

FACT SHEET FOR RECLAIMED WATER PERMIT ST0045498

King County Brightwater Reclaimed Water Treatment Plant

June 10, 2011

SUMMARY

King County's Brightwater Wastewater Treatment Plant (Brightwater WWTP) treats wastewater to secondary treatment standards using a membrane bioreactor process. The majority of the treated effluent is discharged via a deepwater outfall to Puget Sound which is authorized under NPDES permit number WA0032247. The Brightwater WWTP produces Class A reclaimed water through a process that includes membrane filtration and disinfection. The Brightwater WWTP uses membrane effluent on-site for internal process water needs and for landscape irrigation and these on-site water uses are exempt from the reclaimed water rules and not the subject of this permit. The County plans to distribute reclaimed water off-site for irrigation, and commercial and industrial uses.

The proposed State Reclaimed Water Permit specifically authorizes the Brightwater WWTP to produce and distribute Class A reclaimed water to off-site users. Ecology must modify the permit before King County can distribute other classes of water (Class B, C, or D) or install additional treatment facilities.

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I. INTRODUCTION

This fact sheet is a companion document to the draft State Reclaimed Water Permit No. ST0045498. The Department of Ecology (Ecology) is proposing to issue this permit, which will allow the beneficial use of reclaimed water. This fact sheet explains the nature of the proposed reclamation and reuse production process, distribution and use, Ecology's decisions on limiting the constituents in the reclaimed water, and the regulatory and technical basis for those decisions.

The Reclaimed Water Act, chapter 90.46 RCW, authorized the development of Water Reclamation and Reuse Standards for the beneficial use of reclaimed water. The Departments of Health (Health) and Ecology completed these standards in 1997, which you can access at Ecology's website at the following address:

<http://www.ecy.wa.gov/programs/wq/reclaim/index.html>

All Reclaimed Water Permits issued by Ecology must specify conditions demonstrating that the facility has adequately and reliably treated its wastewater to meet the requirements in the Water Reclamation and Reuse Standards appropriate for the use. In addition to meeting the water quality limits, the Reuse Standards require specific treatment and disinfection requirements beyond those of most conventional wastewater treatment facilities. The standards also require automated alarms, redundancy of treatment units, emergency storage, operator training requirements, and public notification of reclaimed water use.

Under the Reclaimed Water Use Act (chapter 90.46 RCW), Ecology issues a permit to the generator of the reclaimed water who may then distribute the water subject to the permitted provisions governing the location, rate, water quality, and purposes of use. RCW 90.46.030 states that Health may issue a permit for industrial and commercial uses of reclaimed water and that the permits will govern the location, rate, water quality, and purposes of use. Ecology issues a single permit that includes Health requirements as agreed to in an interagency memorandum of agreement.

Additional Ecology-adopted rules describe how Ecology exercises its permitting authority:

- State Waste Discharge Program (chapter 173-216 WAC).
- Discharge Standards and Effluent Limits for Domestic Wastewater Facilities (chapter 173-221 WAC).
- Submission of Plans and Reports for Construction of Wastewater Facilities (chapter 173-240 WAC).

In response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make it available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty (30) days (See *Appendix A—Public Involvement Information* for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft State Reclaimed Water Permit in response to comments. Ecology will summarize the responses to comments and any changes to the permit in *Appendix C*.

Table 1. General Facility Information

GENERAL INFORMATION	
Applicant	King County Department of Natural Resources and Parks Wastewater Treatment Division 201 S. Jackson Street Seattle, WA 98104-3855
Facility Name and Address	King County – Brightwater Reclaimed Water Treatment Plant 22509 SR 9 SE, #101 Woodinville, WA 98072-6010
Type of Treatment System	Source water is wastewater influent. The reclaimed water treatment includes oxidation, membrane filtration, and disinfection.
Description of Use Area(s)	Vicinity of the Brightwater Reclaimed Water Treatment Plant and the Sammamish valley.
Contact at Facility	Name: Sean Kehoe, Wastewater Treatment Supervisor Telephone #: (206) 263-9456
Responsible Official	Name: Christie True Title: Director, King County Department of Natural Resources and Parks (KCDNRP) Address: King County, 201 S. Jackson St, Seattle, WA 98104 Telephone #: (206) 296-6500

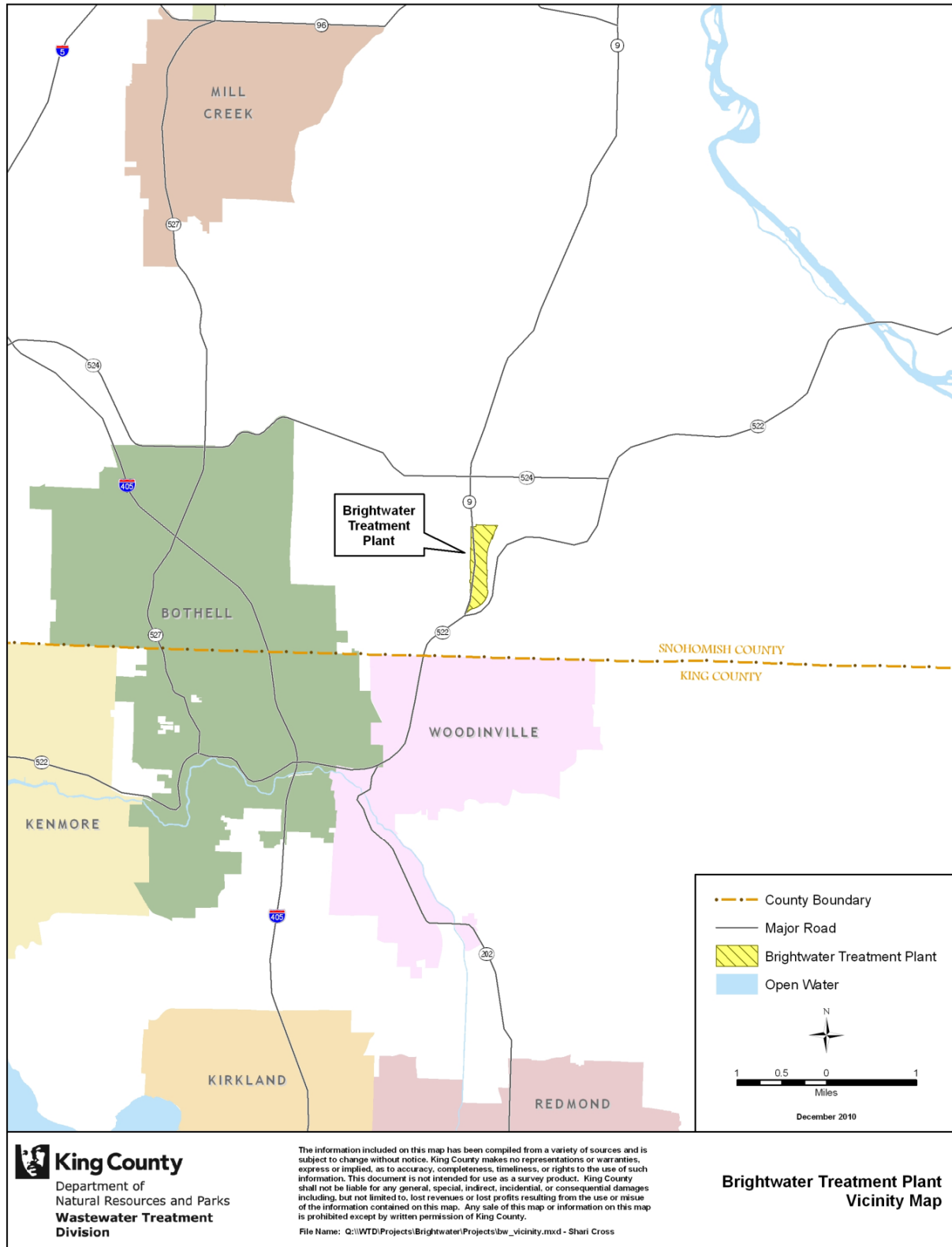


Figure 1. Facility Location Map

II. BACKGROUND INFORMATION

A. Facility Description

History

The Brightwater Regional Wastewater System includes a newly constructed wastewater treatment plant, conveyance system, and marine outfall. The King County Department of Natural Resources and Parks, Wastewater Treatment Division, owns and operates the Brightwater WWTP located north of the intersection of State Route 9 and Highway 522 in an unincorporated area of Snohomish County. The County plans to complete construction in 2012; it started the project in 2006. NPDES permit number WA0032247 authorizes the plant to discharge secondary treated and disinfected effluent to Puget Sound via a deep, marine water outfall.

