

- This site is in unincorporated Snohomish County, east of Highway 9 at 228th Street SE near the town of Grace, close to Highway 522, and north of the City of Woodinville.
- It has a large useable area, relatively low elevation and moderate conveyance and pump station requirements.
- The site contains industrial uses, surrounded by light industrial and rural residential uses.
- The site is considered suitable based on its size, elevation, topography, accessibility, industrial use setting, limited sensitive natural resources onsite, and adequate size to provide buffer with neighboring uses.

Engineering

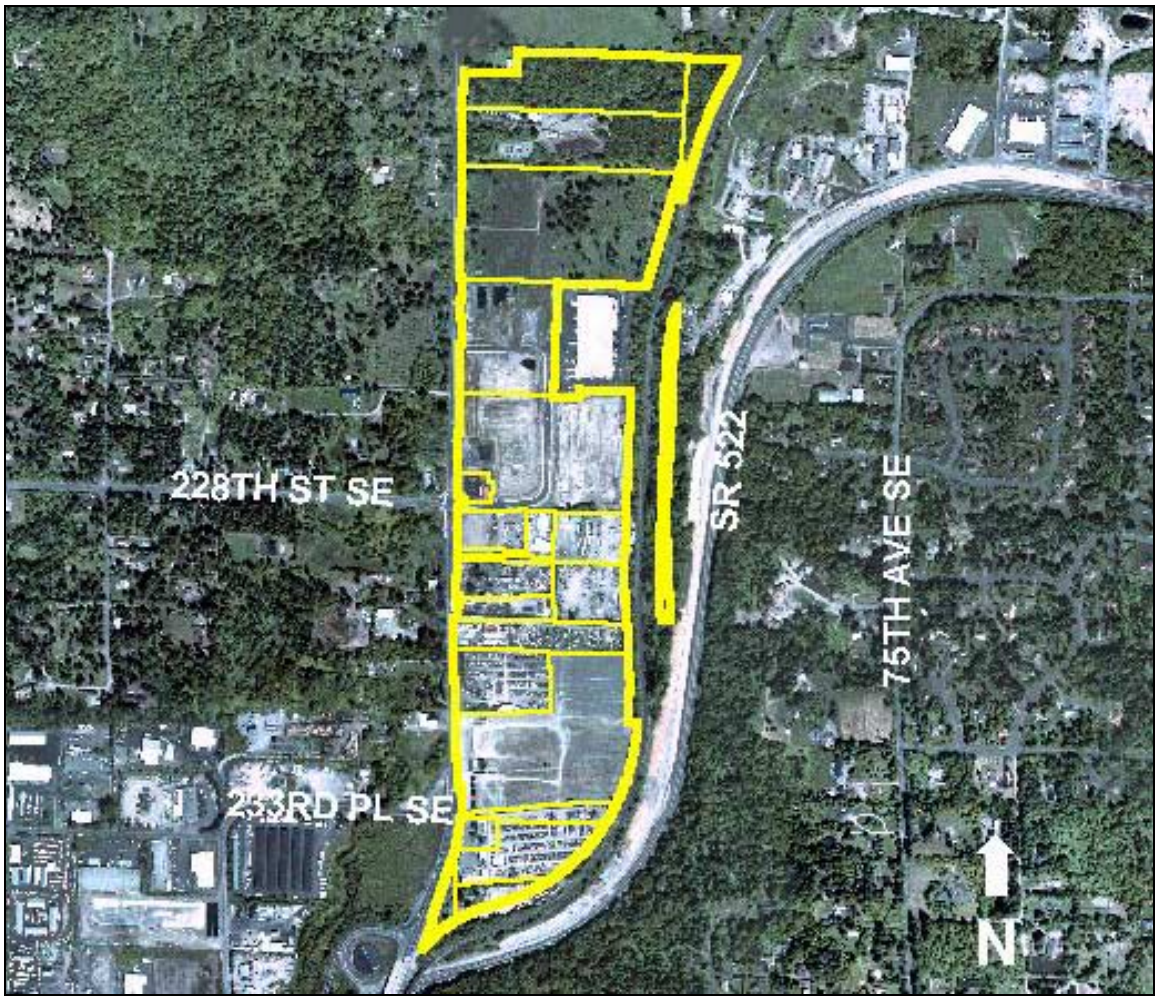
- Ease of access to the site is high with the nearest freeway located 0.1 miles away.
- The useable area is 104 acres with a mean site elevation of 175 feet. About one quarter of the useable area is sloped 10% to 30% and about one third of the useable area that is not sloped has soils susceptible to liquefaction.
- There is no landslide potential.
- An estimated 109,000 feet of conveyance is required and 5 pump stations.
- The depth to groundwater is estimated as variable over the site (5 to 50 feet deep) and artesian groundwater is not likely present on site.

