

EVALUATION REPORT AND FINDINGS
on the

Application for Certification
Pursuant to Section 401 of the
Federal Clean Water Act

Submitted via Joint Permit Application to
U.S. Army Corps of Engineers
for

Tri-County Metropolitan Transit District of Oregon (TriMet)
Portland to Milwaukie Light Rail Transit project

File #2009-00444

Pursuant to Oregon Administrative Rules
Chapter 340, Division 48



Prepared by:

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1. INTRODUCTION

The Department of Environmental Quality (DEQ) received a request for Clean Water Act (CWA) Section 401 Water Quality Certification (401 WQC) for the TriMet Portland to Milwaukie Light Rail project, via Public Notice issued by the U.S. Army Corps of Engineers (USACE) on July 30, 2010. DEQ's 401 WQC Public Notice was included with the USACE notice in accordance with Oregon Administrative Rule (OAR) 340-048-0032.

On July 26, 2010, the US Coast Guard (USCG) verbally requested 401 WQC from DEQ and published Public Notice 10-N-03 on August 5, 2010 for a permit under the General Bridge Act of 1946 for the proposed bridge over the Willamette River. Because the Willamette River Bridge is but one component of the entire proposal being considered by the USACE for a CWA Section 404 permit, DEQ's evaluation and 401 WQC decision will be responsive to the requests for 401 WQC from both USACE and USCG processes.

DEQ's 401 WQC program first became aware of the proposed project in July 2008 through receipt of comments by US Environmental Protection Agency (EPA) on the draft Supplemental Environmental Impact Statement prepared by the Federal Transit Administration during the National Environmental Policy Act (NEPA) process. Staff from DEQ's Cleanup program and 401 WQC program began providing technical assistance to the applicant and their consultants on various contamination and water quality issues in 2009, in conjunction with a concurrently proposed remediation project that TriMet's proposed Willamette River bridge intersects. The Zidell/ZRZ Realty property on the west bank of the Willamette River is undergoing remedial action through DEQ's Cleanup program as described in the DEQ Record of Decision on the action issued on June 30, 2005. TriMet entered into a Consent Judgment with DEQ on January 12, 2011, for protection from potential liability for release of hazardous substances present on the Zidell/ZRZ site and an adjacent remedial site owned by Oregon Health & Science University (OHSU). Stipulations of the Consent Judgment include that TriMet: obtain a 401 WQC and USACE 404 permit and comply with conditions protective of water quality; and comply with applicable provisions of the Records of Decision for the Zidell/ZRZ and OHSU remedial actions.

DEQ has now evaluated the available information and prepared this Evaluation and Findings Report and 401 WQC, together referred to as the 401 decision, prepared pursuant to Section 401 of the Clean Water Act (33 U.S.C. Section 1431), Oregon Revised Statutes (ORS 468B) and Oregon Administrative Rules (OAR 340 Division 48).

All documents and communications generated in the process of reviewing the application, all supplemental information submitted by the applicant, and all materials received as part of the public review process, are considered part of the record regarding this application.

2. REQUIREMENTS FOR CERTIFICATION

Section 401 of the CWA establishes requirements for state certification of proposed projects or activities that may result in any discharge to navigable waters. Before a federal agency may issue a permit or license for any project that may result in any discharge to navigable waters, the state must certify that the proposed project or activity will comply with applicable effluent limitations, water quality-related effluent limitations, water quality standards and implementation plans, national standards of performance for new sources, and toxic and pretreatment effluent standards (Sections

301, 302, 303, 306, and 307 respectively, of the CWA) and any state regulations adopted to implement these sections. The state is further authorized to condition any granted certificate to require compliance with appropriate water quality-related requirements of state law.

The CWA creates a unique system for protection of water quality. The state has primary responsibility and authority for protecting water quality. The federal law recognizes and supports state requirements as long as they are not less stringent than established federal minimums. Indeed, federally approved state requirements and standards become federal requirements and standards.

In the Section 401 certification process, the state acts under the authority of the federal law. However, the state must also comply with state law. In Oregon, statutory authority for Section 401 certification is contained in ORS chapter 468B. The DEQ is the agency of the State of Oregon designated to carry out the certification functions prescribed by Section 401 of the Clean Water Act. DEQ may issue an unconditional certification where a project will not impact water quality. A conditioned certification may be issued in those cases where a project may have an impact on water quality, but implementation of the conditions contained in the certification will assure compliance with standards. Certification may be denied in cases where a project cannot be undertaken in accordance with water quality standards. States are also authorized to impose conditions needed to implement other water quality related requirements arising under state law.

Administrative rules (OAR chapter 340, division 48) prescribe the procedures for Section 401 certifications. The rules identify the information that must be included in an application for Section 401 certification [OAR 340-048-0020(2)]. Aside from general information about the project, the substantive information is that "required by the federal permitting or licensing agency or such other environmental background information as may be necessary to demonstrate that the proposed project or activity will comply with water quality requirements." DEQ may also request any additional information necessary to adequately evaluate the project impacts on water quality [OAR 340-048-0020(3)].

3. SUMMARY OF APPLICATION

3.1 Documents Filed by Applicant

The following documents are considered to comprise the application, as filed by the applicant, and have become part of the DEQ record:

- Joint Permit Application Form and Attachments, prepared by TriMet, dated June 30, 2010.
- Bridge Hydraulics and Scour Assessment Detailed Report for Proposed TriMet Bridge over the Willamette River, prepared by WEST Consultants, Inc., dated January 15, 2010.
- Memorandum to National Marine Fisheries Service from Federal Transit Administration on Portland-Milwaukie Light Rail – Willamette River Bridge Mitigation/Enhancement, dated May 24, 2010.
- Response to DEQ October 5, 2010 Information Request, prepared by TriMet, dated November 3, 2010.
- Application for US Coast Guard Bridge Permit Willamette River Transit Bridge, Portland OR, prepared by TriMet, dated July 15, 2010.
- Biological Assessment Portland-Milwaukie Light Rail project FINAL, prepared by

- Parametrix, dated October 12, 2009.
- Ecosystems Results Report Portland-Milwaukie Light Rail Project Supplemental Draft Environmental Impact Statement, Chapter 3, dated May 2008.
- Water Quality and Hydrology Results Report in Support of the Portland-Milwaukie Light Rail Project Supplemental Draft Environmental Impact Statement, prepared by Parametrix and Metro, dated May 2008.
- Portland-Milwaukie Light Rail Project Final Environmental Impact Statement, Section 3.9 Water Quality and Hydrology, dated June 2010.
- Metro Council Final Land Use Order – Resolution No. 08-3964, dated July 17, 2008.
- Draft Memorandum on Revised Hydraulic Scour Protection Design and Water Quality - Willamette River Transit Bridge, prepared by Vigil-Agrimis, dated January 21, 2011.
- DEQ Land Use Compatibility Statements, signed by City of Portland, Clackamas County and City of Milwaukie, dated January 2011.
- Portland to Milwaukie Light Rail Project Segment „B“ - Willamette River Transit Bridge – Draft Hydraulics Report and Appendices, prepared by Vigil-Agrimis, dated February 3, 2011.
- Response to DEQ Additional Information Request (based on GeoEngineers“ Hydraulics Review), prepared by Vigil-Agrimis, dated April 19, 2011.

The following additional documents were also considered in this evaluation and are part of the DEQ record:

- Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations for the Portland-Milwaukie Light Rail Project, prepared by National Marine Fisheries Service, dated June 23, 2010.
- Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations for the ZRZ Realty Company Contaminant Cleanup, prepared by National Marine Fisheries Service, dated February 3, 2011.
- Hydraulic Review of Proposed TriMet Transit Bridge and Zidell Site Sediment Cap, prepared by GeoEngineers, Inc., dated April 11, 2011.
- Willamette River Downtown Portland Sediment Characterization Phase II, prepared by GSI Water Solutions, Inc. and Hart Crowser, dated February 2010.
- Various verbal and email communications within DEQ and with USACE, USCG, NMFS, EPA and the applicant“s representatives.

3.2 Notification of Complete Application

Not applicable per OAR 340-048-0032.

3.3 Legal Name and Address of Project Applicant

Tri-County Metropolitan Transit District of Oregon
 710 NE Holladay Street
 Portland, Oregon 97232

Attn: Dave Unsworth

3.4 Description of Project Location

An approximately 7.3 mile light rail transit corridor originating in downtown Portland, crossing the Willamette River between the South Waterfront District and the Oregon Museum of Science and Industry, following Highway 99 and the Tillamook Branch of the Union Pacific Railroad south through Milwaukie, crossing six more streams, and terminating at Park Avenue in unincorporated Clackamas County.

3.5 Waters of the State Impacted by Project

The Willamette River, Crystal Springs Creek, Johnson Creek, Crystal Creek, Spring Creek, Kellogg Lake, Courtney Springs Creek, and wetlands and floodplain associated with Crystal Springs Creek, Crystal Creek, and Fairview Creek.

3.6 Adjacent Landowners

OHSU 3181 S.W. Sam Jackson Park Rd. Portland, Oregon 97239-3098	City of Milwaukie 10722 SE Main St Milwaukie, OR 97222
Jazzy Future LLC 2406 SE Harrison St Milwaukie, OR 97222	Philip Korton 2535 SE Harrison St Milwaukie, OR 97222
Union Pacific Railroad 1525 North River Street Portland, or 97227-1760	OMSI 1945 SE Water Avenue Portland, OR 97214
ZRZ Realty 3121 SW Moody Avenue Portland, OR 97239	Oregon Department of Transportation 355 Capitol St. N.E. Salem, OR 97301-3871
Portland Waldorf School 2300 SE Harrison St Milwaukie, OR 97222	Portland Opera Assoc 211 SE Caruthers Street Portland, OR 97214

4. DESCRIPTION OF PROPOSED PROJECT

The project is intended to accommodate anticipated future demand for increases in travel capacity within the Portland-metropolitan area by expanding transit service and enhancing bicycle and pedestrian connectivity. This will support local land use goals and help maintain livability by reducing vehicles miles traveled in automobiles, traffic congestion, delays, and vehicle emissions.

Construction of an approximately 7.3 mile light rail transit corridor and other associated facilities (e.g., guideways, stations, park and ride lots, operations and maintenance facility expansion) along the proposed alignment will result in impacts to waters of the state due to installation of new or improvement of existing stream crossings (bridges and culverts) or compensatory mitigation activities on the Willamette River, Crystal Springs Creek, Johnson Creek, Crystal Creek, Spring Creek, Kellogg Lake/Creek, and Courtney Springs Creek. Details of each project component are provided below:

Willamette River – At approximately river mile 13.8, a cable-stayed bridge is proposed with approximate dimensions of: 75.5 to 110.5 feet in width, 1,720 feet in length, and 55 to 77.5 feet (Columbia River Datum) of vertical clearance for navigation. The design includes five spans with two abutments. Two towers (Tower 3 and Tower 4) will support the bridge in water along with two piers on shore above ordinary high water.

Permanent in-water components of the bridge design include:

- Placement of approximately one foot of sand on the riverbed within the footprints of the west side work bridge and scour protection measures around both piers
- Two in-water piers, each consisting of a set of up to six (12 total) drilled shafts of 10-foot diameter and 160 to 200-feet in length
- Two elliptical concrete pile caps, one for each pier, of approximately 95- by 55-feet in diameter and approximately 5 to 13-feet thick, to accommodate likely seal pour concrete slabs of 2 to 4-foot thick at the bottom of each pile cap
- Scour protection
 - Tower 3 (west side) – 12 to 18 inches of sand (except at the interface with the Zidell cap where habitat gravel will be used) overlain by 2 to 5 feet of rock material (Class 100, Class 200, Type B rock, gravel and articulated block) up to 8,200 cubic yards over approximately 32,850 square feet of riverbed
 - Tower 4 (east side) – 12 to 18 inches of sand overlain by 2 to 5 feet of rock material (Class 200, Class 100, Type B rock, gravel, and articulated block) over approximately 40,000 square feet of riverbed

Temporary in-water components include:

- Two steel sheetpile elliptical cofferdams, 95- by 55-feet in diameter and filled with sand, gravel and cobbles, for construction of the in-water piers, with up to 48 temporary 24-inch diameter steel piles for work platform support
- Two work bridges, one from each bank to the permanent pier locations, with bents placed approximately 30 feet apart (except for one section where they will span 125 feet to avoid known contamination on the west side) constructed of up to 73 24-inch and 11 36-inch diameter steel piles.
- Up to 12 24-inch diameter steel piles for temporary mooring assistance.
- Installation and removal of “spuds” into the riverbed for anchoring of work barges at various times during construction

Crystal Springs Creek – A single span bridge with approximate dimensions of 68-feet in length and 34-feet in width will fully span the creek. Placement of approximately 30 piles and pile cap reinforcement, along with cast-in-place concrete for abutments which may include wing walls and track walls, will affect approximately 0.97-acres of wetlands.

Johnson Creek and Tacoma Park and Ride Access – A single span steel girder bridge with pre-cast, pre-stressed and cast-in-place concrete elements, of approximately 108-feet in length will fully span the creek. Abutments will be founded on driven piles and skewed to match the stream alignment and minimize impacts. The existing automobile bridge over Johnson Creek will be modified for access to a new „park and ride“ structure. An abutment will be extended, a single side

10-foot sidewalk or 8-foot sidewalks on both sides will be added, and stormwater conveyance will be updated.

Crystal Creek – An existing 36-inch culvert under the Union Pacific Railroad alignment will be lined with a new HDPE pipe, extended by 20-feet and mechanically stabilized earth walls will contain the 34-foot wide light rail track. The channel will be realigned upstream of the culvert to improve inlet conditions. These actions will affect approximately 0.06-acre of wetlands, and 0.01-acre of stream. Fish passage is not proposed, but riparian revegetation and enhancement are proposed for water quality improvement.

Spring Creek – Approximately 100-feet of an existing 200-foot long, 36-inch diameter culvert will be repaired and an existing manhole abandoned. Fish passage is not proposed and repairs involving concrete, solvents or sediment will be done in isolation from waters of the state.

Kellogg Lake/Creek – A multiple span bridge, measuring approximately 6,000 square feet and at an elevation of approximately 32-feet above ordinary high water, will be constructed of cast-in-place box girders, pier foundations and abutments and be founded on drilled shafts and driven piles. One permanent H-pier, consisting of two 4-foot diameter columns will be constructed above the ordinary high water level. Approximately 60 untreated 24-inch steel piles will be driven to support a temporary work bridge affecting approximately 0.005-acre of the lake.