The *Regional Wastewater Services Plan* (RWSP), adopted by the King County Council under Ordinance 13680 in November 1999, identified the need for King County (the County) to construct a new 36- to 54-million gallon per day (mgd) wastewater treatment plant and conveyance system in north King County or south Snohomish County by 2010. The new wastewater treatment plant, known as the Brightwater Treatment Plant or “Brightwater,” is necessitated by a wide range of factors, including population growth and economic development, requirements for urban services, environmental and public health protection, capacity constraints within the County’s existing treatment plants and conveyance facilities, and prevention of sanitary sewer overflows to Lake Washington.

Additionally, flows from the King County wastewater service area will exceed the capacity of the two existing regional treatment plants between 2010 and 2020. Brightwater will provide capacity in the northern service area to reduce the occurrence of sanitary sewer overflows into Lake Washington. Brightwater is scheduled to begin interim operations in 2011 and full operations in 2012. The *Facilities Plan, Brightwater Regional Wastewater Treatment System* (Facilities Plan) describes treatment plant facilities required through 2040, as well as a future expansion that would serve 2040 and beyond.

The Facilities Plan includes the provisions for reclaimed water. In October 2006, King County submitted the Brightwater Reclaimed Water System Engineering Report to Ecology for review and approval. Ecology approved this document in November 2006.

Collection System Status

Flows conveyed to the new Brightwater WWTP are primarily flows that were previously conveyed to King County’s South WWTP from south Snohomish County and north King County. Developments within the Brightwater service area were constructed with separate sanitary and storm sewers. A series of smaller pump stations and related sewer lines from tributary systems or component agencies feed into the County’s regional conveyance system and ultimately the influent pump station (IPS).

Reclaimed Water Treatment Process

The Influent Pump Station (IPS), located off-site, will pump incoming untreated wastewater to the Brightwater headworks through two force mains. Two flow meters, one per force main, will measure the influent flow rate. All incoming wastewater will receive preliminary treatment via screening, followed by aerated grit removal. The grit removal system will have one set of aerated tanks per primary sedimentation basin, arranged as trains. The aerated grit tanks will be sized to accommodate flocculation for chemically enhanced primary clarification (CEPC).

Wastewater flows below MBR manufacturer's design peak flow capacities (Table 2) will be treated primarily in conventional primary clarifiers. Scum will be collected by helical skimmers located immediately upstream of the primary effluent launders. Conventional primary effluent will receive fine screening followed by biological treatment in the MBR process. The primary effluent screens will protect the membranes from damage by oversized materials.

Wastewater flows in excess of the MBR manufacturer's design peak flow capacities will be treated via CEPC. Flows receiving CEPC treatment only will not be used for reclamation purposes. The CEPC process combines conventional primary sedimentation with chemical addition; the chemicals enhance the settling of wastewater solids, providing a cleaner primary effluent than conventional clarification alone. Brightwater will have five primary tanks, each of which can operate in standard or CEPC mode. When a split-flow event occurs, all wastewater flow will enter the primary sedimentation process; the flow split will occur after the primary tanks.

King County uses a supervisory control and data acquisition system (SCADA) which is a computerized system that controls wastewater treatment operations. Based on incoming flows, the SCADA will select individual sedimentation tanks to operate in a conventional or CEPC mode. The tanks operating in CEPC mode will be dosed with a combination of ferric chloride, polyaluminum chloride, and polymer; flocculation will occur in the grit tanks, which have been oversized to provide adequate contact time. The primary tanks running in conventional mode will operate as described previously.

The MBR will have two major types of process tanks: the aeration basins, which act as bioreactors, and the membrane basins, where liquid/solid separation occurs. The MBR process is designed to operate at elevated mixed liquor suspended solids concentrations and at a sludge age sufficient to provide complete nitrification throughout the year. The membranes will be immersed in the mixed liquor. The permeability of the membranes will be maintained through routine automated processes and periodic in situ cleaning operations. Only MBR effluent will be used for reclaimed water purposes.

MBR effluent flows into a three chambered membrane effluent box. Effluent water in the first chamber may be routed to plant service water uses. Effluent water that spills over the first weir and enters the second chamber is designated for reclaimed water. The second chamber is chlorinated with sodium hypochlorite and flow from the second chamber is split, traveling to the disinfection building for contact time prior to going to the Environmental Education and Community Center (EECC) and art sculpture and to the dedicated Reclaimed Water High Pressure (RWHP) pipeline located in the east tunnel. The

dedicated RWHP pipeline will convey disinfected effluent to the Influent Pump Station (IPS) and provide the required disinfection concentration and contact time (CT) at the maximum design flow rate. A residual chlorine analyzer in the IPS will measure residual chlorine. The County will convey flow meeting Class A reclaimed water requirements to reclaimed water uses downstream. Flow not meeting the disinfection standard will automatically be rerouted to the IPS influent wet well where it will be conveyed back to the Brightwater WWTP for additional treatment. Chlorinated water receives a 30 minute contact time either in route to the EECC and art sculpture or in the Brightwater East Tunnel between the treatment plant and the IPS. Effluent that spills over the second weir and enters the third and final chamber will flow to the Brightwater Effluent Tunnel with eventual discharge to Puget Sound via the marine outfall.

A site plan and a simplified process flow diagram are shown in Figures 2 and 3, respectively. Figure 4 shows the Brightwater disinfection and sampling points associated with the membrane effluent (ME) box, effluent box, and influent pump station.

Table 2. MBR Design Peak Flow Capacities

Flow Duration¹	Phase 1 – Initial (2011-2016) 30 MGD Nominal MBR Capacity	Phase 1 – Final (2016-2040) 39 MGD Nominal MBR Capacity
Maximum hour	44	57
Maximum 4-hour	44	57
Maximum 8-hour	44	57
Maximum 16-hour	41	53
Maximum 24-hour	35	45
Maximum 7 days	35	45
Maximum 31 days	30	39

¹ Flow Duration is the maximum amount of time that the membrane manufacturer has specified that indicated flow can pass through the membranes without causing permanent damage.