Environmental/Community

- The Snohomish County Code permits a wastewater treatment facility as a conditional use.
- The site is largely impervious and lacking in vegetation and/or natural resources; however, a portion of the site contains a small, moderate quality wetland. Given the site size, this wetland area could be avoided and/or enhanced.
- The surrounding area includes light industrial and rural residential development.
- The sparse natural vegetation limits opportunities for visual screening using existing vegetation, but plantings could be used to provide visual buffers.

Site Name: Route 9

Site No. 64/IND9
Location..... Unincorporated Snohomish County, north of Woodinville
Estimated Total Area..... 108 acres
Estimated Useable Area..... 104 acres
Mean Elevation..... 175 ft.
Conveyance Length……109,000 ft.
No. of Pump Stations……5



Woodinville

Overall

- This site is located in the City of Woodinville, in King County, east of the intersection of NE North Woodinville Way and NE Woodinville-Snohomish Road.
- The site is undeveloped, and forested, although a medium-density development is proposed on site. Adjacent uses are medium-density residential and industrial.
- There is a small wetland and a stream on the site that could be avoided and/or enhanced.
- The site is considered suitable based on size, soils, topography, and limited sensitive natural resources on-site.

Engineering

- The useable area is 44 acres with a mean site elevation of 220 feet.
- An estimated 111,000 feet of conveyance is required and five pump stations.
- Approximately one third of the useable area is sloped at 10% to 20%.
- There is no apparent landslide potential or liquefiable soils present on site.
- The depth to groundwater is estimated as variable over the site (5 to 50 feet deep) and artesian groundwater is not likely present on site.
- Ease of access to the site is moderate with the nearest freeway located 1.4 miles away.

Environmental/Community

- This site is located on the outer perimeter of Woodinville's urban center, inside the Urban Growth Boundary.
- The site zoning does not currently allow a wastewater facility, therefore a re-zone might be required.
- There is a small wetland and a stream on the site, however, it appears that these resources could be avoided and/or enhanced.
- The site is forested with mixed deciduous-evergreen trees, which would provide visual buffer for the site.

Site Name: Woodinville

Site No......15
Location ..... Woodinville, King Co.
Estimated Total Area..... 44 acres
Estimated Useable Area..... 44 acres
Mean Elevation .....220 ft.
Conveyance Length..... 111,000 ft.
No. of Pump Stations.....5

Marine Outfall Siting Process

Overview

The Marine Outfall Siting Study (MOSS) is tasked with investigating the physical and biological conditions of the northern main basin of Puget Sound to identify a suitable site or sites for a new marine outfall for the Brightwater project. The MOSS study area extends from Meadow Point in the south to the town of Mukilteo to the north, and from the shoreline on the east to approximately the middle of Puget Sound on the west.

As was conducted for the facility siting process, an initial constraint analysis was conducted for the marine outfall siting process. Three initial constraints were identified, which if present would seriously limit construction or operation of the marine outfall. These initial constraints included presence of a Superfund site (designated under the Comprehensive Environmental Response, Compensation and Liability Act – CERCLA), presence of anchor zones, and location within minimum diffuser depth. No Superfund sites or anchor zones were identified in the MOSS study area, indicating that these two fundamental constraints will not influence outfall siting in this study area. A minimum diffuser depth of 100 feet was identified as necessary to comply with the regulatory requirement for a minimum of 100 to 1 initial dilution of seawater to treated effluent. The minimum diffuser depth was then used throughout the MOSS investigations when identifying potential outfall pipeline and diffuser areas.