Courtney Springs Creek – An approximately 280-foot section of the existing 48-inch culvert will be replaced in isolation from the stream channel.

Ruby Junction Operations and Maintenance Facility – Portions of the proposed expansion of this existing facility will be within the 100-year floodplain of Fairview Creek, but no direct impacts to the creek are anticipated and no structures are proposed within the floodplain.

Mitigation – The following restoration and enhancement efforts will be performed or funded in the Lower Willamette Subbasin. 1) Removal of an approximately 0.46 acre derelict pile field from river mile 5.8 of the Lower Willamette River, near the St. John's Bridge. 2) Restoration of approximately 0.59 acre of shallow water habitat along the South Waterfront District through bank layback. 3) Restoration of approximately 1.1 acre of riparian, wetland, and stream channel areas along Crystal Springs Creek, as part of the City of Portland's Westmorland Park Restoration Project. 4) Enhancement of approximately 3,000 square feet of riparian area on Milwaukie Presbyterian Church property adjacent to Kellogg Lake. 5) Improvement of shallow water habitat by removing approximately 12 derelict piles and associated cross braces in Kellogg Lake.

Post-Construction Stormwater Management – Comprehensive drainage reports have been prepared for each segment of the entire project. Stormwater management facilities that treat the full volume of runoff anticipated from all associated impervious surfaces will be designed to the City of Portland Stormwater Manual specifications.

5. ISSUANCE OF PUBLIC NOTICE

A Public Notice was issued by USACE on July 30, 2010 that described the entire project and included DEQ's 401 WQC Public Notice in accordance with Oregon Administrative Rule (OAR)

340-048-0032. A USCG Public Notice (10-N-03) was issued on August 5, 2010 that described the proposed bridge over the Willamette River.

Relevant water quality and beneficial use comments received during public notice were considered and incorporated as appropriate into the final 401 decision.

6. APPLICABLE WATER QUALITY REGULATIONS AND DEQ EVALUATIONS

Oregon's water quality regulations are contained in Oregon Administrative Rules (OAR) Chapter 340, Divisions 40 through 56 and 71. Division 40 contains the state's groundwater standards. Division 41 entitled "Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon" contains the surface water standards, and is the most significant with respect to Section 401 certification evaluation of a proposed project. The requirements and standards set forth in Division 41 were adopted to comply with the surface water quality protection provisions of both state and federal law. The water quality standards in Division 41 are composed of three elements: beneficial uses, water quality criteria (both narrative and numeric), and the antidegradation policy.

6.1 Protection of Beneficial Uses

Both Oregon Law and the federal Clean Water Act are structured to require that water quality be protected and maintained so that existing and potential beneficial uses of public waters are not impaired or precluded by degraded water quality. The regulatory approach used is to:

1. Identify beneficial uses that are recognized as significant with regard to water quality protection;
2. Develop and adopt standards of quality for significant water quality parameters to define the quality that is necessary to protect the identified beneficial uses;
3. Establish and enforce case-by-case discharge limitations for each source that is permitted to discharge treated wastes into public waters to assure that water quality standards are not violated and beneficial uses are not impaired; and
4. Establish and implement "best management practices" for a variety of "land management" activities to minimize their contribution to water quality standards violations or impairment of beneficial uses.

The table below indicates the designated beneficial uses for the Willamette Basin, as posted on DEQ's website at: <http://www.deq.state.or.us/wq/rules/div041/dbutables/table340a.pdf>.

Table 2: Beneficial Uses	
Main Stem Willamette River Mouth to Newberg	All Other Streams and Tributaries
Public Domestic Water Supply	Public Domestic Water Supply
Private Domestic Water Supply	Private Domestic Water Supply
Industrial Water Supply	Industrial Water Supply
Irrigation	Irrigation
Livestock Watering	Livestock Watering
Fish and Aquatic Life	Fish and Aquatic Life
Wildlife and Hunting	Wildlife and Hunting
Fishing	Fishing
Boating	Boating
Water Contact Recreation	Water Contact Recreation
Aesthetic Quality	Aesthetic Quality
Hydro Power	Hydro Power
Commercial Navigation & Transportation	

The Willamette River in the project reach is designated as a salmon and steelhead migration corridor and Johnson Creek is designated for salmon and trout rearing and migration, as depicted in Figure 340A at: <http://www.deq.state.or.us/wq/rules/div041/fufigures/figure340a.pdf>.

6.2 Water Quality Standards

Water quality standards are developed for varying geographic areas to protect beneficial uses. Generally, if a water quality standard fully protects the most sensitive beneficial use, then all beneficial uses are fully protected. Water quality standards have been adopted for water quality parameters that are most significant or useful in regulating pollution. These standards take the form of both numeric limits and narrative criteria and have been established based on best available information at the time they were adopted. Development of standards is a continuing process. As new information becomes available, standards for additional parameters may be added and existing numeric standards or narrative criteria may be revised to better reflect the intent of protection of the identified beneficial uses.

6.3 Antidegradation Policy

Oregon's antidegradation policy (OAR 340-41-0004) applies to all surface waters. In the case of bodies of water that meet water quality standards, it provides for the maintenance of existing water quality. Specifically, it states that the existing quality of high quality waters (i.e., waters meeting water quality standards) shall be maintained and protected unless the Environmental Quality

Commission makes certain rigorous findings of need. For water quality-limited waters, water quality may in no circumstances be lowered; that is, these waters have a non-degradation status.

7. POTENTIAL MODIFICATION OF SURFACE WATER QUALITY

7.1 Antidegradation

340-041-0004

- (1) Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to supplement the Antidegradation Policy.
- (2) Growth Policy. In order to maintain the quality of waters in the State of Oregon, it is the general policy of the Commission to require that growth and development be accommodated by increased efficiency and effectiveness of waste treatment and control such that measurable future discharged waste loads from existing sources do not exceed presently allowed discharged loads except as provided in section (3) through (9) of this rule.
- (3) Non-degradation Discharges. The following new or increased discharges are subject to this Division. However, because they are not considered degradation of water quality, they are not required to undergo an antidegradation review under this rule:
 - (a) Discharges Into Existing Mixing Zones. Pollutants discharged into the portion of a water body that has been included in a previous mixing zone for a permitted source, including the zones of initial dilution, are not considered a reduction in water quality, so long as the mixing zone is established in accordance with OAR 340-041-0053, there are no other overlapping mixing zones from other point sources, and the discharger complies with all effluent limits set out in its NPDES permit.
 - (b) Water Conservation Activities. An increase in a pollutant concentration is not considered a reduction in water quality so long as the increase occurs as the result of a water conservation activity, the total mass load of the pollutant is not increased, and the concentration increase has no adverse effect on either beneficial uses or threatened or endangered species in the water body.
 - (c) Temperature. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality.
 - (d) Dissolved Oxygen. Up to a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species.
- (4) Recurring Activities. Since the baseline for applying the antidegradation policy to an individual source is the water quality resulting from the source's currently authorized discharge, and since regularly-scheduled, recurring activities remain subject to water quality standards and the terms and conditions in any applicable federal and state permits, certifications and licenses, the following activities will not be considered new or increasing discharges and will therefore not trigger an antidegradation review under this rule so long as they do not increase in frequency, intensity, duration or geographical extent:
 - (a) Rotating grazing pastures,
 - (b) Agricultural crop rotations, and

- (c) Maintenance dredging.
- (5) Exemptions to the Antidegradation Requirement. Some activities may, on a short term basis, cause temporary water quality degradation. However, these same activities may also have substantial and desirable environmental benefits. The following activities and situations fall into this category. Such activities and situations remain subject to water quality standards, and must demonstrate that they have minimized adverse affects to threatened and endangered species in order to be exempt from the antidegradation review under this rule:
 - (a) Riparian Restoration Activities. Activities that are intended to restore the geomorphology or riparian vegetation of a water body, or control invasive species need not undergo an antidegradation review so long as the Department determines that there is a net ecological benefit to the restoration activity. Reasonable measures that are consistent with the restoration objectives for the water body must be used to minimize the degradation;
 - (b) Emergency Situations. The Director or a designee may, for a period of time no greater than 6 months, allow lower water quality without an antidegradation review under this rule in order to respond to public health and welfare emergencies (for example, a significant threat of loss of life, personal injury or severe property damage); and
 - (c) Exceptions. Exceptions authorized by the Commission or Department under (9) of this rule.
- (6) High Quality Waters Policy: Where the existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality must be maintained and protected. However, the Environmental Quality Commission, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, and with full consideration of sections (2) and (9) of this rule, and 340-041-0007(4), may allow a lowering of water quality in these high quality waters if it finds:
 - (a) No other reasonable alternatives exist except to lower water quality; and
 - (b) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference;
 - (c) All water quality standards will be met and beneficial uses protected; and
 - (d) Federal threatened and endangered aquatic species will not be adversely affected.
- (7) Water Quality Limited Waters Policy: Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.
- (8) Outstanding Resource Waters Policy. Where existing high quality waters constitute an outstanding State or national resource such as those waters designated as extraordinary resource waters, or as critical habitat areas, the existing water quality and water quality values must be maintained and protected, and classified as "Outstanding Resource Waters of Oregon."
 - (a) The Commission may specially designate high quality water bodies to be classified as Outstanding Resource Waters in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those water bodies. The Department will develop a screening process and establish a list of nominated water bodies for Outstanding Resource Waters designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority water bodies for nomination include:

- (A) Those in State and National Parks;
 - (B) National Wild and Scenic Rivers;
 - (C) State Scenic Waterways;
 - (D) Those in State and National Wildlife Refuges; and
 - (E) Those in federally designated wilderness areas.
- (b) The Department will bring to the Commission a list of water bodies that are proposed for designation as Outstanding Resource Waters at the time of each triennial Water Quality Standards Review; and
 - (c) When designating Outstanding Resource Waters, the Commission may establish the water quality values to be protected and provide a process for determining what activities are allowed that would not affect the outstanding resource values. After the designation, the Commission may not allow activities that may lower water quality below the level established except on a short term basis to respond to public health and welfare emergencies, or to obtain long-term water quality improvements.
- (9) Exceptions. The Commission or Department may grant exceptions to this rule so long as the following procedures are met:
 - (a) In allowing new or increased discharged loads, the Commission or Department must make the following findings:
 - (A) The new or increased discharged load will not cause water quality standards to be violated;
 - (B) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference; and
 - (C) The new or increased discharged load will not unacceptably threaten or impair any recognized beneficial uses or adversely affect threatened or endangered species. In making this determination, the Commission or Department may rely upon the presumption that if the numeric criteria established to protect specific uses are met the beneficial uses they were designed to protect are protected. In making this determination the Commission or Department may also evaluate other State and federal agency data that would provide information on potential impacts to beneficial uses for which the numeric criteria have not been set;
 - (D) The new or increased discharged load may not be granted if the receiving stream is classified as being water quality limited under sub-section (a) of the definition of "Water Quality Limited" in OAR 340-041-0002, unless:
 - (i) The pollutant parameters associated with the proposed discharge are unrelated either directly or indirectly to the parameter(s) causing the receiving stream to violate water quality standards and being designated water quality limited; or
 - (ii) Total maximum daily loads (TMDLs), waste load allocations (WLAs) load allocations (LAs), and the reserve capacity have been established for the water quality limited receiving stream; and compliance plans under which enforcement action can be taken have been established; and there will be sufficient reserve capacity to assimilate the increased load under the established TMDL at the time of discharge; or
 - (iii) Effective July 1, 1996, in water bodies designated water-quality limited for dissolved oxygen, when establishing WLAs under a TMDL for water bodies meeting the conditions defined in this rule, the Department may at its discretion provide an allowance for WLAs calculated to result in no measurable reduction of dissolved oxygen

(DO). For this purpose, "no measurable reduction" is defined as no more than 0.10 mg/L for a single source and no more than 0.20 mg/L for all anthropogenic activities that influence the water quality limited segment. The allowance applies for surface water DO criteria and for Inter-gravel dissolved oxygen (IGDO) if a determination is made that the conditions are natural. The allowance for WLAs applies only to surface water 30-day and seven-day means; or

(iv) Under extraordinary circumstances to solve an existing, immediate and critical environmental problem, the Commission or Department may, after the completion of a TMDL but before the water body has achieved compliance with standards, consider a waste load increase for an existing source on a receiving stream designated water quality limited under sub-section (a) of the definition of "Water Quality Limited" in OAR 340-041-0002. This action must be based on the following conditions:

(I) That TMDLs, WLAs and LAs have been set; and

(II) That a compliance plan under which enforcement actions can be taken has been established and is being implemented on schedule; and

(III) That an evaluation of the requested increased load shows that this increment of load will not have an unacceptable temporary or permanent adverse effect on beneficial uses or adversely affect threatened or endangered species; and

(IV) That any waste load increase granted under subparagraph (iv) of this paragraph is temporary and does not extend beyond the TMDL compliance deadline established for the water body. If this action will result in a permanent load increase, the action has to comply with sub-paragraphs (i) or (ii) of this paragraph.

(b) The activity, expansion, or growth necessitating a new or increased discharge load is consistent with the acknowledged local land use plans as evidenced by a statement of land use compatibility from the appropriate local planning agency.

(c) Oregon's water quality management policies and programs recognize that Oregon's water bodies have a finite capacity to assimilate waste. Unused assimilative capacity is an exceedingly valuable resource that enhances in-stream values and environmental quality in general. Allocation of any unused assimilative capacity should be based on explicit criteria. In addition to the conditions in subsection (a) of this section, the Commission or Department may consider the following:

(A) Environmental Effects Criteria:

(i) Adverse Out-of-Stream Effects. There may be instances where the non-discharge or limited discharge alternatives may cause greater adverse environmental effects than the increased discharge alternative. An example may be the potential degradation of groundwater from land application of wastes;

(ii) In-stream Effects. Total stream loading may be reduced through elimination or reduction of other source discharges or through a reduction in seasonal discharge. A source that replaces other sources, accepts additional waste from less efficient treatment units or systems, or reduces discharge loadings during periods of low stream flow may be permitted an increased discharge load year-round or during seasons of high flow, so long as the loading has no adverse affect on threatened and endangered species;

(iii) Beneficial Effects. Land application, upland wetlands application, or other non-discharge alternatives for appropriately treated wastewater may replenish groundwater levels and increase streamflow and assimilative capacity during otherwise low streamflow periods.