Figure 2. Brightwater Site Plan

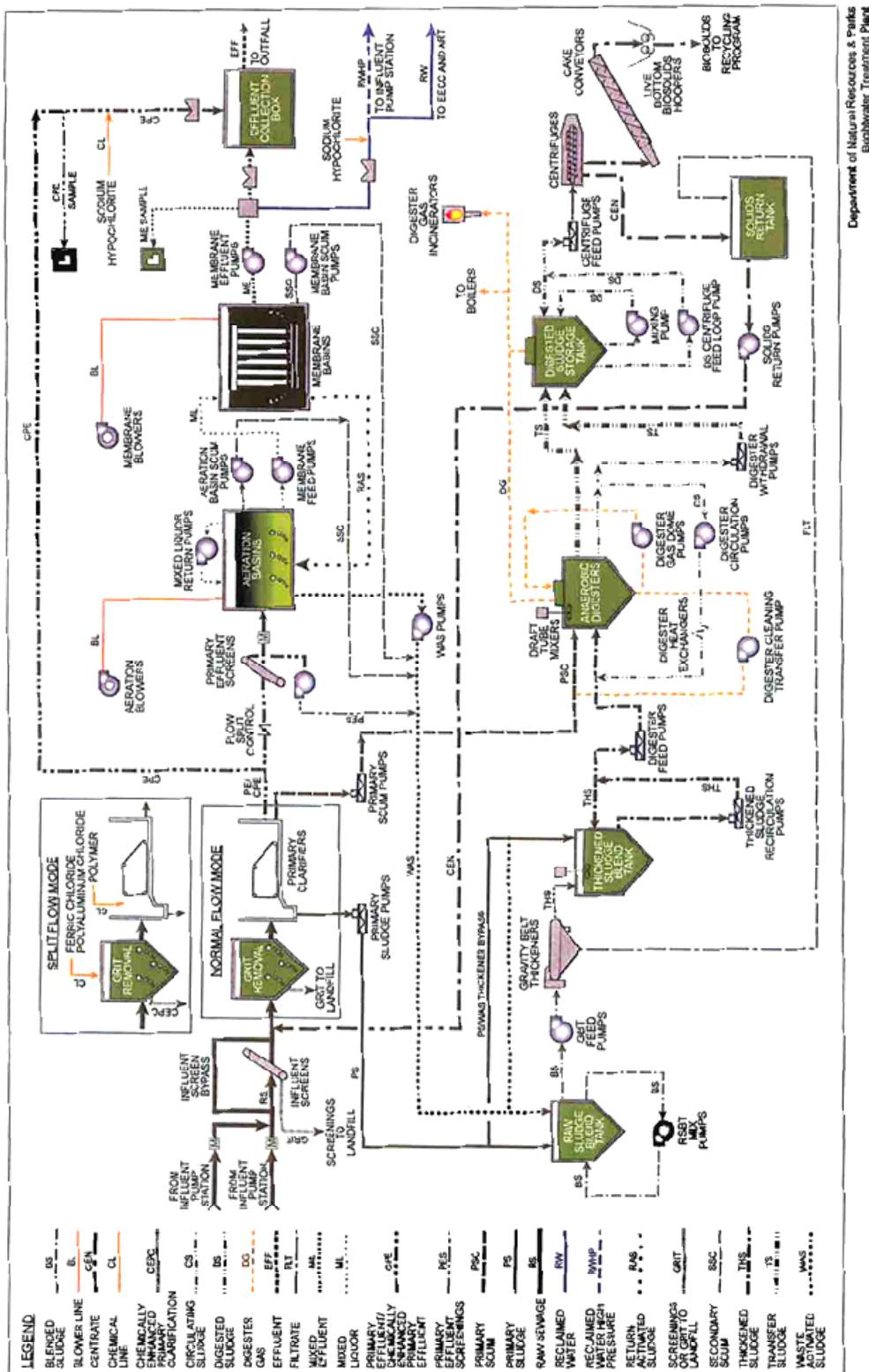


Figure 3. Brightwater Process Flow Schematic

BRIGHTWATER EFFLUENT AND RECLAIMED WATER SAMPLING AND MONITORING LOCATIONS

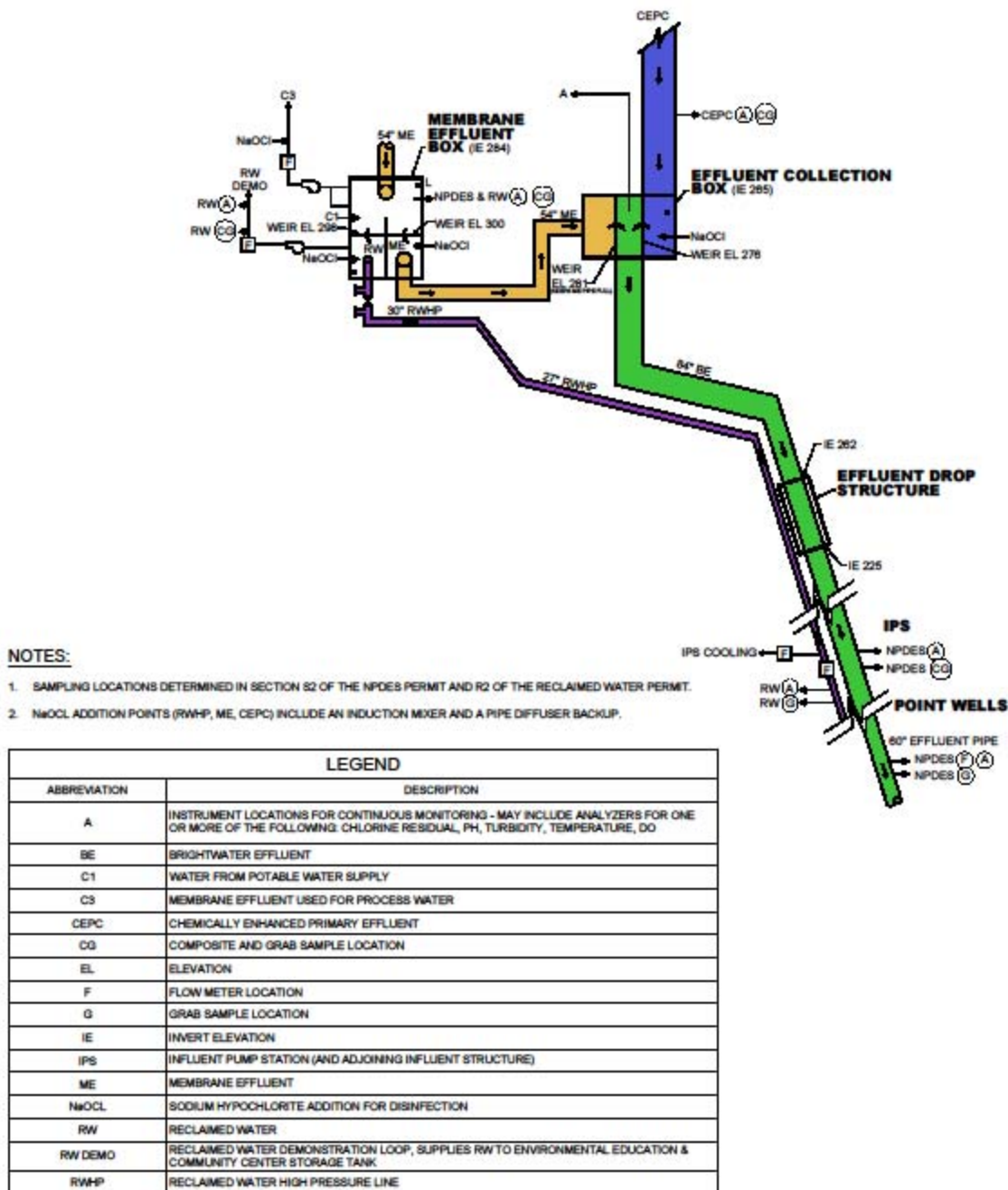


Figure 4. Brightwater Effluent Disinfection and Sampling Locations

The Brightwater Reclaimed Water Plant meets the treatment, disinfection, redundancy, and other requirements of the Water Reclamation and Reuse Standards through the following design and operation protocols.

- All of the biological treatment steps at the Brightwater WWTP meet Ecology's requirements for Class 1 reliability.
- The distribution system includes standby metering pumps for sodium hypochlorite supply and a backup diffuser for distribution of reclaimed water. Continuous on-line analyzers and recorders measure residual chlorine at several locations, including the disinfection building, influent pump station, and various downstream pump station locations.
- Flow in the dedicated RWHP pipe not meeting the turbidity and disinfection standards at the IPS will automatically be rerouted to the IPS influent wet well where it will be conveyed back to the Brightwater WWTP for additional treatment.
- For the south reclaimed water backbone, reclaimed water not meeting the chlorine distribution standard can be diverted to the wastewater line at the York pump station.
- Chlorinated effluent automatically diverts to the effluent collection box when the SCADA system detects a low chlorine residual at the disinfection building that serves the environmental education and community center.
- A standby source of potable water at various locations provides a back up to reclaimed water with the necessary air gap protection to prevent contamination of the potable water source.

Distribution System and Use Areas

The Brightwater treatment system uses membrane effluent on-site for internal process water needs and for landscape irrigation and these on-site water uses are exempt from the reclaimed water standards and not the subject of this permit. This reclaimed water permit covers off-site distribution and use only.

The Brightwater reclaimed water conveyance system can convey 21 MGD of reclaimed water from the treatment site to the North Creek portal. The off-site distribution consists of a west system and a south system as shown in Figure 5. Reclaimed water will be conveyed in a dedicated pipe line from the treatment plant site to the North Creek portal and to the North Kenmore portal. A dedicated reclaimed water pipe line has not been constructed from the North Kenmore portal to the Ballinger Way portal. In the future, a pumping station will be required at the Ballinger Way portal to bring reclaimed water to the surface. An additional treatment system may be required at this location if the County plans to use reclaimed water, particularly during peak wet weather events. The south system consists of a dedicated reclaimed water pipe line from North Creek portal to the North Creek facilities site. From the North Creek pump station to the York pump station, an existing force main will be converted to reuse conveyance purposes via cleaning and disinfection. A new dedicated reclaimed water pipe line from the York pump station to the Willows Run Golf Course has been constructed.

The off-site distribution system conveys reclaimed water to off-site use areas including the Environmental Education Center, Art Fountain/Entrance Structure, North Creek Pump Station, York Pump Station, Hollywood Pump Station, Willows Run Golf Course, and the Sammamish River Landscaping Strip. Permitted reclaimed water uses at the pump stations include irrigation of landscaping around the pump stations and truck fill stations. Willows Run Golf Course and the Sammamish River landscaping strip plan to use the reclaimed water for irrigation purposes. Reclaimed water will be used for toilet flushing, and irrigation at the Environmental Education and Community Center. Reclaimed water will also be used at an art fountain/entrance structure. Figure 5 shows the use area locations. The reclaimed water permit requires the County to update a use area list annually and provide it to the Ecology and Health.

The facilities that use the reclaimed water must provide appropriate flow rates, setbacks, signs, and other controls in order to use Class A reclaimed water per the *Water Reclamation and Reuse Standards*.