In Phase 1 the MOSS team compiled geographic information obtained from initial research in order to determine potentially suitable outfall zones along the shoreline of Puget Sound in the vicinity of the study area. Thus, the marine outfall, constraints analysis was applied to the entire shoreline, nearshore and offshore region, rather than at discrete sites. Approved site screening criteria provided specific policy direction for the MOSS evaluation. To systematically apply the criteria, the MOSS team prepared Detailed Evaluation Questions (DEQs) for which the answers could be mapped (i.e., constrained areas). The DEQs covered topics such as engineering/geophysical constraints, biological resource protection, shoreline public use, and hazardous materials. The complete set of Level 1 MOSS DEQs, accompanying scales of evaluation and rationales for each question are provided in Appendix M.

The MOSS team first determined the presence of geophysical constraints such as steep slopes at outfall diffuser sites and marine pipeline corridors, presence of submarine canyons, ridges, and slides and unsuitable substrate for tunneling. Next, the MOSS team examined nearshore biological, shoreline public use, and hazardous materials constraints in those areas not already constrained by geophysical issues. After compiling all the constraint information, eight relatively unconstrained preliminary outfall zones were identified. A complete description of the methodology used in applying the MOSS site screening criteria can be found in Appendix M.

A list of Phase 1 MOSS activities is shown below:

- Nearshore mapping study - field work and report preparation
- Geophysical mapping studies – field work and report preparation
- Marine habitat analysis – data gathering and report preparation

Level 1 MOSS Evaluation

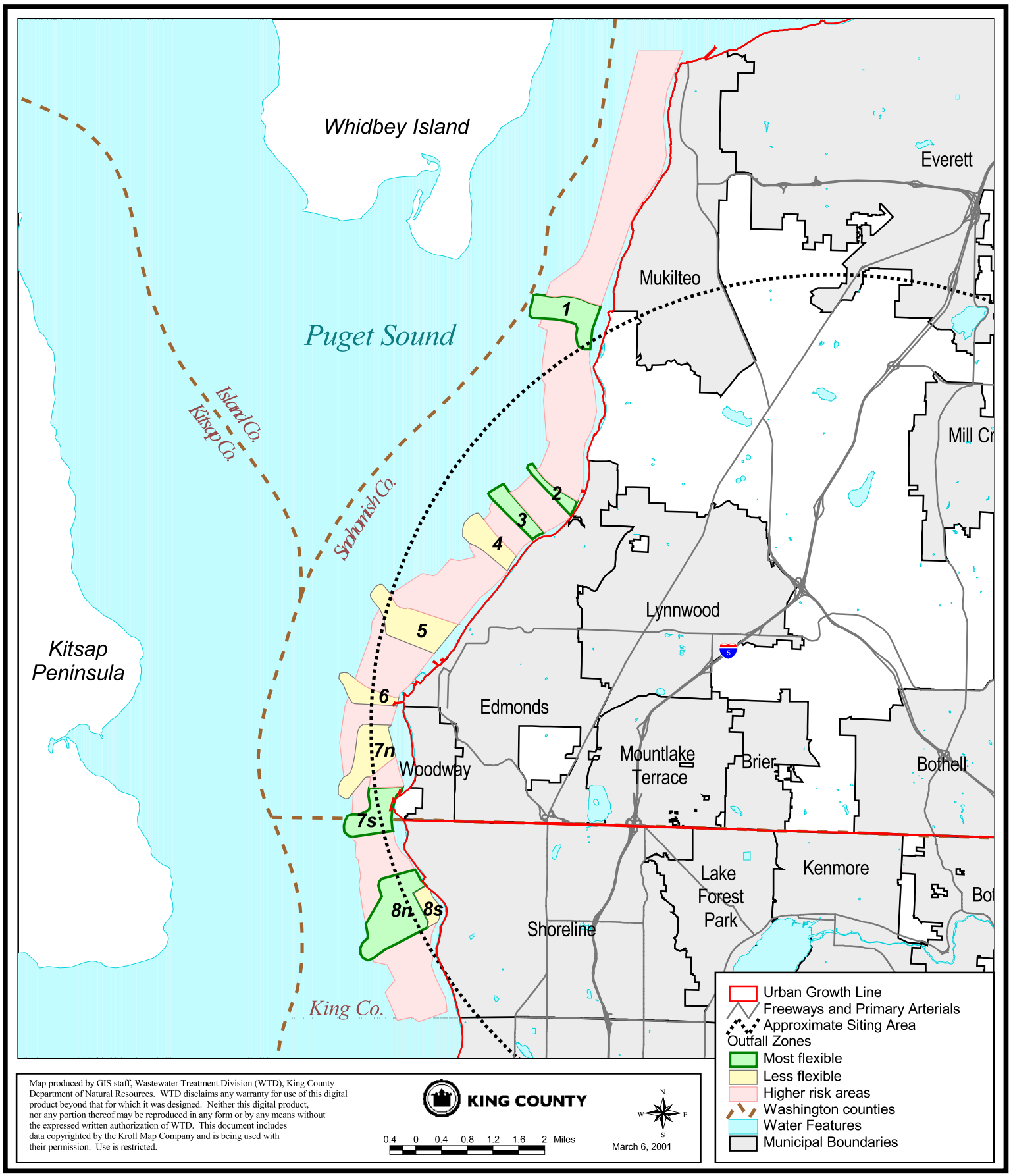
To obtain information on shoreline and offshore constraints, the MOSS team undertook four major scientific investigations to characterize the MOSS study area (See Appendix N):