(B) Economic Effects Criteria. When assimilative capacity exists in a stream, and when it is judged that increased loadings will not have significantly greater adverse environmental effects than other alternatives to increased

discharge, the economic effect of increased loading will be considered. Economic effects will be of two general types:

- (i) Value of Assimilative Capacity. The assimilative capacity of Oregon's streams is finite, but the potential uses of this capacity are virtually unlimited. Thus it is important that priority be given to those beneficial uses that promise the greatest return (beneficial use) relative to the unused assimilative capacity that might be utilized. In-stream uses that will benefit from reserve assimilative capacity, as well as potential future beneficial use, will be weighed against the economic benefit associated with increased loading;
- (ii) Cost of Treatment Technology. The cost of improved treatment technology, non-discharge and limited discharge alternatives may be evaluated.

7.1.1 Application of Antidegradation Policy

The above rule is generally designed to address new or increased pollutant loads, such as in a National Pollutant Discharge Elimination System (NPDES) permitted discharge. However, applicability can also be drawn for use in 401 WQC evaluation of new or increased pollutant loads or potential for impairment.

The above rule sections require that existing high quality waters, where quality exceeds the levels necessary to protect fish, shellfish, wildlife, and recreation, must be maintained and protected. Exceptions are delineated and include a determination by the Environmental Quality Commission (EQC) or DEQ to allow lowered water quality for justifiable reasons, such as short-term (one month or less) lowering of water quality to respond to emergencies or otherwise protect public health and welfare. These sections also require DEQ to minimize degradation of water quality limited waters and protect the recognized beneficial uses of such waters by requiring the highest and best practicable control of all waste discharges and activities. These sections, in conjunction with other provisions of the water quality standards contained in OAR 340- 41 are intended to assure that water quality is not changed so as to impair designated beneficial uses of the water.

DEQ is required to interpret and apply the EQC adopted water quality standards, including the antidegradation policy, in a manner consistent with the guiding federal rules. DEQ has developed an internal management directive (IMD) to guide interpretation of the antidegradation policy when considering issuance of water quality permits and certifications. The IMD details the following guiding steps:

1. Determine if an Antidegradation Review is needed;
2. If needed, determine if a significant lowering of water quality will occur;
3. Factors to consider in allowing a lowering of water quality include:
 - a. The classification of the waterbody (outstanding, high, or limited);
 - b. Consideration of alternative treatments; and,
 - c. Comparison of the economic or social benefits with the environmental costs;
4. Determine whether or not the permit or certification should be drafted. DEQ typically allows approval of new discharges or activities that may have some theoretical or detectable impact on quality of waters provided that:
 - a. Adverse impact on water quality will not be significant;
 - b. Any change in water quality will not adversely affect existing, designated and potential beneficial uses; and,

- c. Highest and best practicable treatment and control of waste discharges and activities is employed to minimize any adverse effects on water quality.
5. Provide public notice of the Antidegradation review.

Under ordinary circumstances, compliance with the water quality standards in OAR 340-041 would be considered sufficient to assure that beneficial uses will be protected. However, if a standard has not been adopted for a pollutant parameter of concern, or if new information indicates that an existing standard is not adequate to prevent adverse water quality impact on a beneficial use in the particular situation, DEQ is required to impose more stringent water quality protection measures to protect designated beneficial uses, including denial of project approval if necessary.

7.1.2 Present Condition of Antidegradation

The Willamette River, Crystal Springs Creek, Johnson Creek, Crystal Creek, Spring Creek, Kellogg Lake/Creek, Courtney Springs Creek, and Fairview Creek are not Outstanding or High Quality waters. Rather, each is classified as Water Quality Limited under the federal CWA, except Courtney Springs Creek which lacks adequate monitoring data to make that determination, but is likely impaired due to its urbanized setting, artificial channel sections (culverts) and lack of adequate riparian vegetation. EPA approved Total Maximum Daily Loads (TMDLs) have been developed for some parameters. These and CWA Section 303(d) listings and potential concern parameters are detailed below for each stream.

For the main stem Willamette River, TMDLs have been developed for the parameters of Bacteria, Dioxin and Temperature and the main stem remains on Section 303(d) list of impaired waterbodies for the parameters of Mercury, Dissolved Oxygen, Iron, DDT, DDE (DDT metabolite), PCBs, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, and Biological Criteria. Other parameters listed for potential concern include: Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene.

The Portland Harbor Superfund Site has been designated by EPA, initiating an assessment and remediation process to address widespread legacy contamination that is present in the lower reaches of the Willamette River. Areas targeted for cleanup span from approximately river mile 0 to 12, with areas of interest continuing to approximately river mile 14.

The Willamette River through the project area (at river mile 13.8) and to the confluence with the Columbia River is highly urbanized and industrialized with significant channelization and nearly all banks have been hardened. Flows are regulated by 11 multipurpose dam/reservoir structures upstream of the project area above Oregon City.

For Johnson Creek, the Lower Willamette Subbasin TMDLs include the parameters of Dissolved Oxygen, E Coli, Fecal Coliform, Phosphorus, and Temperature and the creek remains on the 303(d) list of impaired waterbodies for the parameters of Biocriteria, DDT, Dieldrin, Flow Modification, Habitat Modification, PCBs and PAHs. Other parameters listed for potential concern include: Alkalinity; Chlordane; Hexavalent Chromium; Copper; Dioxins/Furans; Iron; Manganese; Nickel; Toxaphene; and Zinc.

For Fairview Creek, the Lower Willamette Subbasin TMDLs include the parameters of E Coli, Fecal Coliform, and pH and the creek remains on the 303(d) list of impaired waterbodies with potential concern for the parameter of Temperature.

Kellogg Creek/Lake is covered as a tributary in the Lower Willamette Subbasin TMDLs and remains listed as impaired on the 303(d) list for the parameter of E Coli. Kellogg Creek exhibits relatively steep grade into an urban lake created by damming the creek with an outlet structure and fish ladder approximately 100 feet from the confluence with the Willamette River.

Crystal Springs Creek, Crystal Creek, and Courtney Springs Creek are all covered as tributaries under the Lower Willamette Subbasin TMDLs, but have no additional 303(d) listed parameters or potential concerns.

7.1.3 Applicant's Position on Antidegradation

The applicant did not provide any discussion on the Antidegradation Policy or any data or evaluation on the potential impacts to the river, streams or wetlands as a result of the proposed project.

7.1.4 Public Comment on Antidegradation

No public comments on the Antidegradation Policy were received.

7.1.5 DEQ Evaluation on Antidegradation

The Willamette River, Crystal Springs Creek, Johnson Creek, Crystal Creek, Spring Creek, Kellogg Lake, Courtney Springs Creek, and wetlands and floodplain associated with Crystal Springs Creek, Crystal Creek, and Fairview Creek are classified as Water Quality Limited waters. Therefore, further degradation of listed parameters or degradation that would cause new parameters to be listed is not permissible.

No lowering of water quality is anticipated due to construction and operation of the proposed facilities. DEQ analyzed the potential for impacts to each water quality criterion, which is presented in Section 7 of this Evaluation and Findings Report, and prepared an Antidegradation Review in compartment with DEQ's Internal Management Directive on Antidegradation. In summary:

DEQ is reasonably assured that water quality standards for the parameters of Bacteria, Nuisance Phytoplankton, Temperature and Total Dissolved Gas would be met during construction and operation of the facilities.

DEQ is reasonably assured that water quality standards for the parameters of Narrative Criteria (as described in OAR 340-041-0007), Biocriteria, Dissolved Oxygen, pH, Total Dissolved Solids, Toxic Substances, and Turbidity will be met, provided the applicant and their contractors implement effective measures for isolation, scour protection, pollution prevention, control and containment, chemically treated wood removal and handling, and stormwater management during construction and operation of the proposed facilities, and accomplish successful compensatory mitigation efforts.

Therefore, all designated beneficial and fish uses, as listed in Section 6.1 of this Evaluation and Findings Report, will be protected.

7.1.6 DEQ Finding on Antidegradation

Inclusion of the controls and limitations identified in this Evaluation and Findings Report as conditions of the 401 WQC (attached) and strict adherence to these conditions by the applicant and their contractors will allow the project to be in compliance with DEQ's Antidegradation policy.

7.2 Statewide Narrative Criteria

340-041-0007

- (1) Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.
- (2) Where a less stringent natural condition of a water of the State exceeds the numeric criteria set out in this Division, the natural condition supersedes the numeric criteria and becomes the standard for that water body. However, there are special restrictions, described in OAR 340-041-0004(9)(a)(D)(iii), that may apply to discharges that affect dissolved oxygen.
- (3) For any new waste sources, alternatives that utilize reuse or disposal with no discharge to public waters must be given highest priority for use wherever practicable. New source discharges may be approved subject to the criteria in OAR 340-041-0004(9).
- (4) No discharges of wastes to lakes or reservoirs may be allowed except as provided in section OAR 340-041-0004(9).
- (5) Logging and forest management activities must be conducted in accordance with the Oregon Forest Practices Act to minimize adverse effects on water quality.
- (6) Log handling in public waters must conform to current Commission policies and guidelines.
- (7) Sand and gravel removal operations must be conducted pursuant to a permit from the Department of State Lands and separated from the active flowing stream by a watertight berm wherever physically practicable. Recirculation and reuse of process water must be required wherever practicable. Discharges or seepage or leakage losses to public waters may not cause a violation of water quality standards or adversely affect legitimate beneficial uses.
- (8) Road building and maintenance activities must be conducted in a manner so as to keep waste materials out of public waters and minimize erosion of cut banks, fills, and road surfaces.
- (9) In order to improve controls over nonpoint sources of pollution, federal, State, and local resource management agencies will be encouraged and assisted to coordinate planning and implementation of programs to regulate or control runoff, erosion, turbidity, stream temperature, stream flow, and the withdrawal and use of irrigation water on a basin-wide approach so as to protect the quality and beneficial uses of water and related resources. Such programs may include, but not be limited to, the following:
 - (a) Development of projects for storage and release of suitable quality waters to augment low stream flow;

- (b) Urban runoff control to reduce erosion;
 - (c) Possible modification of irrigation practices to reduce or minimize adverse impacts from irrigation return flows;
 - (d) Stream bank erosion reduction projects; and
 - (e) Federal water quality restoration plans.
- (10) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed;
 - (11) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed;
 - (12) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed;
 - (13) Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed;
 - (14) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch may not be allowed;
 - (15) Radioisotope concentrations may not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;
 - (16) Minimum Design Criteria for Treatment and Control of Wastes. Except as provided in OAR 340-041-0101 through 340-041-0350, and subject to the implementation requirements set forth in OAR 340-041-0061, prior to discharge of any wastes from any new or modified facility to any waters of the State, such wastes must be treated and controlled in facilities designed in accordance with the following minimum criteria.
 - (a) In designing treatment facilities, average conditions and a normal range of variability are generally used in establishing design criteria. A facility once completed and placed in operation should operate at or near the design limit most of the time but may operate below the design criteria limit at times due to variables which are unpredictable or uncontrollable. This is particularly true for biological treatment facilities. The actual operating limits are intended to be established by permit pursuant to ORS 468.740 and recognize that the actual performance level may at times be less than the design criteria.
- (A) Sewage wastes:
- (i) Effluent BOD concentrations in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) may not exceed one unless otherwise approved by the Commission;
 - (ii) Sewage wastes must be disinfected, after treatment, equivalent to thorough mixing with sufficient chlorine to provide a residual of at least 1 part per million after 60 minutes of contact time unless otherwise specifically authorized by permit;
 - (iii) Positive protection must be provided to prevent bypassing raw or inadequately treated sewage to public waters unless otherwise approved by the Department where elimination of inflow and infiltration would be necessary but not presently practicable; and
 - (iv) More stringent waste treatment and control requirements may be imposed where special conditions make such

action appropriate.

(B) Industrial wastes:

- (i) After maximum practicable in-plant control, a minimum of secondary treatment or equivalent control (reduction of suspended solids and organic material where present in significant quantities, effective disinfection where bacterial organisms of public health significance are present, and control of toxic or other deleterious substances);
- (ii) Specific industrial waste treatment requirements may be determined on an individual basis in accordance with the provisions of this plan, applicable federal requirements, and the following:
 - (I) The uses that are or may likely be made of the receiving stream;
 - (II) The size and nature of flow of the receiving stream;
 - (III) The quantity and quality of wastes to be treated; and
 - (IV) The presence or absence of other sources of pollution on the same watershed.
- (iii) Where industrial, commercial, or agricultural effluents contain significant quantities of potentially toxic elements, treatment requirements may be determined utilizing appropriate bioassays;
- (iv) Industrial cooling waters containing significant heat loads must be subjected to off-stream cooling or heat recovery prior to discharge to public waters;
- (v) Positive protection must be provided to prevent bypassing of raw or inadequately treated industrial wastes to any public waters;
- (vi) Facilities must be provided to prevent and contain spills of potentially toxic or hazardous materials.

7.2.1 Application of Standard for Narrative Criteria

This standard is self-explanatory in its purpose to prohibit degradation of water quality, particularly with respect to aesthetic offenses, and to ensure that where natural (non-anthropogenic) causes result in water quality that exceeds the numeric criteria, that the naturally occurring condition shall be the standard.

7.2.2 Present Condition of Narrative Criteria

7.2.2.1 Fungi and Other Growths

The degraded condition of the subject waterways is influenced by the high level of urbanization and stream and bank alteration that has occurred. Except for the Willamette River and some reaches of Johnson Creek, the subject waterways are relatively slow moving and constrained or impounded by multiple culverts and other barriers. Slow flows and nutrient laden stormwater runoff likely create conditions for algal and other growths during warm times of the year. However, there is little current information available as to unacceptable deleterious effect on stream bottoms, fish or other aquatic life; or demonstrating that fungi or other growths are injurious to health, recreation, or industry in the subject waterways.

7.2.2.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability

There is no current information available as to unacceptable taste and odor in the system of surface waters having a deleterious effect on fish, other aquatic life, potability of drinking water, or palatability of fish or shellfish. Drinking water is drawn from the Willamette River and proximal groundwater wells for communities, farms and homeowners many miles upstream of the project area. Shellfish harvest does not occur in the subject waterways.

7.2.2.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits

The affected reaches of the Willamette River, Crystal Springs Creek, Johnson Creek, Crystal Creek, Spring Creek, Kellogg Lake, Courtney Springs Creek are all located in highly urbanized areas. The proposed crossing locations of the Willamette River and Kellogg Lake are through areas of known sediment contamination and it is likely that several of the other streams proposed for crossings also contain some level of contaminated sediment.

7.2.2.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films

No information is available that indicates that any of these issues are currently present in the subject waterways at the project locations. However, the potential for sheens to appear due to accidental spills or incidental to industrial uses is present in these highly urbanized areas.