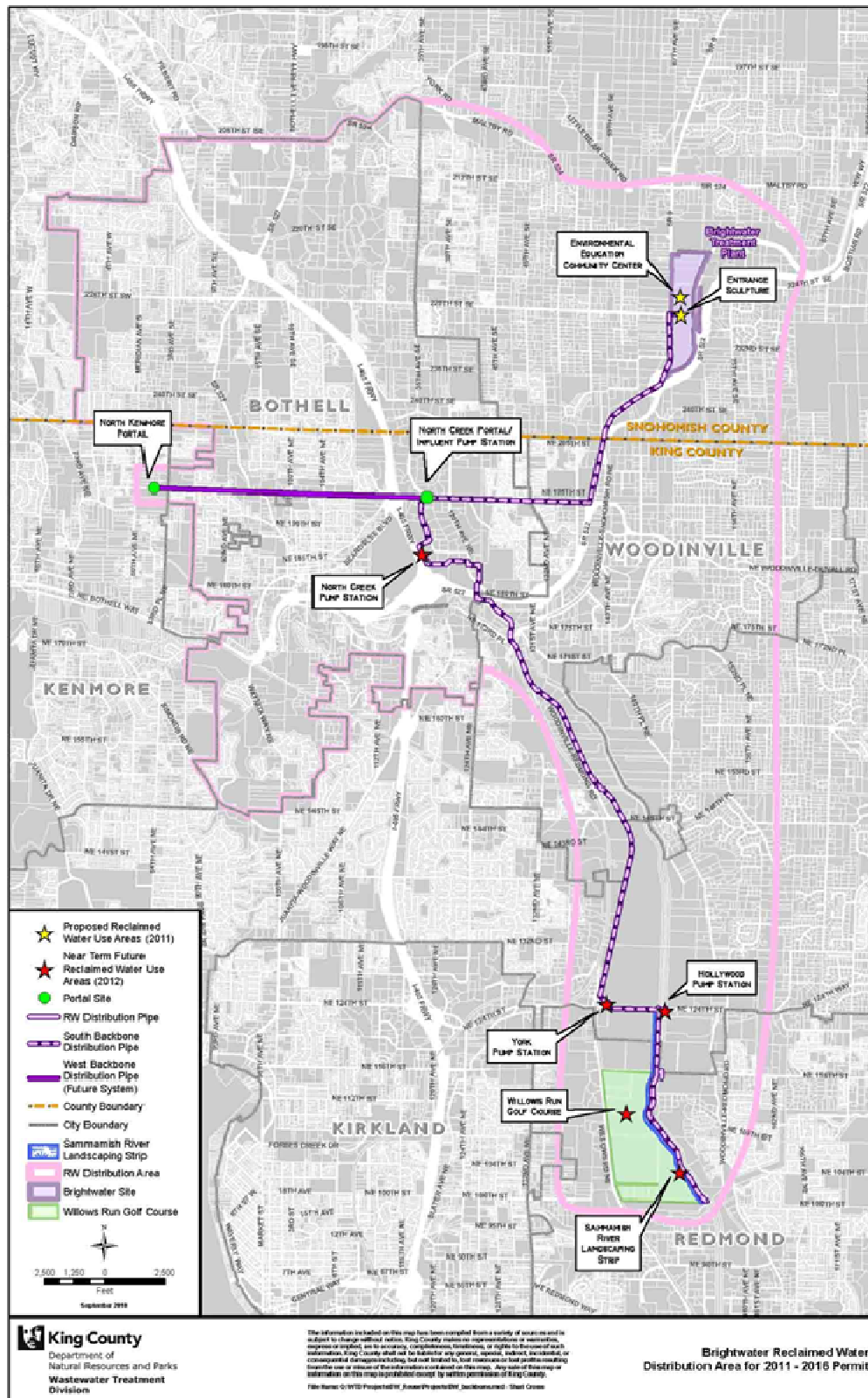


Figure 5. Reclaimed Water Distribution and Use Areas

Water Rights – Impairment Analysis

Per the Revised Code of Washington (RCW) 90.46.130, facilities that reclaim water cannot impair existing downstream freshwater rights. Ecology's water resources section determined that an impairment analysis was not required of the Brightwater project since it is a new treatment plant that discharges to marine waters.

Residual Solids

Residual solids are addressed under the NPDES permit and not this reclaimed water permit. Nonetheless, a brief explanation of the residual solids is included as follows. The wastewater treatment process removes solids at the headworks (grit and screenings), and at the primary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, and screenings are drained, compacted and disposed of as solid waste at a landfill. Primary and waste secondary sludge and scum are comingled in the raw sludge blend tank and pumped to gravity belt thickeners for thickening. The thickened sludge is fed to the anaerobic digesters. The digested sludge is combined in a common blending storage tank and then dewatered with centrifuges to produce biosolids. The biosolids are applied to forest and agriculture lands under a permit from the King County Health Department.

The County periodically analyzes biosolids for various chemical contaminants. Regulatory and compliance issues regarding biosolids are managed by the Department of Ecology's Biosolids Program and not the subject of this permit.

B. Permit Status

The Brightwater Reclaimed Water permit is a new permit.

C. Reclaimed Water Characterization

Since Brightwater is a newly constructed reclaimed water plant and has yet to produce reclaimed water, no actual characterization data is available at this time.

D. SEPA Compliance

To meet the intent of SEPA, an existing, unpermitted discharge must undergo SEPA review during the permitting process. For the Brightwater project, King County conducted an extensive environmental review process including an Environmental Impact Statement (EIS) issued on November 19, 2003. King County issued a draft Supplemental EIS on April 11, 2005, and provided new information and evaluated probable significant adverse environmental impacts that could result if an earthquake were to damage proposed Brightwater WWTP facilities. The Draft Supplemental EIS had a 30-day comment period and the County held a public hearing on May 4, 2005. King County issued a Final Supplemental EIS on July 19, 2005, and responded to comments received on the Draft Supplemental EIS. Following the issuance of the Final Supplemental EIS, the King County Executive decided to proceed with construction and operation of the Brightwater WWTP at the Route 9 site.

In addition, King County conducted the SEPA process for the Brightwater Reclaimed Water System's Engineering Report. The County issued a Determination of Non-Significance for the Brightwater Reclaimed Water System on July 26, 2007.

E. Generation of Reclaimed Water

King County is considered the generator of the reclaimed water, and RCW 90.46.120 gives the generator exclusive right to any water produced by the wastewater treatment facility. Use and distribution of reclaimed water is exempted from the water right permit requirements of RCW 90.03.250 and 90.44.060.

III. PROPOSED PERMIT CONDITIONS

The Reclaimed Water Act, chapter 90.46 RCW, requires that facilities adequately and reliably treat reclaimed water prior to distribution and beneficial use. Ecology also uses the authority under chapter 90.48 RCW to permit water reclamation and reuse facilities.

State statute requires that Ecology base limits in a State Reclaimed Water Permit on the 1997 Water Reclamation and Reuse Standards:

- Technology and treatment methods available to treat specific contaminants are called technology-based methods. Technology-based treatment methods that Ecology considers acceptable include adequate and reliable treatment (ART) as defined in the 1997 *Water Reclamation and Reuse Standards*.

The limits in this permit reflect information received in the application and from supporting reports. Ecology evaluated the permit application and determined the limits needed to comply with the standards adopted by the state of Washington.

A. Technology-Based Effluent Limits – Effluent of Wastewater Treatment/Reclaimed Water Plant

All waste discharge permits issued by Ecology must specify conditions requiring the facility to use AKART before discharging to waters of the state (RCW 90.48). Ecology defines AKART for domestic wastewater facilities in chapter 173-221 WAC. The production of reclaimed water is inherent to the Brightwater wastewater treatment plant in that the MBR process provides for oxidation and filtration as part of its normal process. Disinfection is achieved via sodium hypochlorite addition. Therefore, the oxidized wastewater (membrane effluent) must meet the limits in Table 3. Compliance with the limits for oxidized wastewater to the reclamation facility is demonstrated through compliance with the Brightwater WWTP NPDES Permit No. WA0032247 for secondary effluent.

Table 3. Technology-Based Limits – Influent to the Reclaimed Water Plant

Parameter	Limit
BOD ₅ (concentration)	Average Monthly Limit = 30 mg/L Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit = 30 mg/L Average Weekly Limit = 45 mg/L

B. Technology-Based Effluent Limits – Reclaimed Water Effluent Limits

All reclaimed water permits must assure that the reclaimed water has been adequately and reliably treated so that as a result of that treatment, it is suitable for a beneficial use or controlled use that would not otherwise occur and is no longer considered a wastewater [(RCW 90.46.010(40)].