- Marine Geophysical Investigation to produce detailed maps of bathymetry and sub-surface geology (Golder Associates).
- The King County Nearshore Mapping Data Report (Battelle) to provide information on the extent of nearshore biological communities.
- Nearshore Marine Habitat Report (Striplin and Battelle) provides information to the Habitat Conservation Plan on the species and types of marine habitats in the study area.
- Review: Puget Sound Physical Oceanography Related to the Triple Junction Region (Evans Hamilton, Inc.) provides currently known information on oceanography in the Puget Sound.

Potential outfall locations within the study area were classified according to their geophysical, biological, community, and hazardous waste features that either hinder or facilitate the construction and operation of the outfall. A map of the study area was created that compiled information about potential constraints and opportunities for outfall siting. Geophysical characteristics were mapped first, to indicate areas of steep slopes and potential slope instability where outfall construction would be difficult. The effort identified eight areas that possess geophysical characteristics where outfall construction appears to be feasible. Other areas along the shoreline where geophysical characteristics represented unacceptable constraints were eliminated from further consideration. The locations of sensitive biological resources, documented hazardous waste sites, and in-water structures were then overlain on the map.

Based on the analysis, shoreline and nearshore zones were given one of three potential rating designations: flexible area (mapped in green), less flexible area (yellow), and unacceptable area (pink). Flexible sites appear to provide the greatest opportunity for constructing an outfall with minimum impact to the area, as well as minimum design and construction difficulties. The less flexible areas are still considered potentially suitable for outfall construction but, based on this first level of evaluation, they have one or more features that could affect design, construction, and/or operation of the outfall. Unacceptable sites contain one or more features that make the area appear to be among the least suitable for outfall siting.

Eight potential outfall sites were identified along the study area shoreline; two of these sites (7 and 8) have both north and south subareas, yielding a total of 10 areas evaluated and ranked. Five areas were designated as “flexible”: Sites 1, 2, 3, 7S, and 8N. The other five were designated as “less flexible”: Sites 4, 5, 6, 7N, and 8S. A map of the potential outfall zones are shown on the opposite page (Figure 8).



BrightWater

Fig. 8 Proposed Outfall Zones

Process Steps Outlined in Ordinance 14043

The RWSP emphasized the importance of ensuring that the Brightwater Facility is operational by the year 2010. King County Council Ordinance 14043, which was adopted on February 12, 2001, established a framework and schedule for decision making to accomplish that objective. This ordinance directed the King County Executive to use the adopted policy site screening criteria to evaluate and select proposed candidate sites, and called for the Executive to transmit legislation to adopt the list of candidate sites and site selection criteria within 45 days of the adoption of Ordinance 14043. The following items are also required as a result of the adoption of Ordinance 14043.

- The King County Council is required to act on the proposed legislation to adopt the list of candidate sites and site selection criteria within 60 days of its transmission.
- The King County Executive is required to transmit legislation to the Council to adopt a list of proposed final candidate sites for the Brightwater Treatment Facilities within 120 days of the Council adoption of the list of candidate sites and site selection criteria.
- The King County Council is required to act on the legislation to adopt final candidate sites for the Brightwater facilities within 80 days of its transmission.
- The final candidate systems will then be analyzed in a Supplemental Environmental Impact Statement, scheduled for completion by late 2002.
- Based on advisory committee and public input, the environmental review and technical analysis, the Executive will select the site for the Brightwater treatment plant, its system conveyance and marine outfall in early 2003.