7.2.2.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch

No information is available that indicates that any of these issues are currently present in the subject waterways at the project locations.

7.2.2.6 Radioisotope Concentrations

No information is available that indicates exceedance of maximum permissible concentrations in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard.

7.2.2.7 Minimum Design Criteria for Treatment and Control of Wastes

No new or modified discharge of wastes is proposed.

7.2.3 Applicant's Position on Narrative Criteria

7.2.3.1 Fungi and Other Growths

7.2.3.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability

7.2.3.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits

7.2.3.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of

Aquatic Life with Oil Films

7.2.3.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch

7.2.3.6 Radioisotope Concentrations

7.2.3.7 Minimum Design Criteria for Treatment and Control of Wastes

The applicant did not provide data or evaluation on the potential impacts to Narrative Criteria in the subject waterways as a result of the proposed project.

7.2.4 Public Comment on Narrative Criteria

7.2.4.1 Fungi and Other Growths

7.2.4.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability

7.2.4.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits

7.2.4.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films

7.2.4.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch

7.2.4.6 Radioisotope Concentrations

7.2.4.7 Minimum Design Criteria for Treatment and Control of Wastes

No public comments were received specific to any of the Narrative Criteria listed above.

7.2.5 DEQ Evaluation on Narrative Criteria

7.2.5.1 Fungi and Other Growths

Due to the limited duration of most of the proposed impacts to waters, further degradation of Fungi and Other Growths is unlikely.

7.2.5.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability

Due to the limited duration of most of the proposed impacts to waters, further degradation of Taste, Odor, Drinking Water Potability or Fish or Shellfish Palatability is unlikely. Creation of Toxic or Other Conditions Deleterious to Fish or Aquatic Life could occur due to mobilization of existing sediment contamination; through loss of fish habitat, passage or prey species; or due to increased, uncontrolled or untreated stormwater discharge from associated impervious surfaces. Isolation of in-water work areas, containment measures and scour protection measures have been proposed to minimize any potential for mobilization of existing contaminants in sediment. Design of the project elements has considered fish passage, where appropriate, and habitat and water quality impact avoidance, minimization and mitigation. A post-construction Stormwater Management

Plan (SWMP) is being developed by the applicant, following the protocols of the City of Portland Stormwater Manual. The final plan implemented must be in accord with NPDES MS-4 permits held by the City of Portland, City of Milwaukie, Clackamas County and the City of Gresham, to achieve the highest practicable treatment and control of stormwater runoff from all impervious surfaces associated with the project.

7.2.5.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits

Due to the presence of contamination in some of the waterways proposed for crossings, changes to the stream bed or banks that alter the geomorphic and flow conditions at these locations could result in the formation of Appreciable Deleterious Bottom Deposits when aquatic life is present. Bridges proposed at Johnson Creek and Crystal Springs Creek will fully span the streams avoiding potential bed and bank alteration. Culvert crossings at Crystal Creek, Spring Creek and Courtney Springs Creek are extensions or repairs of existing culverts in areas with multiple fish passage barriers. Therefore, additional alteration of the streambed and flow at these locations are unlikely to result in formation of deleterious deposits and no sensitive aquatic species would be exposed in any event. Geomorphic and flow alterations in Kellogg Lake due to placement of the box girder structure are unlikely due to the very low velocities of the impounded creek and the size of the proposed structure being less than 10 % of the active channel size. Scour analysis at the proposed temporary work bridge piers, cofferdams and permanent bridge piers in the Willamette River indicate that protection is required to keep contaminated sediments from being mobilized. The proposed placement of sand and rock at the bridge towers has been reviewed by an independent contractor for DEQ, in conjunction with the proposed Zidell contamination cap adjacent to the western in-water pier tower, and determined to be adequate to protect from scour at up to a 500 year flood event. Therefore, proposed scour control measures will be protective of any mobilization of existing contaminated sediments such that Appreciable Deleterious Bottom Deposits will not be caused by the new structure.

7.2.5.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films

Additional Objectionable Sheens, floating solids, and the like could occur during in-water work due to spills or post-construction if stormwater runoff is not properly treated and controlled.

7.2.5.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch

Due to the limited duration of most of the proposed impacts to waters, further degradation of Aesthetic Conditions is unlikely.

7.2.5.6 Radioisotope Concentrations

Due to the limited duration of most of the proposed impacts to waters, further degradation of Radioisotopes is unlikely.

7.2.5.7 Minimum Design Criteria for Treatment and Control of Wastes

This criterion is not applicable because no new or modified discharge of wastes is proposed.

7.2.6 DEQ Finding on Narrative Criteria

7.2.6.1 Fungi and Other Growths

7.2.6.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability

7.2.6.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits

7.2.6.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films

7.2.6.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch

7.2.6.6 Radioisotope Concentrations

7.2.6.7 Minimum Design Criteria for Treatment and Control of Wastes

DEQ concludes that impacts to the narrative criteria are unlikely. However, conditions requiring spill prevention and response measures should be imposed to minimize impacts from accidental sheens, floating solids, and the like and adequate post-construction stormwater management must be implemented to prevent pollution from being discharged into waters of the state.

7.3 Bacteria

340-041-0009

- (1) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) may not exceed the criteria described in paragraphs (a) and (b) of this paragraph:
 - (a) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:
 - (A) A 30-day log mean of 126 *E. coli* organisms per 100 milliliters, based on a minimum of five (5) samples;
 - (B) No single sample may exceed 406 *E. coli* organisms per 100 milliliters.
 - (b) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.
- (2) Raw Sewage Prohibition: No sewage may be discharged into or in any other manner be allowed to enter the waters of the State, unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;
- (3) Animal Waste: Runoff contaminated with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;
- (4) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering,

irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed;

- (5) Effluent Limitations for Bacteria: Except as allowed in subsection (c) of this section, upon NPDES permit renewal or issuance, or upon request for a permit modification by the permittee at an earlier date, effluent discharges to freshwaters, and estuarine waters other than shellfish growing waters may not exceed a monthly log mean of 126 *E. coli* organisms per 100 ml. No single sample may exceed 406 *E. coli* organisms per 100 ml. However, no violation will be found, for an exceedance if the permittee takes at least five consecutive re-samples at four-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the log mean of the five re-samples is less than or equal to 126 *E. coli*. The following conditions apply:
- (a) If the Department finds that re-sampling within the timeframe outlined in this section would pose an undue hardship on a treatment facility, a more convenient schedule may be negotiated in the permit, provided that the permittee demonstrates that the sampling delay will result in no increase in the risk to water contact recreation in waters affected by the discharge;
 - (b) The in-stream criterion for chlorine listed in Table 20 must be met at all times outside the assigned mixing zone;
 - (c) For sewage treatment plants that are authorized to use reclaimed water pursuant to OAR 340, division 55, and that also use a storage pond as a means to dechlorinate their effluent prior to discharge to public waters, effluent limitations for bacteria may, upon request by the permittee, be based upon appropriate total coliform, limits as required by OAR 340, division 55:
 - (A) Level II limitations: No two consecutive samples may exceed 240 total coliform per 100 milliliters.
 - (B) Level III and Level IV limitations: No single sample may exceed 23 total coliform per 100 milliliters.
 - (C) No violation will be found for an exceedance under this paragraph if the permittee takes at least five consecutive re-samples at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample(s) were taken; and in the case of Level II effluent, the log mean of the five re-samples is less than or equal to 23 total coliform per 100 milliliters or, in the case of Level III and IV effluent, if the log mean of the five re-samples is less than or equal to 2.2 total coliform per 100 milliliters.
 - (6) Sewer Overflows in winter: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of November 1 through May 21, except during a storm event greater than the one-in-five-year, 24-hour duration storm. However, the following exceptions apply:
 - (a) The Commission may on a case-by-case basis approve a bacteria control management plan to be prepared by the permittee, for a basin or specified geographic area which describes hydrologic conditions under which the numeric bacteria criteria would be waived. These plans will identify the specific hydrologic conditions, identify the public notification and education processes that will be followed to inform the public about an event and the plan, describe the water quality assessment conducted to determine bacteria sources and loads associated with the specified hydrologic conditions, and describe the bacteria control program that is being implemented in the basin or specified geographic area for the identified sources;
 - (b) Facilities with separate sanitary and storm sewers existing on January 10, 1996, and which currently experience sanitary sewer overflows due to inflow and infiltration problems, must submit an acceptable plan to the Department at the first permit renewal, which describes actions that will be taken to assure compliance with the discharge prohibition by January 1, 2010. Where discharges occur to a receiving stream with sensitive beneficial uses, the Department may negotiate a more aggressive schedule for discharge elimination;
 - (c) On a case-by-case basis, the beginning of winter may be defined as October 15, if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses, including water contact recreation,

will not be increased due to the date change.

- (7) Sewer Overflows in summer: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm. The following exceptions apply:
 - (a) For facilities with combined sanitary and storm sewers, the Commission may on a case-by-case basis approve a bacteria control management plan such as that described in subsection (6)(a) of this rule;
 - (b) On a case-by-case basis, the beginning of summer may be defined as June 1 if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses, including water contact recreation, will not be increased due to the date change;
 - (c) For discharge sources whose permit identifies the beginning of summer as any date from May 22 through May 31: If the permittee demonstrates to the Department's satisfaction that an exceedance occurred between May 21 and June 1 because of a sewer overflow, and that no increase in risk to beneficial uses, including water contact recreation, occurred because of the exceedance, no violation may be triggered, if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.
- (8) Storm Sewers Systems Subject to Municipal NPDES Stormwater Permits: Best management practices must be implemented for permitted storm sewers to control bacteria to the maximum extent practicable. In addition, a collection-system evaluation must be performed prior to permit issuance or renewal so that illicit and cross connections are identified. Such connections must be removed upon identification. A collection system evaluation is not required where the Department determines that illicit and cross connections are unlikely to exist.
- (9) Storm Sewers Systems Not Subject to Municipal NPDES Stormwater Permits: A collection system evaluation must be performed of non-permitted storm sewers by January 1, 2005, unless the Department determines that an evaluation is not necessary because illicit and cross connections are unlikely to exist. Illicit and cross-connections must be removed upon identification.
- (10) Water Quality Limited for Bacteria: In those water bodies, or segments of water bodies identified by the Department as exceeding the relevant numeric criteria for bacteria in the basin standards and designated as water-quality limited under section 303(d) of the Clean Water Act, the requirements specified in section 11 of this rule and in OAR 340-041-0061(12) must apply.
- (11) In water bodies designated by the Department as water-quality limited for bacteria, and in accordance with priorities established by the Department, development and implementation of a bacteria management plan may be required of those sources that the Department determines to be contributing to the problem. The Department may determine that a plan is not necessary for a particular stream segment or segments within a water-quality limited basin based on the contribution of the segment(s) to the problem. The bacteria management plans will identify the technologies, best management practices and/or measures and approaches to be implemented by point and nonpoint sources to limit bacterial contamination. For point sources, their National Pollutant Discharge Elimination System permit is their bacteria management plan. For nonpoint sources, the bacteria management plan will be developed by designated management agencies (DMAs) which will identify the appropriate best management practices or measures and approaches.

7.3.1 Application of Standard of Bacteria

This is a water quality standard of public health significance. It takes into account the cumulative impacts of all coliform bacteria discharges; however, its major emphasis is on the control of human fecal coliform bacteria sources.

7.3.2 Present Condition of Bacteria

Livestock and other sources of fecal related bacteria that could enter the Willamette River exist upstream of the project area. Multiple municipal and industrial waste water discharges, which may contain bacteria, are permitted into streams in the Lower Willamette River subbasin. The Willamette River and other streams in the subbasin also receive discharges that contain bacteria when stormwater overwhelms the capacity of existing pipes that carry both sewage and stormwater, though projects to remedy these overflows are underway. Other sources of Bacteria include urban stormwater runoff, which impacts all of the subject waterways.

Because excessive levels of Bacteria in all of the subject waterways classify these as impaired, TMDLs have been developed for Bacteria in the Willamette Basin and E Coli and Fecal Coliform in the Lower Willamette Subbasin. After several years of TMDL implementation, it is anticipated that Bacteria levels will be reduced to assimilative levels in these waterways. At the present time, however, the subject waterways are still impaired for the criterion of Bacteria.

7.3.3 Applicant's Position on Bacteria

The applicant did not provide data or evaluation on the potential impacts to Bacteria in the subject waterways as a result of the proposed project.

7.3.4 Public Comment on Bacteria

No public comments have been received specific to the Bacteria criterion.

7.3.5 DEQ Evaluation on Bacteria

The proposed activities are not anticipated to introduce new sources of Bacteria to the subject waterways. In contrast, the addition of proposed post-construction stormwater management features and improvements to existing stormwater treatment facilities may help to reduce Bacteria entering the subject waterways.

7.3.6 DEQ Finding on Bacteria

The criterion of Bacteria is unlikely to be further degraded by the proposal and may be improved with implementation of the proposed post-construction stormwater management plan.

7.4 Biocriteria

340-041-0011

Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.

340-041-0002

Defines "without changes in the resident biological community" as "no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region." "Ecological integrity" is defined as "the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat for the region." An "appropriate reference site or region" is further defined as "a site on the same water body, or within the same basin or eco-region that has similar habitat conditions, and represents the water quality and

biological community attainable within the area of concern.”

7.4.1 Application of Biocriteria Standard

The biocriteria standard is meant to complement the other parameter-specific criteria in the following manner. The parameter-specific criteria are designed to give full protection to the most sensitive beneficial use, with the implicit assumption that if the most sensitive beneficial use is protected, then all uses will be protected. However, the application of these criteria is very limited in considering multiple stressors and cumulative effects. By contrast, the biocriteria are aimed at gaining the ability to assess total impact to the community in situ. Biocriteria make it possible to evaluate the impact of a source without a need for measuring every possible water quality variable. Thus, the standard is applied as a measure of the impact of a source by comparing the biological integrity (as represented by appropriate expressions) downstream of the source with that at a reference site or region.

7.4.2 Present Condition of Biocriteria

The Willamette River and Johnson Creek are both listed as impaired for the parameter of Biocriteria.

The documented biological community within the Willamette River includes resident and anadromous fish, turtles, amphibians, aquatic invertebrates, passerine birds, shore birds, raptors, and small mammals, though the water quality criteria of Biocriteria applies only to aquatic life. Some of the aquatic species of this community are listed as threatened or endangered under the Federal and State Endangered Species Acts, as detailed in the NMFS Biological Opinion and on Oregon Department of Fish and Wildlife lists. The ecological integrity of the lower Willamette River is degraded due to continued anthropogenic disturbance associated with the current and historic land use practices, particularly urban stormwater runoff and legacy toxic streambed and upland contamination.