The authority and duties for reclaimed water use are in addition to those already provided in law with regard to sewage and wastewater collection, treatment, and disposal for the protection of public health and the safety of the state's waters. For land application, the permit requires the reclaimed water to be applied at agronomic rates.

The *Water Reclamation and Reuse Standards*, 1997, define the requirements for the level of treatment technology as well as water quality limits necessary for public health protection during the use of reclaimed water. The standards provide four classes of reclaimed water, Classes A, B, C, and D.

The Brightwater plant is expected to produce Class A reclaimed water. Class A is the highest quality of reclaimed water and therefore provides the broadest range of reuse opportunities. Class A reclaimed water also requires the most stringent treatment and water quality limits. The technology and water quality requirements for the production of Class A reclaimed water are as follows:

“Class A Reclaimed Water” is reclaimed water that had been adequately and reliably treated and, at a minimum is, at all times, an oxidized, coagulated, filtered, and disinfected wastewater.

1. Oxidized is defined as wastewater in which the organic matter has been stabilized such that the 5-day biochemical oxygen demand (BOD₅) does not exceed 30 mg/L and total suspended solids (TSS) does not exceed 30 mg/L, is non-putrescible, and contains dissolved oxygen.
2. Coagulated wastewater is defined as an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated prior to filtration by the addition of chemicals or by an equally effective method. The coagulation requirement is not enforced for membrane bioreactor plants because these facilities perform well without coagulation, and coagulates add unnecessary costs and use of chemicals.
3. Filtered wastewater is defined as an oxidized, coagulated wastewater which has been passed through natural undisturbed soils or filter media, such as sand, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of 2 nephelometric turbidity units (NTU), determined monthly, and does not exceed 5 NTU at any time. For MBR facilities that reclaim water, the average monthly turbidity limit is 0.2 NTU and the maximum limit is 0.5 NTU.
4. Adequate disinfection is defined as ensuring five log virus inactivation. Total coliform monitoring is an indication of successful inactivation. Accordingly, the median number of total coliform organisms in the wastewater after disinfection must

not exceed 2.2 most probable number (MPN) per 100 milliliters, as determined from the bacteriological results of the last seven (7) days for which analyses have been completed, and the number of total coliform organisms must not exceed 23 MPN per 100 milliliters in any sample.

5. Meet a chlorine disinfection residual of 1 mg/L after a minimum of 30 minutes of contact time. Maintain a 0.5 mg/L chlorine distribution residual in the reclaimed water during conveyance from the reclamation facility to the use areas to prevent microbial re-growth.

BOD₅ & TSS:

Ecology applied the Reclaimed Water Standards for BOD₅ and TSS; these standards require that monthly average BOD₅ and TSS levels do not exceed 30 mg/L.

Turbidity:

Washington State's Class A Reclaimed Water Standards require the facility to filter Class A water at all times. The definition of "filtered water" states that turbidity must not exceed an average operating turbidity of 2 NTU, determined monthly, and 5 NTU at any time.

Reclaimed water production at this facility is based on membrane bioreactor (MBR) treatment. Turbidity limits for the operation of MBRs are set similar to the current regulations adopted by the State of California for the production of recycled water at 0.2 NTU daily average and not to exceed 0.5 NTU. A properly maintained and operated membrane would consistently achieve these levels. Turbidity above these levels occurs when there is significant damage to the membranes in the form of broken membrane fibers or cuts in the membrane sheets so as to allow a bypass of the process.

Total Coliform:

The proposed permit includes total coliform limits according to Class A Reclaimed Water Standards. The standards require that the 7-day median does not exceed 2.2 MPN/100 mL and that no sample exceeds 23 MPN/100 mL.

pH:

Ecology set pH limits according to technology limits for municipal wastewater treatment plants.

Residual Chlorine:

Meet a minimum disinfection contact time of 30 minutes with a residual of 1 mg/L. A total chlorine distribution residual of at least 0.5 mg/L must be maintained in the reclaimed water during conveyance to the use area and may be waived upon request.

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment process functions correctly and that reclaimed water limits are being achieved.

A. Reclaimed Water Monitoring

Ecology details the proposed monitoring schedule under Condition R2. Specified monitoring frequencies take into account the quantity and variability of the reclaimed water, the treatment method, past compliance, and significance of constituents.

B. Lab Accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*, to prepare all monitoring data (with the exception of certain parameters). Ecology accredited the laboratory at this facility for all of the parameters in R1 and R2.

V. OTHER PERMIT CONDITIONS

A. Reporting and Record Keeping

Ecology based permit Condition R3 on our authority to specify any appropriate reporting and record keeping requirements (WAC 173-216-110).

B. Operations and Maintenance

Ecology requires dischargers to take all reasonable steps to properly operate and maintain their treatment system in accordance with state regulations (WAC 173-240-080 and WAC 173-216-110). The facility must review annually and submit any updates to Ecology.

Implementation of the procedures in the Operation and Maintenance (O&M) Manual ensures the facility's compliance with the terms and limits in the permit and ensures the facility provides adequate and reliable treatment and, at a minimum, provides at all times an oxidized, filtered, and disinfected wastewater. The O&M Manual must also include provisions for properly operating, cleaning and maintaining the distribution system.

C. Residual Solids

To prevent water pollution, the County is required in the NPDES permit to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of biosolids from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

D. Reclaimed Water Distribution and Use

These permit requirements are based on the *Water Reclamation and Reuse Standards* authorized in chapter 90.46 RCW. The standards contain requirements to assure that distribution and use of reclaimed water are protective of public health and the environment at all times. These include prohibitions on bypass, alarms and alternative disposal of substandard water, maintenance of operational records, cross connection control, use area restrictions and enforceable contracts.

E. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all Reclaimed Water Permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

Ecology may modify this permit to comply with new or amended state regulations.

B. Proposed Permit Issuance

This proposed permit meets all statutory requirements for authorizing the beneficial use of reclaimed water, including those limits and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. Ecology proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Gavlak, R.; D. Horneck; R.O. Miller; and J. Kotuby-Amacher. *Soil, Plant and Water Reference Methods for the Western Region*, 2nd Edition, 2003.

King County, May 2005. *Facilities Plan: Brightwater Regional Wastewater Treatment System*.

King County, October 2006. *Brightwater Reclaimed Water System Engineering Report*.

Washington State Department of Ecology, 1993. *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*, Ecology Publication #93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. *Water Reclamation and Reuse Standards*, Ecology Publication #97-23. 73 pp.

Washington State Department of Ecology.

Laws and Regulations: <http://www.ecy.wa.gov/laws-rules/index.html>

Permit and Wastewater Related Information:

<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>

Washington State Department of Ecology, 2005. *Implementation Guidance for the Ground Water Quality Standards*, Ecology Publication #96-02.

APPENDICES

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to issue a new reclaimed water permit to King County Wastewater Treatment Division. The permit prescribes operating conditions and reclaimed water limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on December 6, 2010, and December 13, 2010, in the *Everett Herald* and *The Seattle Times* to inform the public about the submitted application and to invite comment on the issuance of this new permit.

Ecology placed a Public Notice of Draft on April 1, 2011, in the *Everett Herald* and *The Seattle Times* to inform the public and to invite comment on the proposed issuance of this Reclaimed Water Permit as drafted.

The notice –

- Told where copies of the draft permit and fact sheet were available for public evaluation (the closest regional office and posted on our website).
- Offered to provide the documents in an alternate format to accommodate special needs.
- Invited people to suggest fairer conditions, limits, and requirements for the permit.
- Urged people to submit their comments, in writing, before the end of the comment period.
- Told how to request a public hearing about the proposed Reclaimed Water Permit.
- Explained the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions About Effective Public Commenting* which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone, 425-649-7201, or by writing to the permit coordinator at the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

The permit and fact sheet were written by Mark Henley, P.E.

APPENDIX B—GLOSSARY

AKART—The acronym for “all known, available, and reasonable methods of prevention, control, and treatment.” AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Ambient Water Quality—The existing environmental condition of the water in a receiving water body.

Ammonia—Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual Average Design Flow (AADF)—The average of the daily flow volumes anticipated to occur over a calendar year.

Average Monthly Discharge Limit—The average of the measured values obtained over a calendar month's time.

BOD₅—Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass—The intentional diversion of waste streams from any portion of the collection or treatment facility.

Compliance Inspection - Without Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition, it includes, as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity—Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring—Uninterrupted, unless otherwise noted in the permit.

Engineering Report—A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample—A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Maximum Daily Discharge Limit—The highest allowable daily discharge of a constituent measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum Day Design Flow (MDDF)—The largest volume of flow anticipated to occur during a 1-day period, expressed as a daily average.

