CITY OF BLAINE
LIGHTHOUSE POINT WATER RECLAMATION FACILITY

ADDENDUM TO FACILITY PLAN TO DEFINE SPECIFIC RECLAIMED WATER FACILITIES AND PLANNING

September 21, 2007

OBJECTIVE OF THIS ADDENDUM

The City of Blaine intends and has initiated actions to provide and use Class A Reclained Water as defined in the Washington Administrative Code. The objective of this addendum to the 20XX Lighthouse Point Water Reclamation Facility (LPWRF) Facility Plan (Plan) is to augment the original Plan to define specific reclaimed water planning objectives and facilities. This addendum is part of and integrated with the existing ____ Plan and incorporates, by reference, works, documents, and records which have been developed since publication of the final Facility Plan including the LPWRF Preliminary Design Report, Value Engineering Session 1 and Value Engineering Session 2.

The original Plan contains the following information which has bearing on the material of this addendum:

- Process descriptions and diagrams that delineate the secondary treatment process, the reclamation process, and reliability features and controls
- Identification of the basis for design predicated on such sources as pilot plant results, recognized design standards published by industry professional organizations, accepted engineering design and operation references, USEPA, state regulatory agencies or site specifics experience and operations data.
- Description and results of any pilot plant studies undertaken to assess the applicability of selected and alternative treatment processes and used to define unit design and operations parameters.
- Reliability assessment of complete treatment trains, unit processes, major and/or significant equipment and/or components.

The Preliminary Design Report and incorporated Value Engineering findings contain the following information which has bearing on the material of this addendum:

- Engineering design calculations, including change of disinfectant from UV to HOCl in VE1 and other process changes.

RECLAIMED WATER PLANNING

As part of an ongoing reclaimed water planning process, which will culminate in submittal of a Reclaimed Water Plan to Washington Department of Health (DOH), the City has initiated planning of a reclaimed water program and facilities. The development of the program will be accomplished in the following phases:

approved by Council 9/24/07 5-0

- **Phase 1** – Design and construction of the LPWRF 3.1 mgd MBR treatment plant; design and construction of a 0.5 mgd reclaimed water pumping station located on Semiahmoo Spit near the existing City WWTP, including residual hypochlorite disinfectant addition, ancillary equipment and instruments for monitoring and sampling; and xx.x miles of reclaimed water conveyance pipeline from the reclaimed water pump station to the XXXXX Golf Course located _____.
- **Phase 2** – Identification of additional reclaimed water users in West Blaine and design and construction of pumping, residual hypochlorite disinfectant addition, and conveyance facilities to provide reclaimed water to these users.
- **Phase 3** – Identification of reclaimed water users in Central and East Blaine and design and construction of new facilities for primary disinfection, residual hypochlorite disinfectant addition, pumping, ancillary equipment and instruments for monitoring and sampling, storage and conveyance piping to these users.

As part of the City's development of a Reclaimed Water Plan, this Addendum to the Facility Plan addresses requirements in WAC 246-290, including but not limited to:

- Compliance with standards (Summary Standards required in Article 8)
- Cross-connection control plan
- Conservation programs including reuse

The DOE summary standards checklist, as reference in Article 8, is included in Appendix B. Cross-connection control and conservation of water resources are discussed in this addendum report.

RECLAIMED WATER SYSTEM AND PROCESSES

The primary and secondary physical and chemical wastewater treatment processes and tertiary membrane filtration at the LPWRF provide the basic reclaimed water treatment system. These processes include: influent pumping, fine screening of raw influent, fine bubble aeration in activated sludge basins modified to accomplish nitrification and denitrification with initial anoxic cells, ultra-filtration Zenon membranes, effluent pumping and hypochlorite disinfection. Contact time for the disinfectant is achieved in the travel time through the effluent piping from LPWRF to the existing outfall at the existing WWTP site on Semiahmoo Spit.

Note there are several major changes from the Plan to the LPWRF design. First, UV disinfection was eliminated in favor of the lower operations cost of hypochlorite dosing into the effluent wet well. Second, grit removal processes were eliminated in consideration of demonstrated performance of fine screens in removing grit in several other MBR installations. Other changes are summarized in Value Engineering Sessions 1 and 2.

The membrane-treated effluent is pumped to the existing City outfall at which point it will be intercepted by a reclaimed water pumping station near the existing WWTP site.

At that point hypochlorite will be used to instill at least a 0.5 mg/l residual in the treated MBR effluent. Monitoring and testing for compliance with state Class A reclaimed water requirements will be accomplished at this location, ___upstr3eam/downstream from the reclaimed water pumps.

Reclaimed water will be pumped to the identified user, Semiahmoo Golf Course from a 10' by 20' reclaimed water pumping station. Conveyance to the Golf Course will be through a single 10-inch/8-inch??-diameter ductile iron force main installed within existing City right-of-way or easements along Semiahmoo Parkway.

Fail-safe contingency plan - Contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use site.

Cross-connection control
<<City to describe existing program>>

Water Conservation
<<City to describe existing program>>

PHASE 1 RECLAIMED WATER USERS

Phase 1 users of Class A reclaimed water, identified by the City, are the Semiahmoo ____ Golf Course located at _____, __ miles from the existing City WWTP. The City is finalizing a reclaimed water supply and use agreement with the Golf Course to provide ___ gpm constant flow of reclaimed water annually during the months of ___ through ___ at a residual pressure of __ psi at the customer's point of connection.

Future users who may engage in Class A reclaimed water use agreements with the City are: xxxx, xxx, xxxx.

PHASE 1 RESIDUAL DISINFECTION FACILITIES

<<Wilson description>>
See drawings .

PHASE 1 RECLAIMED WATER CONVEYANCE

<<Wilson description>>
See drawings

PHASE 1 ANCILLARY MONITORING AND TESTING

<<Patricia Tam sampling plan and DOH requirements>>

APPENDIX A – SUPPLEMENTAL DESIGN DRAWINGS
LPWRF design drawings incorporated by reference.
Add three drawings from Wilson

APPENDIX B – SUMMARY CHECKLIST
From DOE website – filled out