Appropriately representative reference sites for river mile 13.8 of the Willamette River and the other stream reaches proposed for impacts as a result of the project have not been identified.

Flow alteration due to regulation by the 11 upstream dam/reservoir structures, extensive bank hardening throughout the Lower Willamette River, intensive industrial use of the project reach, historic navigational dredging, and as yet unaddressed legacy contamination all limit biological diversity and integrity for any meaningful comparisons.

Like the Willamette River, Johnson Creek, Crystal Springs Creek and Kellogg Creek/Lake support salmonids. Due to fish passage barriers throughout the systems, Spring Creek, Crystal Creek and Courtney Springs Creek do not have documented salmonid presence, though resident species are likely present. The urbanized condition of the reaches of all of these streams indicates altered channel morphology and function and impaired water quality, which in turn limit biological diversity and integrity.

7.4.3 Applicant's Position on Biocriteria

The applicant did not provide data or evaluation specific to the potential impacts to the criterion of Biocriteria in the subject waterways as a result of the proposed project. A Biological Assessment was prepared for the applicant by Parametrix with respect to potential impacts to the trust species of NMFS and USFWS. This assessment provides some information on threatened and endangered

salmonids and sturgeon, their habitat needs, and potential impacts related to the proposed stream crossings and wetland fill, but it does not address the aquatic ecosystem as a whole. The applicant also provided an Ecosystems Results Report as part of the National Environmental Policy Act (NEPA) process that provides a detailed look at the existing conditions of the affected waterways with respect to water quality, aquatic life use, vegetation, and terrestrial species use. Overall, these documents indicate that adverse changes to the ecosystems at the impact areas are not anticipated, and in some cases, ecological integrity may improve.

7.4.4 Public Comment on Biocriteria

No public comments were received specific to the criterion of Biocriteria.

7.4.5 DEQ Evaluation on Biocriteria

While stream impacts will occur due to construction of the project, the majority of potential impacts to water quality will be temporary in nature and minimized due to implementation of isolation, containment and preventative measures. Permanent impacts from the placement of new structures into waterways have also been minimized by design. Necessary scour protection measures at the in-water Willamette bridge piers have been designed to minimize impediments to aquatic life and will use materials that are conducive to fish benthic habitat needs. Compensatory mitigation will be implemented to offset unavoidable impacts and is anticipated to improve habitat and water quality conditions. Finally, on-going impacts from increased stormwater discharge from associated impervious surfaces have been addressed with the applicant's post-construction SWMP, which is anticipated to improve conditions in some areas where stormwater treatment is not currently applied or is ineffective.

7.4.6 DEQ Finding on Biocriteria

While the current biological integrity of these systems is degraded, the proposed project activities are not anticipated to have a measurable negative effect to the biological systems in the waterways, and may even improve habitat and water quality conditions. Provided all practicable isolation, containment and impact prevention measures, the comprehensive post-construction SWMP, scour protection measures to prevent mobilization of known contamination in the Willamette River and successful completion of the compensatory mitigation are implemented, DEQ is reasonably assured that Biocriteria will not be further impaired due to construction and operation of the project.

7.5 Dissolved Oxygen (DO)

340-041-0016

No wastes may be discharged and no activities may be conducted that either alone or in combination with other wastes or activities will cause violation of the following standards: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

- (1) For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, 121B, and 190B, and Figures 130B, 151B, 160B, 170B, 180A, 201A, 220B, 230B, 260A, 271B, 286B, 300B, 310B, 320B, and 340B, (as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures and, where resident trout spawning occurs, during

the time trout spawning through fry emergence occurs:

- (a) The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;
 - (b) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation;
 - (c) The spatial median inter-gravel dissolved oxygen concentration must not fall below 8.0 mg/l.
- (2) For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum (Table 21);
 - (3) For water bodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen may not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and may not fall below 4.0 mg/l as an absolute minimum (Table 21);
 - (4) For water bodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen may not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 5.5 mg/l as a 30-day mean minimum, and may not fall below 4.0 mg/l as an absolute minimum (Table 21);
 - (5) For estuarine water, the dissolved oxygen concentrations may not be less than 6.5 mg/l (for coastal water bodies);
 - (6) For ocean waters, no measurable reduction in dissolved oxygen concentration may be allowed.

7.5.1 Application of Standard of DO

Dissolved oxygen is essential for maintaining aquatic life. Historically, the depletion of dissolved oxygen was one of the most frequent water pollution problems. Its effect on aquatic organisms, especially at low concentrations, has been studied extensively. Sensitivity to low dissolved oxygen concentrations differs between species, between various life stages (egg, larvae, and adults), and between different life processes (feeding, growth, and reproduction).

7.5.2 Present Condition of DO

Sections of the Willamette River and Johnson Creek are listed as impaired for the parameter of Dissolved Oxygen.

A compilation of available data in DEQ's Laboratory Analytical Storage and Retrieval (LASAR) database indicates more than 400 measurements of Dissolved Oxygen were taken in the Willamette River from 7 different locations near the proposed bridge site from 1968 to 1971 and 1982 to 2010. The highest single measurement was 15.3 mg/L and the lowest single measurement was 5.4 mg/L, with the majority of points falling around the average (mean) of 10.3 mg/L. In addition, the applicant's 2008 Ecosystems Results Report includes data from the City of Portland collected at

the Morrison Bridge on the Willamette River from 2000 to 2007 that indicates a maximum measurement of 15.9 mg/L, a minimum measurement of 7.2 mg/L, a mean of 10.8 mg/L and a median of 11.0 mg/L.

The applicant's 2008 report also provides City of Portland data taken from the mouth of Johnson Creek from 2002 to 2007 that indicates a maximum measurement of 15.8 mg/L, a minimum measurement of 6.7 mg/L, a mean of 11.1 mg/L and a median of 10.7 mg/L.

The applicant's 2008 report also provides City of Portland data taken from the mouth of Crystal Springs Creek from 2002 to 2007 that indicates a maximum measurement of 13.6 mg/L, a minimum measurement of 7.0 mg/L, a mean of 10.6 mg/L and a median of 10.5 mg/L.

No DEQ or other data is available for Dissolved Oxygen in Crystal Creek, Spring Creek, Kellogg Lake/Creek, or Courtney Springs Creek.

7.5.3 Applicant's Position on DO

The applicant did not provide data or evaluation on the potential impacts to Dissolved Oxygen in the subject waterways as a result of the proposed project.

7.5.4 Public Comment on DO

No public comments were received specific to the criterion of Dissolved Oxygen.

7.5.5 DEQ Evaluation on DO

Dissolved Oxygen could be impaired by proposed disturbance of sediment in all of the impacted streams. The highest likelihood for such impairment would be due to disturbed sediment containing organics or contaminants capable of degrading or interacting to consume oxygen or in the event disturbed sediment is re-deposited downcurrent in areas where interstitial spaces in gravel substrate exist. However, proposed activities that could disturb sediments are of short duration and isolation of in-water work areas and application of containment and prevention measures for erosion and sediment control are proposed to avoid these potential scenarios.

7.5.6 DEQ Finding on DO

While impairment of Dissolved Oxygen currently exists in some areas of the Willamette River and Johnson Creek, proposed activities are unlikely to further degrade Dissolved Oxygen levels in these streams or any of the other streams proposed for impact, provided all practicable isolation, containment and control measures are implemented.

7.6 Nuisance Phytoplankton Growth

340-041-0019

(1)(a) The following values and implementation program must be applied to lakes, reservoirs, estuaries and streams, except for ponds and reservoirs less than ten acres in surface area, marshes and saline lakes:

(b) The following average Chlorophyll a values must be used to identify water bodies where phytoplankton may

impair the recognized beneficial uses:

- (A) Natural lakes that thermally stratify: 0.01 mg/l;
 - (B) Natural lakes that do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg/l;
 - (C) Average Chlorophyll a values may be based on the following methodology (or other methods approved by the Department): A minimum of three samples collected over any three consecutive months at a minimum of one representative location (e.g., above the deepest point of a lake or reservoir or at a point mid-flow of a river) from samples integrated from the surface to a depth equal to twice the secchi depth or the bottom (the lesser of the two depths); analytical and quality assurance methods must be in accordance with the most recent edition of Standard Methods for the Examination of Water and Wastewater.
- (2) Upon determination by the Department that the values in section (1) of this rule are exceeded, the Department may:
- (a) In accordance with a schedule approved by the Commission, conduct such studies as are necessary to describe present water quality; determine the impacts on beneficial uses; determine the probable causes of the exceedance and beneficial use impact; and develop a proposed control strategy for attaining compliance where technically and economically practicable. Proposed strategies could include standards for additional pollutant parameters, pollutant discharge load limitations, and other such provisions as may be appropriate. Where natural conditions are responsible for exceedance of the values in section (1) of this rule or beneficial uses are not impaired, the values in section (1) of this rule may be modified to an appropriate value for that water body;
 - (b) Conduct necessary public hearings preliminary to adoption of a control strategy, standards or modified values after obtaining Commission authorization;
 - (c) Implement the strategy upon adoption by the Commission.
- (3) In cases where waters exceed the values in section (1) of this rule and the necessary studies are not completed, the Department may approve new activities (which require Department approval), new or additional (above currently approved permit limits) discharge loadings from point sources provided that it is determined that beneficial uses would not be significantly impaired by the new activity or discharge.

7.6.1 Application of Standard for Nuisance Phytoplankton

Certain types of wastes in water, under proper ambient conditions, may stimulate nuisance algal growths. The magnitude of such growths is determined by measuring chlorophyll a, a photosynthetic pigment which is very closely correlated to biomass. OAR 340-41-0019 sets forth a process for determining when phytoplankton growths may be reaching nuisance proportions. This rule is designed to trigger further study and control strategies if the chlorophyll a values exceed specified levels in streams or lakes. Where natural conditions are responsible for the algal blooms, the existing level of chlorophyll is considered to be the upper level of acceptability.

7.6.2 Present Condition of Nuisance Phytoplankton

No data is available specific to Nuisance Phytoplankton levels in the subject waterways. The surface waters in the area are not listed as impaired for aquatic weeds and algae.

7.6.3 Applicant's Position on Nuisance Phytoplankton

The applicant did not provide data or evaluation on the potential impacts to Nuisance Phytoplankton in the subject waterways as a result of the proposed project. However, the

applicant's May 2008 Ecosystems Results Report includes observations of algal growths in some streams during warm months where flow has been altered and temperatures may be higher, which may be due to the heavily urbanized and altered condition of these streams.

7.6.4 Public Comment on Nuisance Phytoplankton

No comments were received related to Nuisance Phytoplankton concerns.

7.6.5 DEQ Evaluation on Nuisance Phytoplankton

While data is limited as to current status of Nuisance Phytoplankton in the subject streams, the altered condition of the stream reaches in the project impacted areas due to urbanization (channelization, bank hardening, stormwater inputs containing nutrients, bacteria and other components) have likely created conditions favorable to Nuisance Phytoplankton (quiescent sections with higher temperatures and presence of nutrients to create algal blooms). Elements of project construction are unlikely to further promote Nuisance Phytoplankton growth. To the contrary, improved treatment and control of stormwater runoff and flow improvements at culvert sections proposed for repair and extension may improve conditions to discourage algal growth.

7.6.6 DEQ Finding on Nuisance Phytoplankton

DEQ is reasonably assured that the proposed project activities will not create conditions favorable for Nuisance Phytoplankton and may even improve conditions related to this parameter.

7.7 pH

340-041-0021

(1) Unless otherwise specified in OAR 340-041-0101 through 340-041-0350, pH values (Hydrogen ion concentrations) may not fall outside the following ranges:

- (a) Marine waters: 7.0-8.5;
 - (b) Estuarine and fresh waters: See basin specific criteria (OAR 340-041-0101 through OAR 340-041-0350).
- (2) Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria are not in violation of the standard, if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria.

7.7.1 Application of Standard for pH

The values measured for pH relate to the balance of acid and alkaline substances in the water. The theoretical range is from 1 (very acid) to 14 (very alkaline). Most streams in Oregon have pH values falling somewhere between 6.5 and 8.5. There may be seasonal fluctuations in the pH number due to substances entering the water from land or bio-chemical activity in the water. Since the fish and other aquatic life in any particular stream have evolved under rather specific pH conditions, it is important to set a pH standard that reflects natural conditions and will prevent any intolerable acid/alkalinity imbalances.

7.7.2 Present Condition of pH

The Willamette Basin specific pH limit is between 6.5 to 8.5. A compilation of data from DEQ's LASAR database includes more than 400 measurements taken between 1968 to 1971 and 1982 to 2010 at five locations in proximity to the proposed bridge location on the Willamette River. These range from 6.6 to 9.8 with the vast majority of measurements falling around the average (mean) of 7.5. Direct measurement data on pH is not available for any of the other subject streams.

7.7.3 Applicant's Position on pH

The applicant did not provide data or evaluation on the potential impacts to pH in the waterways proposed for impact as a result of the project.

7.7.4 Public Comment on pH

No comments were received specific to the criterion of pH.

7.7.5 DEQ Evaluation on pH

Activities that could temporarily alter local pH in the subject streams include contact with uncured concrete, mobilization of some contaminants into the water column, or excessive algal blooms. Concrete must be isolated from contact with waters until it is cured. Isolation of in-water work areas and containment measures must be employed to eliminate or minimize disturbance of sediment. In the small, slow moving, urbanized streams where algal blooms may occur, frequency may be decreased due to flow improvements expected with implementation of proposed culvert repairs or extensions.

7.7.6 DEQ Finding on pH

Provided that adequate isolation, containment and spill contingency measures are implemented, DEQ is reasonably assured that pH will not be further degraded in the streams proposed for impact as a result of the project.

7.8 Temperature

340-041-0028

- (1) Background. Water temperatures affect the biological cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations throughout the State. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows, and stream velocity, volume, and flow. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals.
- (2) Policy. It is the policy of the Commission to protect aquatic ecosystems from adverse warming and cooling caused by anthropogenic activities. The Commission intends to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities. The Commission recognizes that some of the State's waters will, in their natural condition, not provide optimal thermal conditions at all places and at all times that salmonid use occurs. Therefore, it is especially important to minimize additional warming due to anthropogenic sources. In addition, the Commission acknowledges that control technologies, best management practices and other measures to reduce anthropogenic warming are evolving and that the implementation to meet these criteria will be an iterative process. Finally, the Commission notes that it will reconsider beneficial use designations in the event that man-made obstructions or barriers to anadromous fish passage are removed and may

justify a change to the beneficial use for that water body.