Maximum Month Design Flow (MMDF)—The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum Week Design Flow (MWDF)—The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method Detection Level (MDL)—The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH—The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Peak Hour Design Flow (PHDF)—The largest volume of flow anticipated to occur during a 1-hour period, expressed as a daily or hourly average.

Peak Instantaneous Design Flow (PIDF)—The maximum anticipated instantaneous flow.

Quantitation Level (QL)—A calculated value five times the MDL (method detection level).

Reasonable Potential—A reasonable potential to cause a water quality violation.

Soil Scientist—An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops, or soils, and have 5, 3, or 1 year(s), respectively, of professional experience working in the area of agronomy, crops, or soils.

Residual Solids—In the process of reclaiming water, solids are removed in the sand filters and contained in the backwash water. The filter backwash is returned to the influent flow to the South WWTP. The wastewater treatment process removes solids at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum, and screenings are drained and disposed of as solid waste at a landfill.

Soluble BOD₅—Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD₅ test is sufficient to remove the particulate organic fraction.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria—A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids—That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)—Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit—A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

APPENDIX C—RESPONSE TO COMMENTS

Oral Testimony Received During Public Hearing – May 16, 2011

Jessie Israel, King County

Please raise your hand if you can't hear me. Uh, First of all, thank you everybody for coming. Citizens -, it is always nice to see citizens uh, at...and I see somebody from the League of Women Voters is here so it is good to see folks here.

My name is Jessie Israel, and on behalf of King County, I'd just like to thank Ecology for, um, your really thorough and detailed review of our Brightwater permit and the Reclaimed Water Program. We're really looking forward to working with you and, uh, we're looking forward to working with the public to make sure that we are ensuring reclaimed water's full potential in this use area.

As many of you know, as, our region grows, and our wastewater treatment needs grow, we're going to have to grow with them to accommodate those needs. To accommodate those trends, we're going to have to do more than just treat water, and we're going to have to do more than just treat and discharge treated effluent into Puget Sound.

Recycling – or reclaiming - water for safe, non-drinking uses is really part of our long-term strategy to create and reuse water resources both reducing pollution and reducing waste.

Um, there has been and you may have heard some misinformation out there and I just want to reiterate that Class A reclaimed water produced by our King County's clean water facilities is safe for all water uses except drinking.

It is thoroughly filtered and disinfected several times throughout the treatment process. It contains only trace amounts of some nutrients and dissolved chemicals and is safe for human contact. National research has found no evidence of illness or disease or from either microbial pathogens or chemicals in parks, playgrounds or schoolyards irrigated with reclaimed water. Not everybody knows this but we've actually been producing reclaimed water since 1997 at King County at both our South Plant and West Point Treatment Plants. We have industrial, irrigation and environmental customers who enjoy the benefits of this alternative water source.

Reclaimed water is held to very stringent quality standards and routine testing – routine testing that's even more than bottled water or drinking water. It's a safe source of irrigation for athletic fields and playgrounds and one of my favorite factoids about reclaimed water is that Seattle Sounders football club practice on a field that's watered with reclaimed water, which is very environmental.

Some comments tonight that have come up about trace compounds. Um, it's true that among some of the perceived risks is a concern about trace compounds the presence of trace concentrations of pharmaceuticals and other chemicals from personal care products found in reclaimed water.

Findings from recently released, and this is actually last week, recently released uh, peer-reviewed study indicate that, depending on the chemical and the exposure situation, it could take anywhere from just a few years to many millions of years of exposure to non-potable reclaimed water to reach the same level of exposure to pharmaceuticals that you'd get from a single dose of routine activities.

So for example, a child would have to play on a reclaimed water irrigated lawn for 110 million years to be exposed to the equivalent of one application of DEET, the mosquito repellent, DEET. So, and I don't know about you but how many people have put on just one application but usually you get hosed down by your parents.

Both national research and local University of Washington research on what happens to those chemicals once they trickle through the soil indicate that, uh, irrigation with Class A reclaimed water is both safe for people and the environment and food crops.

With science rapidly changing, um, we do work very hard to stay absolutely current on national research on emerging chemicals - on pharmaceuticals, personal care products and hormones - to understand how new treatment technologies can further minimize these compounds in our clean effluent.

And for those of you who don't know, in California, 52 uh, different vegetables and crops including strawberries, artichokes, lettuce and oranges are irrigated with reclaimed water. Some of them are certified organic and are shipped all over the country and may actually be in your refrigerator right now.

Um, in drier parts of the country, decades of national and international research have determined the viability and safety of using reclaimed water for certain non-drinking uses. It's commonly accepted as being the safe and environmental choice. Drinking water is a finite resource. And in America, 80% of our drinking water is used for non-drinking purposes: for flushing toilets, for watering crops, for cooling big industrial machines.

Here in King County, in approving this permit and in overseeing reclaimed water production and use around the State, Ecology is really providing important environmental safeguards that benefit all of us now and in the future. We're in complete support of this oversight and are really proud to have a long history in working well with Department of Ecology.

One more thing before I sit down. There is lots of information that we have available on our website which is kingcounty.gov/reclaimedwater or athirstyplanet.com which is the Water Reuse Association's website where there is access to lots of research so you can geek out on research. I also have, um, some information about summaries of current studies here and I am happy to, happy to give to folks tonight who have specific questions about research and safety and health impacts of reclaimed water.

We're really thrilled to be here and thrilled to be about to, uh, to offer reclaimed water to the area. Thanks.

End of Public Hearing Comments

Ecology's Response to King County's Oral Testimony: Comments noted.

Written Comments from Kerry Peterson (via e-mail on 5/22/11 at 11:03 pm)

***Ecology's Note:** The below commenter made comments on both the NPDES and reclaimed water permits. Comments applicable to the reclaimed water permit are shown below. For comments made in relation to the NPDES permit, please see Appendix I of the Brightwater NPDES Fact Sheet.*

PETERSON • 3932 Midvale Ave. N. • Seattle, WA 98103

May 22, 2011

Tricia Miller, Permit Coordinator
Washington Department of Ecology
Northwest Region Water Quality Program
3190 160th Avenue SE
Bellevue, WA 98008
via email: tricia.miller@ecy.wa.gov

Dear Tricia,

I'm commenting on the draft NPDES and Reclaimed Water (RW) permits, respectively dated 3-18-11 and 3-29-11, for King County's Brightwater Wastewater Treatment Plant, as well as the presentations given at the public meeting held May 16, 2011 in Woodinville.

Reclaimed Water Condition R.7 (RW R.7): Please clarify the uses and facilities covered under the life cycle of the permit. For example west and south segments were discussed in the meeting presentation, along with twin forcemains. The east forcemain is to be used for RW and the west forcemain after 2017 is to be used for sewer. These facilities were not discussed in the draft. How are the distribution systems located and identified in the permit?

***Ecology's response:** The Brightwater reclaimed water permit allows for the production, use, and distribution of Class A reclaimed water for all irrigation and commercial and industrial uses, as described in the 1997 Washington State Water Reclamation and Reuse standards. This includes irrigation uses for food and non-food crops. The Brightwater distribution system is shown as Figure 5 of the fact sheet. Additional language has been added to the fact sheet to more fully explain the distribution system.*

The North Kenmore and Ballinger portals were not depicted in the presentation. Please clarify if the permittee may develop and operate these portals as distribution facilities under the RW permit outright, or as described in RW R.7.C. Must Ecology modify the permit before King County can add, modify or improve any distribution facilities?

***Ecology's response:** The Brightwater reclaimed water project includes a dedicated reclaimed water pipe line from the treatment plant site to the North Creek portal and to the North Kenmore portal. The County may develop and operate the North Creek and North Kenmore portals as distribution facilities under the RW permit. The distribution of Class A reclaimed water is further defined in the engineering report for this project that has been approved by both the Departments of Ecology and Health. The North Creek, North Kenmore and Ballinger Way portals are*

described in the Brightwater Reclaimed Water System Engineering report (October 2006). Generally, distribution facilities can be modified without reopening the permit if they are documented in an engineering report or addendum to an existing engineering report. A dedicated reclaimed water pipe line has not been constructed from the North Kenmore portal to the Ballinger Way portal. Modifications (pump station and treatment system) at grade for the Ballinger Way portal may be necessary if the County intends to distribute and use reclaimed water from this location, particularly if the County intends to use reclaimed water during wet weather periods. It is anticipated that an amendment to the engineering report would be required for reclaimed water uses from the Ballinger Way portal. At this time, no reclaimed water uses from the Ballinger Way portal have been identified to Ecology staff.

This permit lists specific “types of use” and proposed “use locations” for the reclaimed water. Please note that Special Condition R7.C requires the Permittee to prepare a Water Use Summary Plan, which contains a summary description of the reclaimed water distribution system. The Permittee must review and update the plan annually and submit updates to the Departments of Health and Ecology.

