

Jefferson County Department of Public Works  
**Port Hadlock UGA Sewer Facility Plan**

---

**APPENDIX E.**  
**RELIABILITY AND REDUNDANCY REQUIREMENTS FOR**  
**RECLAMATION AND REUSE STANDARDS**

---

September 2008



**Table E1-4. Reliability and Redundancy Requirements of Articles 10 and 11 of the Water Reclamation and Reuse Standards**

Article	Requirements
<p><b>Article 10— General Requirements of Design</b></p>	<p><b>1. Flexibility of Design</b></p> <p>The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.</p> <p>There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.</p>
	<p><b>2. Power Supply</b></p> <p>The power supply shall be provided with one of the following reliability features:</p> <ul style="list-style-type: none"> <li>(a) Alarm and standby power source.</li> <li>(b) Alarm and automatically actuated short-term storage or disposal provisions as specified in Article 11, item 1.</li> <li>(c) Automatically actuated long-term storage or disposal provisions as specified in Article 11, item 1.</li> </ul>
	<p><b>3. Storage Where No Approved Alternative Disposal System Exists</b></p> <ul style="list-style-type: none"> <li>(a) Where no alternative disposal system is permitted, a system storage or other acceptable means shall be provided to ensure the retention of reclaimed water under adverse weather conditions or at other times when reuse is precluded.</li> <li>(b) When wet weather conditions preclude the use of reclaimed water, the system storage volume shall be established by determining the storage period that would be required for the duration of a 10-year storm, using weather data that is available from, or is representative of, the area involved. A minimum of 20 years of climatic data shall be used in storage volume determinations. (Note that the designer must select an appropriate storm duration to provide the protection of a 10-year recurrence interval.)</li> <li>(c) At a minimum, system storage capacity shall be the volume equal to three times that portion of the average daily flow of reuse capacity for which no alternative reuse or disposal system is permitted.</li> <li>(d) Reclaimed water storage ponds or quarantine which can impound a volume of 10 acre-feet (equivalent to 435,600 cubic feet or 3.258 million gallons) or more may be subject to state dam safety regulations. See <a href="#">G1-1.4.6E</a>.</li> </ul>

Article	Requirements
<p><b>Article 11— Alternative Reliability Requirements</b></p>	<p><b>1. Emergency Storage or Disposal</b></p> <p>(a) Where short-term storage or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion works, provisions for odor control, conduits, and pumping and pump-back equipment. All of the equipment other than the pump-back equipment shall be either independent of the normal power supply or provided with a standby power source.</p> <p>(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities, or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump-back equipment. All of the equipment other than the pump-back equipment shall be either independent of the normal power supply or provided with a standby power source.</p> <p>(c) Diversion to a different type of reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for that type of reuse.</p> <p>(d) Subject to prior approval by DOH and Ecology, diversion to a discharge point where the wastewater meets all discharge requirements is an acceptable alternative to emergency disposal of partially treated wastewater.</p> <p>(e) Automatically actuated short-term storage or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), and (d) listed above, all the necessary sensors, instruments, valves, and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of the treatment process, and a manual reset to prevent automatic restart until the failure is corrected.</p>
	<p><b>2. Biological Treatment</b></p> <p>All biological treatment unit processes shall be provided with one reliability feature, as follows:</p> <p>(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.</p> <p>(b) Alarm, short-term storage or disposal provisions, and standby replacement equipment.</p> <p>(c) Alarm and long-term storage or disposal provisions.</p> <p>(d) Automatically actuated long-term storage or disposal provisions.</p>
	<p><b>3. Secondary Sedimentation</b></p> <p>All secondary sedimentation unit processes shall be provided with one reliability feature, as follows:</p> <p>(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.</p> <p>(b) Standby sedimentation unit process.</p> <p>(c) Long-term storage or disposal provisions.</p>

Article	Requirements
<p><b>Article 11— Alternative Reliability Requirements (continued)</b></p>	<p><b>4. Coagulation</b></p> <p>(a) All coagulation unit processes shall be provided with all features for uninterrupted chemical feed, as follows:</p> <ul style="list-style-type: none"> <li>• Standby feeders.</li> <li>• Adequate chemical storage and conveyance facilities.</li> <li>• Adequate reserve chemical supply.</li> <li>• Automatic dosage control.</li> </ul> <p>(b) All coagulation unit processes shall be provided with one reliability feature, as follows:</p> <ul style="list-style-type: none"> <li>• Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation.</li> <li>• Alarm, short-term storage or disposal provisions, and standby replacement equipment.</li> <li>• Alarm and long-term storage or disposal provisions.</li> <li>• Automatically actuated long-term storage or disposal provisions.</li> <li>• Alarm and standby coagulation unit process.</li> </ul>
	<p><b>5. Filtration</b></p> <p>All filtration unit processes shall be provided with one reliability feature, as follows:</p> <p>(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.</p> <p>(b) Alarm, short-term storage or disposal provisions, and standby replacement equipment.</p> <p>(c) Alarm and long-term storage or disposal provisions.</p> <p>(d) Alarm and standby filtration unit process.</p>