- (3) Purpose. The purpose of the temperature criteria in this rule is to protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.
- (4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:
 - (a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;
 - (b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to 340-041-340: Figures 130A, 151A, 160A, 170A, 180A, 201A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);
 - (c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);
 - (d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have coldwater refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;
 - (e) The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 121B, 140B, 190B, and 250B, and Figures 180A, 201A, 260A and 310A may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit);
 - (f) The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130B, 151B, 160B, 170B, 180A, 201A, 260A, 310B, and 340B, may not exceed 12.0 degrees Celsius (53.6 degrees Fahrenheit). From August 15 through May 15, in bull trout spawning waters below Clear Creek and Mehlhorn reservoirs on Upper Clear Creek (Pine Subbasin), below Laurance Lake on the Middle Fork Hood River, and below Carmen reservoir on the Upper McKenzie River, there may be no more than a 0.3 degrees Celsius (0.5 Fahrenheit) increase between the water temperature immediately upstream of the reservoir and the water temperature immediately downstream of the spillway when the ambient seven-day-average maximum stream temperature is 9.0 degrees Celsius (48 degrees Fahrenheit) or greater, and no more than a 1.0 degree Celsius (1.8 degrees Fahrenheit) increase when the seven-day-average stream temperature is less than 9 degrees Celsius.
- (5) Unidentified Tributaries. For waters that are not identified on the “Fish Use Designations” maps referenced in section (4) of this rule, the applicable criteria for these waters are the same criteria as is applicable to the nearest downstream water body depicted on the applicable map. This section (5) does not apply to the “Salmon and Steelhead Spawning Use Designations” maps.
- (6) Natural Lakes. Natural lakes may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other

aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of a natural lake is the same as its natural thermal condition.

- (7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.
- (8) Natural Conditions Criteria. Where the department determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based criteria in section (4) of this rule, the natural thermal potential temperatures supersede the biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body.
- (9) Cool Water Species.
 - (a) No increase in temperature is allowed that would reasonably be expected to impair cool water species. Waters of the State that support cool water species are identified on subbasin tables and figures set out in OAR 340-041-0101 to 340-041-0340; Tables 140B, 190B and 250B, and Figures 180A, 201A and 340A.
 - (b) See OAR 340-041-0185 for a basin specific criterion for the Klamath River.
- (10) Borax Lake Chub. State waters in the Malheur Lake Basin supporting the Borax Lake chub may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the natural condition.
- (11) Protecting Cold Water.
 - (a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead, or bull trout are present.
 - (b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:
 - (A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or
 - (B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.
 - (c) The cold water protection narrative criteria in subsection (a) do not apply if:
 - (A) There are no threatened or endangered salmonids currently inhabiting the water body;

- (B) The water body has not been designated as critical habitat; and
 - (C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.
- (12) Implementation of the Temperature Criteria.
- (a) Minimum Duties. There is no duty for anthropogenic sources to reduce heating of the waters of the State below their natural condition. Similarly, each anthropogenic point and nonpoint source is responsible only for controlling the thermal effects of its own discharge or activity in accordance with its overall heat contribution. In no case may a source cause more warming than that allowed by the human use allowance provided in subsection (b) of this rule.
 - (b) Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:
 - (A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or
 - (B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.
 - (C) Point sources must be in compliance with the additional mixing zone requirements set out in OAR 340-041-0053(2)(d).
 - (D) A point source in compliance with the temperature conditions of its NPDES permit is deemed in compliance with the applicable criteria.
 - (c) Air Temperature Exclusion. A water body that only exceeds the criteria set out in this rule when the exceedance is attributed to daily maximum air temperatures that exceed the 90th percentile value of annual maximum seven-day average maximum air temperatures calculated using at least 10 years of air temperature data, will not be listed on the section 303(d) list of impaired waters and sources will not be considered in violation of this rule.
 - (d) Low Flow Conditions. An exceedance of the biologically-based numeric criteria in section (4) of this rule, or an exceedance of the natural condition criteria in section (8) of this rule will not be considered a permit violation during stream flows that are less than the 7Q10 low flow condition for that water body.
 - (e) Forestry on State and Private Lands. For forest operations on State or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770) deemed in compliance with this rule. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards.
 - (f) Agriculture on State and Private Lands. For farming or ranching operations on State or private lands, water quality standards are intended to be attained and are implemented through the Agricultural Water Quality Management Act (ORS 568.900 to 568.933) and rules thereunder, administered by the Oregon Department of Agriculture. Therefore, farming and ranching operations that are in compliance with the Agricultural Water Quality

Management Act requirements will not be subject to DEQ enforcement under this rule. DEQ will work with the Oregon Department of Agriculture to revise the Agricultural Water Quality Management program to attain water quality standards.

- (g) Agriculture and Forestry on Federal Lands. Agriculture and forestry activities conducted on federal land must meet the requirements of this rule and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this rule.
- (h) Other Nonpoint Sources. The department may, on a case-by-case basis, require nonpoint sources (other than forestry and agriculture), including private hydropower facilities regulated by a 401 water quality certification, that may contribute to warming of State waters beyond 0.3 degrees Celsius (0.5 degrees Fahrenheit), and are therefore designated as water-quality limited, to develop and implement a temperature management plan to achieve compliance with applicable temperature criteria or an applicable load allocation in a TMDL pursuant to OAR 340-042-0080.
 - (A) Each plan must ensure that the nonpoint source controls its heat load contribution to water temperatures such that the water body experiences no more than a 0.3 degrees Celsius (0.5 degree Fahrenheit) increase above the applicable criteria from all sources taken together at the maximum point of impact.
 - (B) Each plan must include a description of best management practices, measures, effluent trading, and control technologies (including eliminating the heat impact on the stream) that the nonpoint source intends to use to reduce its temperature effect, a monitoring plan, and a compliance schedule for undertaking each measure.
 - (C) The Department may periodically require a nonpoint source to revise its temperature management plan to ensure that all practical steps have been taken to mitigate or eliminate the temperature effect of the source on the water body.
 - (D) Once approved, a nonpoint source complying with its temperature management plan is deemed in compliance with this rule.
- (i) Compliance Methods. Anthropogenic sources may engage in thermal water quality trading in whole or in part to offset its temperature discharge, so long as the trade results in at least a net thermal loading decrease in anthropogenic warming of the water body, and does not adversely affect a threatened or endangered species. Sources may also achieve compliance, in whole or in part, by flow augmentation, hyporheic exchange flows, outfall relocation, or other measures that reduce the temperature increase caused by the discharge.
- (j) Release of Stored Water. Stored cold water may be released from reservoirs to cool downstream waters in order to achieve compliance with the applicable numeric criteria. However, there can be no significant adverse impact to downstream designated beneficial uses as a result of the releases of this cold water, and the release may not contribute to violations of other water quality criteria. Where the Department determines that the release of cold water is resulting in a significant adverse impact, the Department may require the elimination or mitigation of the adverse impact.
- (13) Site-Specific Criteria. The Department may establish, by separate rulemaking, alternative site-specific criteria for all or a portion of a water body that fully protects the designated use.
 - (a) These site-specific criteria may be set on a seasonal basis as appropriate.
 - (b) The Department may use, but is not limited by the following considerations when calculating site-specific criteria:

- (A) Stream flow;
 - (B) Riparian vegetation potential;
 - (C) Channel morphology modifications;
 - (D) Cold water tributaries and groundwater;
 - (E) Natural physical features and geology influencing stream temperatures; and
 - (F) Other relevant technical data.
- (c) DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.
- (d) Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected.

7.8.1 Application of Standard for Temperature

Oregon's water temperature standard was adopted by the Environmental Quality Commission (EQC) based on research regarding effects of water temperature on salmonid productivity, modeling temperature effects of various activities, and identification of sensitive habitats.

Water quality criteria produced by national fishery experts, and provided by the federal Water Pollution Control Administration, recommended a maximum not-to-be exceeded temperature of 68°F (20°C) for salmonid growth and migration routes and 55.4°F (13°C) for salmonid spawning and egg development waters. Because of the number of trout and salmon waters that had been destroyed or made marginal or non-productive nationwide, it was further recommended that the remaining trout and salmon waters be protected. More specifically that inland trout streams and headwaters of salmon streams should not be warmed.

As temperatures increase above the optimal range, spawning and egg development becomes rapidly impaired, thus limiting reproduction. With increasing temperature, salmonids and trout experience sublethal effects of impaired feeding, decreased growth rates, reduced resistance to disease and parasites, increased sensitivity to toxics, intolerance with migration, reduced ability to compete with more temperature resistant species, and increased vulnerability to predation. If temperatures are high enough for sustained periods, mortality occurs. In addition, other water quality parameters (such as dissolved oxygen) may also be adversely affected by elevated temperatures. Based on the available information, the temperature standard was established with the primary intent of protecting the most temperature sensitive species occurring in the subject stream. It was recognized that natural temperatures may exceed the desirable upper limit for protection. However, the determination made in the adoption of the standard was that when temperatures are above the optimum established as the upper limit in the standard, discharges of waste or activities which cause a measurable increase should not be allowed.

DEQ has traditionally applied the temperature standard to activities that cause a change in temperature as well as to discharges that cause a change in temperature. The intent is to protect the fishery values that the standard was adopted to protect. Thus, if natural temperatures are above the optimum specific to the waterbody, a point source discharge will not be approved if it will cause a

0.5°F (0.3°C) or more increase in temperature outside of a limited size "mixing zone" which is established in the waste discharge permit for the source. (The mixing zone size and shape is established to assure that beneficial uses are not impaired, including fishery uses.) Similarly, an activity or project that does not result in a discharge of waste but would cause a 0.5°F (0.3°C) or more increase in the temperature of the stream compared to the temperature that would exist without the activity or project would not be approved.

7.8.2 Present Condition of Temperature

A compilation of data from DEQ's LASAR database includes more than 400 measurements between 1968 to 1971 and 1982 to 2010 at five sites proximal to river mile 13.8 of the Willamette River. The highest single measurement was 25.5 °C with a range of approximately 15.5°C to 22.5°C occurring consistently from June through September. These temperatures are largely in exceedance of the designated migration corridor fish use temperature of 20°C for the Willamette River from mid-June into September. The lowest single measurement was 3°C with a range of approximately 6°C to 8.2°C consistently occurring from November through March.

DEQ LASAR data also includes two data collection points on Johnson Creek near the proposed impact area. While data from these locations is limited, it does indicate measurements of 20°C and 21.5°C in late July of 2001 and 2002. These temperatures are well above the designated salmon and trout rearing and migration fish use temperature of 18°C in Johnson Creek.

7.8.3 Applicant's Position on Temperature

The applicant did not provide data or evaluation on the potential impacts to Temperature in the subject streams as a result of the proposed project.

7.8.4 Public Comment on Temperature

No comments were received specific to the criterion of Temperature.

7.8.5 DEQ Evaluation on Temperature

Changes to the parameter of Temperature within the impacted streams could be caused by a combination of removal of overhanging vegetation from small streams, which could elevate stream temperatures, and addition of permanent shading due to new crossing structures, which could reduce stream temperatures. In cases of new bridges, shade lost from this vegetation removal is replaced by new overwater structures. However, the size of the waterways at the Willamette and Kellogg Lake bridges negates these impacts. At culvert replacements on small streams, vegetation removal is minimal and new shade resulting from extended culvert lengths is negligible.

7.8.6 DEQ Finding on Temperature

DEQ is reasonably assured that Temperature will not be further impaired in any of the subject streams as a result of any of the proposed project activities.

7.9 Total Dissolved Gas

340-041-0031

- (1) Waters will be free from dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such water.
- (2) Except when stream flow exceeds the ten-year, seven-day average flood, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 110 percent of saturation. However, in hatchery-receiving waters and other waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 105 percent of saturation.

7.9.1 Application of Standard for Total Dissolved Gas

Part (1) of this rule refers to noxious gases that sometimes result from putrescible substances in the water. Putrescible substances may be from discharged wastes or they may be from accumulations of naturally occurring organic debris settled in stream or reservoir bottoms. Such gases have two primary adverse properties when in excess concentrations:

1. Some can be directly toxic to aquatic life; and,
2. Others consume dissolved oxygen which may lead to indirect mortalities.

Part (2) of this rule involves the supersaturation of atmospheric gases in water may cause either crippling or lethal gas bubbles to form in the tissues of fish. The standard, based on scientifically derived evidence, is designed to prohibit discharges or activities that will result in atmospheric gases reaching known harmful concentrations. The EPA and the American Fisheries Society have identified six ways that total dissolved gas supersaturation can occur:

1. Excessive biological activity--dissolved oxygen concentrations often reach supersaturation because of excessive algal photosynthesis. Gas bubble disease in fishes results, in part, from algal blooms. Algal blooms often accompany an increase in water temperature and this higher temperature further contributes to supersaturation.
2. Water spillage at hydropower dams caused supersaturation. When excess water is spilled over the face of a dam, it entrains air as it plunges to the stilling or plunge pool at the base of the dam. The momentum of the fall carries the water and entrained gases to great depths in the pool; and, under increased hydrostatic pressure, the entrained gases are driven into solution, causing supersaturation of dissolved gases.
3. Natural waterfalls with deep plunge basins can cause supersaturation and subsequent adverse effects to fish.
4. The use of air in turbine intakes to avoid cavitation creates supersaturation--a condition that can be avoided if identified.
5. Improper engineering of hatchery water supplies can cause Venturi action.

6. Gas bubble disease may be induced by discharges from power-generating and other thermal sources. Cool, gas-saturated water is heated as it passes through the condenser or heat exchanger. As the temperature of the water rises, percent saturation increases because of the reduced solubility of gases at high temperatures. Thus, the discharged water becomes supersaturated with gases and fish or other organisms living in the heated water may exhibit gas bubble disease.

7.9.2 Present Condition of Total Dissolved Gas

No data is available to characterize the existing conditions of Total Dissolved Gas concentrations in any of the streams proposed for impact as a result of the project. The Willamette River is regulated by multiple dams many miles upstream of the proposed project area, but the distance and great dilution of the river make it unlikely that any dam related increases in Total Dissolved Gas would be measurable at the project areas. In addition, urbanized stream sections where algal blooms may occur could exhibit increased levels of Total Dissolved Gas due to algal photosynthesis raising Dissolved Oxygen levels and increased temperatures enhancing supersaturation potential. However, these small stream sections are not associated with dam spill over, are likely of limited area and only seasonally present. Therefore, on-going impairment of Total Dissolved Gas in the subject waterways is unlikely.