RW R.3: Please consider records retention of all monitoring information for a minimum of five years after the permit expires, or longer as required to comply with appropriate public records law. As written, relevant monitoring records are not required to survive the permit expiration.

Ecology’s response: *Special Condition R.3 requires the County to retain records of all monitoring information for a minimum of 5 years, concurrent with the life cycle of this permit.*

Monitoring records submitted to Ecology are housed in the Permit and Reporting Information System (PARIS). Information in this database is accessible to the public at <https://fortress.wa.gov/ecy/wgreports/public/f?p=110:300:3625661288916616>. Information on active permits is not removed from this database.

RW R.8: New water reclamation rules were scheduled for adoption in December 2010; however, the governor froze implementation of ‘non-essential’ rules, this proposed rule included. Implementation may occur perhaps as early as 2012. The draft RW permit proposed a five-year lifetime. Please consider renewing this permit annually. This would help ensure more timely compliance with updated rules. Setting annual effective dates may also be consistent with terms of General Conditions G.3.B.4 and G.4.

Ecology’s response: *It is anticipated that reclaimed water permit will be effective from August 1, 2011, to July 31, 2016. Legislation was passed and signed by Governor Gregoire requiring the Reclaimed Water Rule be adopted no earlier than June 30, 2013. This date could be delayed even further if resources are not available to complete the rule making process. The permit renewal process is labor intensive and Ecology does not have adequate resources to renew permits on an annual basis. The permit term is 5 years which is consistent with other Ecology-issued reclaimed water permits. General Condition G.3.B.4 describes causes for modifying permits but does not require modification. Decision to modify the permit will be based on the substance and significance of the changes once the implications of the final rule are clearly understood.*

Since the 26-page Fact Sheet is a companion document to the RW permit, please incorporate it into the permit by reference. No mention is made in the draft permit to the Fact Sheet.

Ecology's response: *It is not Ecology's standard practice to incorporate fact sheets into permits by reference. The fact sheet is a companion document and is available along with the permit on Ecology's website.*

RW R.7.K., second paragraph: would public notice help protect public health, safety or welfare? Should the permittee be required, in this section or elsewhere, to also notify customers (see R.7.A.-B.) of substandard reclaimed water entering the distribution system? I imagine customers should be notified to take appropriate precaution. Given the nonpotable nature, substandard reclaimed water seems to present less risk to the general public, who still can be notified by Health or Ecology media broadcast (similar to 'boil orders') if widespread notice seems appropriate.

Ecology's response: *Class A reclaimed water facilities are required to maintain the highest level of process redundancy and reliability. The current permit condition gives the County time and flexibility to avoid a public health issue. For example, the nature of the problem may be easily remedied before reaching the use site. On page 9 of the fact sheet, safeguards are described such as the ability to discard water not meeting the Class A standards at the influent pump station (IPS) where it can be conveyed back to the treatment plant and re-treated. On page 13 of the fact sheet, the ability to discard water at the York pump station for the southern distribution system is described. Ecology agrees that in certain instances (i.e. total coliform exceedance, distribution of substandard reclaimed water, etc.), it is appropriate for the County to notify customers of problems. A permit condition has been added to ensure that the County notifies appropriate entities when substandard reclaimed water has been distributed to use areas. The County intends to develop proper notification protocols as part of the Operations and Maintenance Manual required under Special Condition R4.*

NPDES S.7 and RW R.5: I understood at the presentation that filter backwash, among other substances listed in RW G.10, was to be wasted as a liquid and incorporated into residual solids for dewatering and disposal. Please clarify if RW membrane bioreactor filter backwash will be treated as a residual solid under NPDES.

Ecology's response: *Appendix E of the NPDES fact sheet includes a process flow diagram that illustrates the solids handling processes. Solids (settled microbial solids) removed from the aeration basins and scum from the membrane tanks will be conveyed to the raw sludge blend tank where it will be thickened in gravity belt thickeners and then anaerobically digested. After digestion and dewatering, biosolids are hauled off-site and land applied. The application of biosolids is handled under a biosolids permit, not the NPDES permit.*

The RW permit sets location, rate, water quality and purpose. Where in the RW permit are the reclaimed water flow rate provisions (including influent and distributed flow), both maximum and minimum?

Ecology's response: *The draft Brightwater reclaimed water fact sheet states that the reclaimed water conveyance system can convey up to 21 MGD from the treatment plant site to the IPS (North Creek portal). The permit application indicates that 1.75 million gallons is the estimated annual volume expected to be used by the environmental education and community center and art sculpture in the first year, starting in September 2011. Generally, Ecology does not specify maximum and minimum flow rates in reclaimed water permits as they are dependent on customers over time. Per your request, a limit of 21 MGD as a daily flow rate limit has been incorporated into the final permit.*

How will the information contained in all the reports to Ecology get digested and disseminated to citizens to increase understanding, so that we can make informed decisions and actively participate in influencing major public policy decisions surrounding reclaimed water and wastewater treatment?

Ecology's response: A table entitled, "Summary of Permit Report Submittals" is included at the beginning of the reclaimed water permit and describes the required submittals that need to be sent to Ecology for review. All documents and reports submitted to Ecology are considered available to the public upon request. A public disclosure request may be necessary. Documents and reports may also be requested from King County directly. Permit information is available to the public via Ecology's on-line database at <https://fortress.wa.gov/ecy/wqreports/public/f?p=110:300:3625661288916616>.

Please refer to Ecology's reclaimed water webpage for general information at <http://www.ecy.wa.gov/programs/wq/reclaim/index.html>. The webpage provide links to information on the draft rule and a link to subscribe to the Reclaimed Water ListServ to receive updates about Ecology's reclaimed water program.

Sincerely,
Kerry Peterson

End of Kerry Peterson's Comments

Written Comments from King County (via e-mail on 5/23/11 at 5:28 pm)

May 23, 2011

Tricia Miller
Water Quality Permit Coordinator
Department of Ecology – Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008-5452

Dear Ms. Miller:

Thank you for the opportunity to submit comments. King County wishes to submit the following comments on the **Draft Brightwater Reclaimed Water Permit Number ST0045498**. If you have questions about these comments, please contact Kristina Westbrook, Resource Recovery Section, Reclaimed Water Program Lead, at 206-296-5279.

Page 7, R2.A Table 2, pH – Suggest changing pH measurement location to “MEB or IPS and Disinfection Building.” This will allow the pH for all distributed flow to be measured when the MEB pH meter is not used.

Ecology’s response: The measurement location for pH has been revised for the final permit.

Page 16, section R7.B – This section allows for adding reclaimed water use locations for irrigation, commercial and industrial uses. The *1997 Washington State Water Reclamation and Reuse Standards* also identifies food crop irrigation as an approved irrigation use for Class A reclaimed water. At the public hearing held on May 16, 2011, a comment was made during the question and answer period, stating that the permit would not allow for irrigation of food crops. It is our understanding that this draft permit allows for all types of irrigation allowed under the state standards including reclaimed water food crops irrigation.

Ecology’s response: Yes, the draft reclaimed water permit allows for all types of irrigation uses, as described in the 1997 Washington State Water Reclamation and Reuse Standards, including food crop irrigation. Additional language has been added to Section R7.B of the final permit clarifying that food crop irrigation is allowed.

Sincerely,

Kristina Westbrook
Reclaimed Water Program Lead

cc: Mark Henley, Permit Manager, Washington State Department of Ecology
Ron Kohler, Brightwater Assistant Manager, Wastewater Treatment Division (WTD),
Department of Natural Resources and Parks (DNRP)

End of King County’s Comments

Written Comments from Emma Dixon (via e-mail on 5/23/11 at 10:57 pm)

It is well understood that the Department of Ecology has a predetermined outcome to issue NPDES and Reclaimed Water permits for the operation of the Brightwater sewage treatment plant. It's unfortunate that King County has a large contract in place with DOE for the permitting process as it creates the appearance that the agency is no longer providing oversight and instead is overlooking the facts.

I am supplying facts to be documented in the legal history of the permit file - so when an earthquake event happens at this facility, and the surrounding waterways are contaminated with pollutants, it will be clear what information was ignored and who is to blame.

The seismic issues were brought to DOE's attention by SKEA representatives during the NPDES permit for the construction of Brightwater – but because it did not pertain to specifics in the permit terms or limits it was not taken into consideration.

The SEPA Compliance section of this Draft permit is completely absent of key aspects of the SEPA process that indicate the significance of the earthquake faulting concerns for the Brightwater treatment plant site.