7.9.3 Applicant's Position on Total Dissolved Gas

The applicant did not provide data or evaluation on the potential impacts to Total Dissolved Gas in the subject waterways as a result of the proposed project.

7.9.4 Public Comment on Total Dissolved Gas

No comments were received specific to the criterion of Total Dissolved Gas.

7.9.5 DEQ Evaluation on Total Dissolved Gas

Sources of impairment of Total Dissolved Gas are unlikely in the project areas of the subject streams and activities proposed are not anticipated to introduce any sources.

7.9.6 DEQ Finding on Total Dissolved Gas

DEQ is reasonably assured that Total Dissolved Gas will not be further degraded in any of the waterway reaches proposed for impact as a result of the project.

7.10 Total Dissolved Solids (TDS)

340-041-0032

Total Dissolved Solids: The concentrations listed in the basin specific criteria found in OAR 340-041-0101 through 340-041-0350, may not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary.

7.10.1 Application of Standard for Total Dissolved Solids

Certain dissolved chemicals in water are known to be toxic to aquatic life and antagonistic to higher animals when in drinking water at low concentrations. Maximum allowable concentrations

of the known toxic or offensive substances have been incorporated in standards for the protection of both aquatic and human life.

Water quality may also be affected by a number of other substances (e.g., calcium, sodium, phosphorus, iron, etc.) that may be undesirable either individually or collectively to domestic, industrial, or agricultural uses when in high concentrations. A measurement of their collective concentration in water is specific conductance, which can be used as a surrogate for total dissolved solids.

7.10.2 Present Condition of Total Dissolved Solids

There is no data available to characterize the current condition of Total Dissolved Solids in the Willamette River. The Willamette River is not listed as impaired for the parameter of Total Dissolved Solids, however, multiple parameters that could be related to Total Dissolved Solids are listed as impaired or with potential concern for impairment. These include Dioxin, Mercury, Iron, DDT, DDE, PCBs, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene. DEQ sampling and analysis indicates that some of these and other toxic substances currently exist within sediment in areas of the Willamette River at the project area and in adjacent (Zidell and OMSI) and nearby (Ross Island Lagoon) areas. Only total PCB Arochlors, total DDx (DDT, DDD and DDE), and Zinc are found at levels above national Probable Effects Level (PEL) screening values.

The applicant's Biological Assessment states that the City of Milwaukie has data indicating that PCBs are found in sediments in Kellogg Lake. However, concentration levels were not provided and DEQ's LASAR database does not contain data on PCB levels or any other toxic substances in Kellogg Lake or any of the other subject streams.

7.10.3 Applicant's Position on Total Dissolved Solids

The applicant did not provide data or evaluation specific to potential impacts to Total Dissolved Solids in the waterways proposed for impact as a result of the project.

7.10.4 Public Comment on Total Dissolved Solids

No comments were received specified to the criterion of Total Dissolved Solids.

7.10.5 DEQ Evaluation on Total Dissolved Solids

The potential for increases in levels of Total Dissolved Solids could arise as a result of disturbance of contaminated sediment or accidental spills of mechanical fluids. For Zinc in the Willamette River, and other metals potentially present in sediments in other urban stream sections proposed for disturbance, metals are anticipated to be strongly associated with organic portions of sediments present and the proposed disturbance is unlikely to cause dissociation or partitioning of these metals to a dissolved state.

In contrast, DDT and PCBs have hydrophilic properties, and PCBs have been shown to be released into the water column during disturbance through dredging in amounts of 2 to 3% of the mass present (Bridges, 2008).

Concentrations of total PCB Aroclors above PEL screening levels found in the samples of sediments at Willamette River mile 12.1 East, 13.1 East and 13.3 East range from non-detect to 520 µg/kg [or parts per billion (ppb)]. Conservatively assuming 3% of 520 ppb will become dissolved indicates that up to 15.6 ppb could potentially become available to the water column over the disturbed area. Given that dredging is not proposed, the minor nature of riverbed disturbance that could occur and the large dilution volume of the Willamette River, it is unlikely that the acute freshwater water quality standard for PCBs of 2.0 µg/L [or parts per billion (ppb)] will be exceeded as a result of mobilization into the water column, even using this conservative approach. Further, placement of approximately one foot of clean sand over the areas that could potentially be disturbed in the Willamette River prior to any work taking place will contain any existing contamination and prevent it from partitioning to dissolved portions. Given the minimal potential lake bed disturbance, lack of current and high dilution volume of Kellogg Lake, it is similarly unlikely that exceedances of the acute freshwater water quality standard for PCBs will occur as a result of the project.

Concentrations of DDT above PEL screening levels found in the samples of sediments at Willamette River mile 12.1 East and 13.1 East range from 5.8 ppb to 73.13 ppb. Assuming 3% of the highest mass will become dissolved indicates that approximately 2.19 ppb could potentially become available to the water column. Given the dilution volume of the Willamette River, it is unlikely that the acute freshwater water quality standard for DDT of 1.1 ppb will be exceeded as a result of mobilization into the water column, even using this conservative approach. Further, placement of approximately one foot of clean sand over the areas that could potentially be disturbed prior to any work taking place will contain any existing contamination and prevent it from partitioning to dissolved portions.

While accidental spill of fluids from mechanical equipment is a risk with any construction near, over or in water, appropriate measures for spill prevention, containment and cleanup can be applied to minimize impacts to the water column.

Creosote treated wood piles are common in derelict pile fields. And release of undegraded chemicals pooled in piling holes, liberated by breaking of chemically treated wood piles, or disturbance of contaminated sediment at the base of piles can increase levels of Total Dissolved Solids in the water column. Care must be taken to apply appropriate management practices and containment measures during removal of chemically treated wood pilings, as proposed for compensatory mitigation.

7.10.6 DEQ Finding on Total Dissolved Solids

While concentrations of some contaminants present in sediments with the potential to be disturbed could become dissolved, sand capping and scour countermeasures that limit any potential for disturbance, coupled with the dilution potential, give DEQ reasonable assurance that Total Dissolved Solids will not be further degraded in the Willamette River and Kellogg Lake.

Spills prevention, control, equipment inspection and maintenance, and cleanup measures must be incorporated into conditions in the certification and implemented by the applicant at all interfaces with streams or other waters of the state.

Chemically treated wood removal, handling, and containment measures must be incorporated into conditions in the certification and implemented by the applicant at piling removal sites.

7.11 Toxic Substances

340-041-0033

- (1) Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife, or other designated beneficial uses.
- (2) Levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20, 33A, and 33B. Tables 33A and 33B, adopted on May 20, 2004, update Table 20 as described in this section.
 - (a) Each value for criteria in Table 20 is effective until the corresponding value in Tables 33A or 33B becomes effective.
 - (A) Each value in Table 33A is effective on February 15, 2005, unless EPA has disapproved the value before that date. If a value is subsequently disapproved, any corresponding value in Table 20 becomes effective immediately. Values that are the same in Tables 20 and 33A remain in effect.
 - (B) Each value in Table 33B is effective upon EPA approval.
 - (b) The department will note the effective date for each value in Tables 20, 33A, and 33B as described in this section.
- (3) To establish permit or other regulatory limits for toxic substances for which criteria are not included in Tables 20, 33A, or 33B, the department may use the guidance values in Table 33C, public health advisories, and other published scientific literature. The department may also require or conduct bio-assessment studies to monitor the toxicity to aquatic life of complex effluents, other suspected discharges, or chemical substances without numeric criteria.

7.11.1 Application of Standard for Toxic Substances

This standard provides protection for humans, wildlife, and aquatic life from adverse effects resulting from the presence of toxic substances above natural levels, either alone or in combination with other chemicals or substances. Where needed, DEQ can consider additional studies reported in the scientific literature to review applicability of numeric criteria, or to set guidance values. Bioassays can be used to determine effects of site-specific effluents or chemical substances on aquatic life.

7.11.2 Present Condition of Toxic Substances

The Willamette River is currently listed as impaired or with potential concern for impairment for multiple Toxic Substances. These include Dioxin, Mercury, Iron, DDT, DDE, PCB, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene. DEQ sampling and analysis indicates that some of these and other Toxic Substances currently exist within sediment in areas of the Willamette River at the project area and in adjacent (Zidell and OMSI) and nearby (Ross Island Lagoon) areas.

Legacy toxic contamination is widespread in the lower Willamette River as indicated by the designation as the Portland Harbor Superfund Site. However, recent DEQ sediment sampling and analysis in the Willamette River at the proposed bridge site and adjacent areas indicates that only total PCB Arochlors, total DDx (DDT, DDD and DDE), and Zinc are found at levels above national PEL screening values.

The applicant's Biological Assessment indicates the City of Milwaukie has data indicating that PCBs are found in sediments in Kellogg Lake. However, concentration levels were not provided and DEQ's LASAR database does not contain data on PCB levels or other toxic substances in Kellogg Lake or any of the other subject streams.

7.11.3 Applicant's Position on Toxic Substances

The applicant provided data or information on existing conditions of Toxic Substances in the Willamette River and Kellogg Lake as part of the Biological Assessment and Ecosystem Results Report. While analysis focused on mobilization of Toxic Substances as a result of project activities was not provided, the applicant concluded from the results of their Hydraulic Analysis in the Willamette River that the potential for scour at the new bridge piers and cofferdams installed to place them, could occur and mobilize existing contaminants. Therefore, the applicant proposed placement of a protective clean sand cap layer throughout the permanent and temporary in-water structures footprints and also permanent scour control measures at the piers. The applicant also determined that scour in Kellogg Lake was unlikely to occur as a result of placement of the new bridge structure. The applicant's position is that management practices applied during construction and scour control measures in place following construction will prevent introduction or mobilization of Toxic Substances over the entire project.

7.11.4 Public Comment on Toxic Substances

No comments were received specific to the criterion of Toxic Substances.

7.11.5 DEQ Evaluation on Toxic Substances

The potential for increases in levels of Toxic Substances could arise as a result of disturbance and mobilization of contaminated sediment, accidental spills of mechanical fluids, and uncontrolled removal of chemically treated wood pilings.

Due to the existence of contaminated sediments at the Willamette River Bridge project area and at the adjacent Zidell site that is proposed to implement an in-water sediment cap remediation project concurrent with the proposed TriMet bridge, DEQ contracted an independent, third party to review the hydraulic and geomorphic alteration analyses associated with each project. The intent of the evaluation was to ensure that both projects had done adequate analysis, particularly at the in-water interface of the projects, to design appropriate measures to prevent project induced scour or other hydraulic or geomorphic changes that could mobilize contaminants. In determining if the project proposals were preventive of contaminant mobilization, DEQ asked the contractor to consider: the interaction and potential hydraulic/geomorphic effects of the west pier and the cap; the capability, validity, and calibration of models and empirical analyses used; and if there was adequate consideration of flow, flood, tidal influence, wave/wake action, wind, propeller wash, bathymetry, substrate material, bank stability, scour potential, and other fluvial and geomorphic parameters. In

consideration of additional, clarifying information from both applicants, GeoEngineers was confident that adequate scour protection measures were proposed by both applicants to substantially eliminate scour associated with both projects during a realistic range of flood flows.

While accidental spill of fluids from mechanical equipment is a risk with any construction near, over or in water, appropriate measures for spill prevention, containment and cleanup can be applied to minimize impacts to the water column.

Creosote treated wood piles are common in derelict pile fields. And release of undegraded chemicals pooled in piling holes, liberated by breaking of chemically treated wood piles, or disturbance of contaminated sediment at the base of piles can increase levels of Toxic Substances in the water column. Care must be taken to apply appropriate management practices and containment measures during removal of chemically treated wood pilings, as proposed for compensatory mitigation.

7.11.6 DEQ Finding on Toxic Substances

While concentrations of some contaminants present in sediments with the potential to be disturbed could become mobilized, sand capping that limits any potential for disturbance, installation of proposed scour protection measures, and implementation of other management practices during construction give DEQ reasonable assurance that Toxic Substances will not be further degraded in the Willamette River, Kellogg Lake, and other subject streams.

Spills prevention, control, equipment inspection and maintenance, and cleanup measures must be incorporated into conditions in the certification and implemented by the applicant at all interfaces with streams or other waters of the state.

Chemically treated wood removal, handling, and containment measures must be incorporated into conditions in the certification and implemented by the applicant at piling removal sites.

7.12 Turbidity

340-041-0036

Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

- (1) Emergency activities: Approval coordinated by the Department with the Oregon Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;
- (2) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14I-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

7.12.1 Application of Standard for Turbidity

Turbidity is a measure of the optical properties of water and is used to indicate the lack of clarity in water. Turbidity results from particulate and dissolved phase matter being held in suspension which increases scattering and absorption of light rather than its transmittance along straight lines. The standard is designed to minimize the addition of soil particles or any other suspended substances that would cause significant increases in the river's normal, seasonal turbidity pattern.

7.12.2 Present Condition of Turbidity

The Willamette River is a large system fed by multiple major and minor tributaries and flowing through areas with land use practices varying from rural areas to intensive agricultural use to highly urban and industrial uses. As a result of these various land use practices, both point source discharges and non-point source runoff discharges to the Willamette River and its tributaries contribute to increased turbidity at varying levels seasonally. Thus, turbidity in the system is widely variable and typically higher during winter high flow conditions.

Compilation of limited available field data from DEQ's LASAR database collected in 2002, 2003 and 2005 in the immediate bridge project area in the Willamette River indicates ambient turbidities ranging from 2 NTU to 12 NTU in February, April, July, August and September with single readings of 22 NTU in April and September. While the other subject streams also have urban location induced higher turbidities during higher flows, summer low flows are anticipated to have relatively low turbidities.

7.12.3 Applicant's Position on Turbidity

The applicant's Biological Assessment discussed impacts to turbidity in each fish bearing waterway during each construction activity. The applicant's position is that potential increases in Turbidity related to construction work will be minimized through implementation of management practices and will be of short durations and magnitudes, such that impacts to fish will not be detrimental.

7.12.4 Public Comment on Turbidity

No comments were received specific to the criterion of Turbidity.

7.12.5 DEQ Evaluation on Turbidity

Elevated Turbidity can occur for varying durations and at varying intensities depending on a combination of several factors, including: substrate composition; stream flow; stream gradient; depth, magnitude, duration, and speed of disturbance; seasonal timing; and efficacy of turbidity control measures. Discharge of uncontrolled stormwater runoff or construction process wastewater can also increase turbidity, in both the periodic and chronic timescale.