King County DID issue an EIS on Nov. 19, 2003 **BUT** that was appealed. The Hearing Examiner ruled on that appeal and stated in the conclusions:

*"The FEIS currently provides insufficient information and analysis concerning the suspected fault on the Route 9 treatment plant site. Substantial additional information on the existence, location and activity of the suspected fault is reasonably available by trenching on or near the site to meet the information requirements of the State Environmental Policy Act....Without that additional information the November 19, 2003 FEIS is **not** adequate for future government actions that will determine the location of wastewater treatment facilities on the Route 9 site **or provide the permits that are required...**"*

As a result of that decision King County was required to trench a possible earthquake fault on the site. The USGS confirmed that it was a fault AND identified other potential faults on the site and recommended additional trenching to confirm or deny the presence of those other fault traces. King County chose to ignore the additional likely faults on the site that were identified by the USGS and NOT trench and investigate them. The USGS commented on the County's consultant's report that followed their investigation. On Nov 16, 2004 the USGS told the County:

"The USGS has proposed studies that would examine lineament X and the area between lineament X and lineament 4, including high resolution seismic imaging, helicopter-based magnetic survey and acquisition of high quality lidar data. As those studies have not been supported, it seems that without those data, you are left with the possibility that lineament X could be another piece of the Southern Whidbey fault system and that there are possible controlling structures at depth (with horizontal rather than vertical motions) between lineament X and lineament 4."

The attached map shows all of the potential faults that have been identified by the USGS and world renowned earthquake geologist and peer of the USGS, Dr. Robert Yeats, and ignored by King County. This map is to be printed and included in the comments for this permit.

King County claims that the Supplemental EIS took a broad approach and analyzed worst case scenarios, including surface rupture and ground shaking on the site and that this resulted in a number of design changes to the project including locating new facilities several hundred feet from the identified Lineament 4 at the north end of the site and the potential Lineament X at the south end. But the County admitted in the Supplemental EIS on Pg 4-24 that:

"Damage to structures from ground surface rupture during an earthquake is not addressed by the IBC seismic design requirements...while small fault movements can be accommodated by design, the amount of movement assumed in Scenario C (3 to 6 feet both horizontally and vertically) cannot be accommodated by practical design methods."

And on Pg 5-17 stated that *"If a fault were to rupture under the aeration basins, more than 9 million gallons of wastewater could leak out of the basins"*

The County's mitigation in the event that an earthquake fault does rupture beneath the plant is simply to divert the sewage flow to another plant and stop the treatment operation on the Brightwater site. BUT they have proceeded to place the Operations Center in a building that is directly on top of the one active fault that the USGS identified on the site!!! So in the event of an earthquake where the facility is ruptured and sewage and chemicals are leaking into the waterways - the building where the operations could be shut down is sitting right on top of the already identified active fault and will most likely be damaged by the fault rupturing underneath it!!

King County has violated the International Building Code in building this facility. It has not complied with section 1616.3.1 which states that:

"A structure assigned to Seismic Design Category E or F shall not be sited over an identified active fault trace."

The County has skirted this rule by siting the Brightwater Operations Building in an existing building directly on top of the one confirmed active fault on the site!! And has simply ignored the research and advice of the USGS and failed to investigate any of the other potential fault traces crossing the site.

The bottom line is that no one has objectively reviewed the adequacy of King County's assessment of the earthquake risks, impacts and mitigation in the Brightwater SEIS.

Snohomish County did not.

It relied on the King County Superior Court system to review any challenges to the SEPA documents. In the Brightwater Development Agreement between King and Snohomish Counties it states in section 1.5(a) that

"The Hearing Examiner's decision shall not include challenges to the SEPA documents prepared by King County because those documents have been subject to appeal before the King County Hearing Examiner and in Superior Court."

The King County Superior Court/Court of Appeals did not.

After the development agreement was signed King County went to Superior Court and petitioned for a writ of prohibition preventing the King County Hearing Examiner from hearing an appeal of the adequacy of the SEIS. The Superior Court judge denied the County's petition but the County appealed the decision to the Court of Appeals where the decision was overturned. The Court of Appeals' unpublished opinion (meaning it won't carry legal precedence over other cases in the future) stated:

"Earlier this year Snohomish County issued a permit to begin construction of the facility and stated that the adverse environmental impacts would be mitigated under its development ordinances and the SEPA analysis documents, barring further appeals under SEPA. Wastewater moved for a writ of prohibition to prevent citizens from pursuing a SEPA administrative appeal, and the trial court denied the writ. Because we conclude the hearing examiner does not have jurisdiction to hear the citizens administrative appeal, Wastewater does not have adequate remedy and the trial court erred in denying the writ of prohibition"

The County said that the seismic issues could be brought up during the building permit process but on appeal of the building permits issued by Snohomish County (which King County 'bought' with a \$70 million mitigation package) the Skagit County Superior Court Judge ruled to deny the appeal based upon the information presented in Supplemental EIS - which was fundamentally flawed from the beginning and King County had prevented every avenue for objective review or legal challenge along the way.

The Department of Ecology is supposed to be responsible for issuing NPDES permits to ensure that our waterways are NOT contaminated with pollutants. This project is virtually a sitting duck- an environmental disaster waiting to happen.

The site is covered with potential faults that have been identified by the USGS. The County has failed to investigate those potential fault traces and has built a \$2 Billion sewage treatment plant right on top. The County has stated in the SEIS that building design methods do not address damage to structures from ground rupture (which is possible right on top of the fault trace) and that the consequences could result in millions of gallons of sewage and chemicals spilling out into the environment.

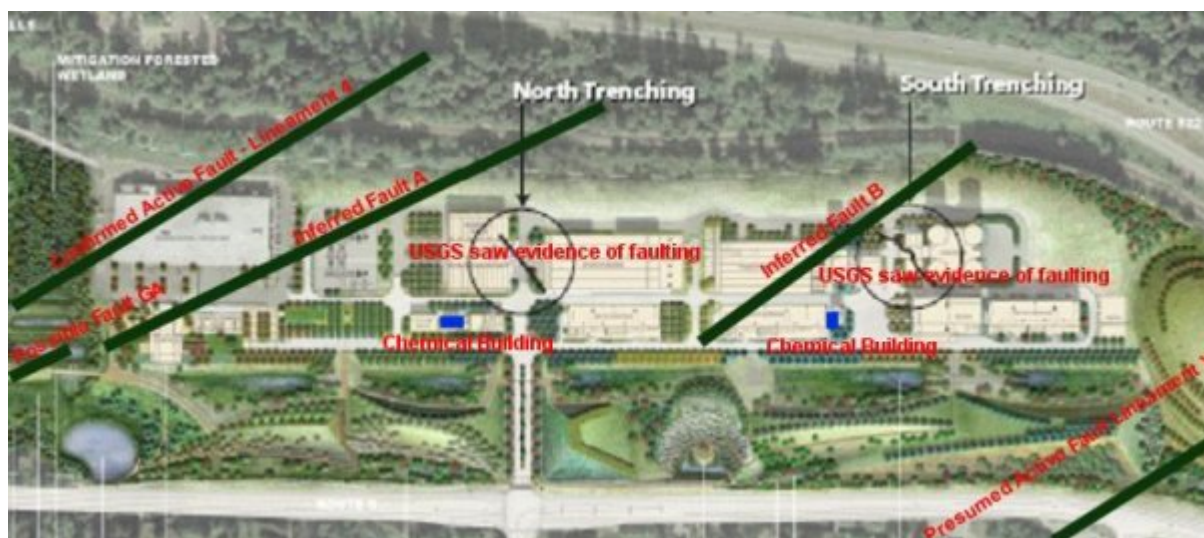
We've all just witnessed the 'fail safe' design at the nuclear plant in Japan.

The risk for an earthquake and for Brightwater to release a huge discharge of pollutants into the environment here is real.

The facts have been ignored by every agency in the review process.

And it is now documented in the legal history for this permit.

Sincerely,
Emma Dixon



End of Emma Dixon's Comments

Ecology's Response to Emma Dixon's Comments: The draft reclaimed water permit addresses the production, distribution, and use of reclaimed water. The reclaimed water permit has monitoring requirements and sets limits on acceptable levels of parameters in the reclaimed water. Any use, other than those explicitly permitted, are in violation of the permit and subject to enforcement action.

The permit requires that the facility be operated and maintained in such a manner so as to comply with the permit at all times including during emergency situations. The county must have appropriate procedures in place to address emergency operations including preventing discharges to the environment.

The draft reclaimed water permit is a water quality permit and does not pertain to siting, land use, or building design issues or codes. Ecology does not have legal jurisdiction over building codes, which are reviewed and enforced at the Snohomish County level.

End of Response to All Comments