The proposed cofferdams will isolate much of the in-water construction from river contact and, thus prevent turbidity increases. However, short term, limited magnitude turbidity increases are anticipated in the Willamette River at the bridge project area during placement of spuds, sand cap, temporary work bridge piles, cofferdams, and scour protection measures; and during removal of

spuds, temporary work bridge piles, and cofferdams; and near the St. John's Bridge during removal of derelict piles, as proposed for compensatory mitigation.

Turbidity control measures will be applied, but short term, limited magnitude turbidity increases are anticipated in Crystal Creek, Spring Creek, and Courtney Springs Creek during culvert replacement or extension work; and in Crystal Springs Creek during channel restoration work, as proposed for compensatory mitigation.

Turbidity control measures will be applied, but short term, limited magnitude turbidity increases are anticipated in Kellogg Lake during installation of temporary work bridge piles and permanent piers and during removal of derelict piles as proposed for compensatory mitigation.

All stormwater discharges will be treated to remove turbidity causing components prior to discharge, in compliance with the City of Portland Stormwater Manual and NPDES MS-4 permit. Any discharge of construction related process wastewater must comply with applicable NPDES permits or adequate treatment and management practices to prevent turbid discharges.

7.12.6 DEQ Finding on Turbidity

Provided the proposed isolation and turbidity control measures and the City of Portland compliant post-construction stormwater management plan are implemented, DEQ is reasonably assured that Turbidity will not be degraded in the subject streams as a result of construction and operation of the proposed facilities.

7.13 Basin-Specific Criteria (Willamette Basin)

340-041-340

Beneficial Uses to Be Protected in the Willamette Basin

(1) Water quality in the Willamette Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 340A (August 2005).

(2) Designated fish uses to be protected in the Willamette Basin are shown in Figures 340A (November 2003) and 340B (August 2005).

[ED. NOTE: Tables referenced are available from the agency.]

340-041-0344

Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:

Columbia Slough -- Bacteria, Dissolved Oxygen, Chlorophyll a, pH, lead, PCBs, Dieldrin, Dioxin, DDE/DDT, and Phosphorus -- November 25, 1998

Pudding -- Ammonia and BOD -- October 18, 1993

Rickreall Creek -- BOD -- April 18, 1994

Tualatin -- Temperature, Bacteria, Dissolved Oxygen, Settleable Volatile Solids, Ammonia, Chlorophyll a, pH and Phosphorus -- August 7, 2001

Yamhill -- Phosphorus -- December 8, 1992

Willamette -- Dioxin -- February 25, 1991

Willamette Coast Fork -- Ammonia and Phosphorus -- May 17, 1996

340-041-0345

Water Quality Standards and Policies for this Basin

(1) pH (hydrogen ion concentration). pH values may not fall outside the following ranges:

(a) All basin waters (except main stem Columbia River and Cascade lakes): 6.5 to 8.5;

(b) Cascade lakes above 3,000 feet altitude: 6.0 to 8.5.

(2) Total Dissolved Solids. Guide concentrations listed may not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0340: Willamette River and Tributaries --100.0 mg/l.

(3) Minimum Design Criteria for Treatment and Control of Sewage Wastes:

(a) Willamette River and tributaries except Tualatin River Subbasin:

(A) During periods of low stream flows (approximately May 1 to October 31): Treatment resulting in monthly average effluent concentrations not to exceed 10 mg/l of BOD and 10 mg/l of SS or equivalent control;

(B) During the period of high stream flows (approximately November 1 to April 30): A minimum of secondary treatment or equivalent control and unless otherwise specifically authorized by the Department, operation of all waste treatment and control facilities at maximum practical efficiency and effectiveness so as to minimize waste discharges to public waters.

(b) Main stem Tualatin River from mouth to Gaston (river mile 0 to 65):

(A) During periods of low stream flows (approximately May 1 to October 31): Treatment resulting in monthly average effluent concentrations not to exceed 10 mg/l of BOD and 10 mg/l of SS or equivalent control;

(B) During the period of high stream flows (approximately November 1 to April 30): Treatment resulting in monthly average effluent concentrations not to exceed 20 mg/l of BOD and 20 mg/l of SS or equivalent control.

(c) Main stem Tualatin River above Gaston (river mile 65) and all tributaries to the Tualatin River: Treatment resulting in monthly average effluent concentrations not to exceed 5 mg/l of BOD and 5 mg/l of SS or equivalent control;

(d) Tualatin River Subbasin: The dissolved oxygen level in the discharged effluents may not be less than 6 mg/l;

(4) Nonpoint source pollution control in the Tualatin River subbasin and lands draining to Oswego Lake:

(a) Subsection (5)(b) of this rule applies to any new land development within the Tualatin River and Oswego Lake subbasins, except those developments with application dates prior to January 1, 1990. The application date is the date on which a complete application for development approval is received by the local jurisdiction in accordance with the regulations of the local jurisdiction;

(b) For land development, no preliminary plat, site plan, permit or public works project may be approved by any jurisdiction in these subbasins unless the conditions of the plat permit or plan approval include an erosion control plan containing methods and/or interim facilities to be constructed or used concurrently with land development and to be operated during construction to control the discharge of sediment in the stormwater runoff. The erosion control plan must include the following elements:

(A) Protection techniques to control soil erosion and sediment transport to less than one ton per acre per year, as calculated using the Natural Resources Conservation Service's Universal Soil Loss Equation or other equivalent methods (see Figures 1 to 6 in Appendix 1 for examples). The erosion control plan must include temporary sedimentation basins or other sediment control devices when, because of steep slopes or other site specific considerations, other on-site sediment control methods will not likely keep the sediment transport to less than one ton per acre per year. The local jurisdictions may establish additional requirements for meeting an equivalent degree of control. Any sediment basin constructed must be sized using 1.5 feet minimum sediment storage depth plus 2.0 feet storage depth above for a settlement zone. The storage capacity of the basin must be sized to store all of the sediment that is likely to be transported and collected during construction while the erosion potential exists. When the erosion potential has been removed, the sediment basin, or other sediment control facilities, can be removed and the site restored as per the final site plan. All sediment basins must be constructed with an emergency overflow to prevent erosion or failure of the containment dike; or

(B) A soil erosion control matrix derived from and consistent with the universal soil equation approved by the jurisdiction or the Department.

(c) The Director may modify Appendix 1 as necessary without approval from the Environmental Quality Commission. The Director may modify Appendix 1 to simplify it and to make it easier for people to apply;

(d) Subsection (5)(e) of this rule applies to any new land development within the Tualatin River and Oswego Lake subbasins, except:

(A) Those developments with application dates prior to June 1, 1990. The application date is the date on which a complete application for development approval is received by the local jurisdiction in accordance with the regulations of the local jurisdiction;

(B) One and two family dwellings on existing lots of record;

(C) Sewer lines, water lines, utilities or other land development that will not directly increase nonpoint source pollution once construction has been completed and the site is either restored to or not altered from its approximate original condition;

(D) If the Environmental Quality Commission determines that a jurisdiction does not need to require stormwater quality control facilities for new development;

(E) When a jurisdiction adopts ordinances that provide for a stormwater quality program equivalent to subsection (e) of this section. Ordinances adopted to implement equivalent programs must:

(i) Encourage on-site retention of stormwater, require phosphorus removal equivalent to the removal efficiency required by subsection (e) of this section, provide for adequate operation and maintenance of stormwater quality

control facilities, and require financial assurance, or equivalent security that assures construction of the stormwater quality control facilities required by the ordinance;

(ii) If the ordinances provide for exemptions other than those allowed for by paragraphs (B) and (C) of this subsection, the ordinances must provide for collection of in-lieu fees or other equivalent mechanisms that assure financing for, and construction of, associated, off-site stormwater quality control facilities. No exemption may be allowed if the jurisdiction is not meeting an approved schedule for identifying location of the off-site stormwater quality control facility to serve the development requesting an exemption.

(e) For new development, no plat, site plan, building permit or public works project may be approved by any jurisdiction in these subbasins unless the conditions of the plat, permit or plan approval require permanent stormwater quality control facilities to control phosphorus loadings associated with stormwater runoff from the development site. Jurisdictions must encourage and provide preference to techniques and methods that prevent and minimize pollutants from entering the storm and surface water systems. Permanent stormwater quality control facilities for phosphorus must meet the following requirements:

(A) The stormwater quality control facilities must be designed to achieve a phosphorus removal efficiency as calculated from the following equation:

$$R_p = 100 - 24.5/R_v$$

Where:

R_p = Required phosphorus removal efficiency

R_v = Average site runoff coefficient

The average site runoff coefficient can be calculated from the following equation:

$$R_v = (0.7 \times A_1) + (0.3 \times A_2) + (0.7 \times A_3) + (0.05 \times A_4) + (A_5 \times 0.0)$$

Where:

A_1 = fraction of total area that is paved streets with curbs and that drain to storm sewers or open ditches.

A_2 = fraction of total area that is paved streets that drain to water quality swales located on site.

A_3 = fraction of total area that is building roof and paved parking that drains to storm sewers.

A_4 = fraction of total area that is grass, trees and marsh areas.

A_5 = fraction of total area for which runoff will be collected and retained on site with no direct discharge to surface waters.

(B) A jurisdiction may modify the equation for R_v to allow the application of additional runoff coefficients associated with land surfaces not identified in this subsection. The Department must be notified in writing whenever an additional runoff coefficient is used. The use of additional runoff coefficients must be based on scientific data. The jurisdiction must discontinue use of an additional runoff coefficient if the Department objects to its use in writing within ten days of receiving notification;

(C) The stormwater quality control facilities must be designed to meet the removal efficiency specified in paragraph (A) of this subsection for a mean summertime storm event totaling 0.36 inches of precipitation with an average return period of 96 hours;

(D) The removal efficiency specified in paragraph (A) of this subsection specify only design requirements and are not intended to be used as a basis for performance evaluation or compliance determination of the stormwater quality control facility installed or constructed pursuant to this subsection;

(E) Stormwater quality control facilities required by this subsection may be approved by a jurisdiction only if the following are met:

(i) For developments larger than one acre, the plat or site plan must include plans and a certification prepared by an Oregon registered, professional engineer that the proposed stormwater control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorus required by paragraph (A) of this subsection;

(ii) The plat or site plan must be consistent with the area and associated runoff coefficients used to determine the removal efficiency required in paragraph (A) of this subsection;

(iii) A financial assurance, or equivalent security acceptable to the jurisdiction, must be provided by the developer with the jurisdiction that assures that the stormwater control facilities are constructed according to the plans established in the plat or site plan approval. Where practicable, the jurisdiction must combine the financial assurance required by this rule with other financial assurance requirements imposed by the jurisdiction;

(iv) Each jurisdiction that constructs or authorizes construction of permanent stormwater quality control facilities must file with the Department, an operation and maintenance plan for the stormwater quality control facilities within its jurisdiction. The operation and maintenance plan must allow for public or private ownership, operation, and maintenance of individual permanent stormwater quality control facilities. The jurisdiction or private operator must operate and maintain the permanent stormwater control facilities in accordance with the operation and maintenance plan.

(f) Except as required by paragraph (D) of this subsection, the jurisdiction may grant an exception to subsection (e) of this section if the jurisdiction chooses to adopt and, on a case-by-case basis, impose a one time in-lieu fee. The fee will be an option where, because of the size of the development, topography, or other factors, the jurisdiction determines that the construction of on-site permanent stormwater treatment systems is impracticable or undesirable:

(A) The in-lieu fee will be based upon a reasonable estimate of the current, prorated cost for the jurisdiction to provide stormwater quality control facilities for the land development being assessed the fee. Estimated costs include costs associated with off-site land and rights-of-way acquisition, design, construction and construction inspection;

(B) The jurisdiction must deposit any in-lieu fees collected pursuant to this paragraph in an account dedicated only to reimbursing the jurisdiction for expenses related to off-site land and rights-of-way acquisition, design, construction and construction inspection of stormwater quality control facilities;

(C) The ordinance establishing the in-lieu fee must include provisions that reduce the fee in proportion to the ratio of the site's average runoff coefficient (R_v), as established according to the equation in paragraph (6)(e)(A) of this rule;

(D) No new development may be granted an exemption if the jurisdiction is not meeting an approved time schedule for identifying the location for the off-site stormwater quality control facilities that would serve that development.

(g) The Department may approve other mechanisms that allow jurisdictions to grant exemptions to new development. The Department may only approve those mechanisms that assure financing for off-site stormwater quality control

facilities and that encourage or require on-site retention where feasible;

(h) Subsection (b) of this section apply until a jurisdiction adopts ordinances that provide for a program equivalent to subsection (b) of this section, or the Environmental Quality Commission determines such a program is not necessary when it approves the jurisdiction's program plan required by OAR 340-041-0470(2)(g).

(5) In order to improve water quality within the Yamhill River subbasin to meet the existing water quality standard for pH, the following special rules for total maximum daily loads, waste load allocations, load allocations and program plans are established:

(a) After completion of wastewater control facilities and program plans approved by the Commission under this rule and no later than June 30, 1994, no activities may be allowed and no wastewater may be discharged to the Yamhill River or its tributaries without the authorization of the Commission that cause the monthly median concentration of total phosphorus to exceed 70 ug/l as measured during the low flow period between approximately May 1 and October 31*** of each year;

(b) Within 90 days of adoption of these rules, the Cities of McMinnville and Lafayette must submit a program plan and time schedule to the Department describing how and when they will modify their sewerage facility to comply with this rule;

(c) Final program plans will be reviewed and approved by the Commission. The Commission may define alternative compliance dates as program plans are approved. All proposed final program plans must be subject to public hearing prior to consideration for approval by the Commission;

(d) The Department will within 60 days of adoption of these rules distribute initial waste load allocations and load allocations to the point and nonpoint sources in the basin. These allocations are considered interim and may be redistributed based upon the conclusions of the approved program plans.

***Precise dates for complying with this rule may be conditioned on physical conditions (i.e., flow, temperature) of the receiving water and may be specified in individual permits or memorandums of understanding issued by the Department. The Department may consider system design flows, river travel times, and other relevant information when establishing the specific conditions to be inserted in the permits or memorandums of understanding.

These specific standards are each addressed in the appropriate preceding sections.

8. EVALUATION OF WATER QUALITY-RELATED REQUIRMENTS OF STATE LAW

DEQ has reviewed the information in the record and the requirements of the state laws to determine the water quality-related requirements that may be applicable to the applicant's proposed project. In determining whether particular requirements may be water quality-related, DEQ has relied on the following considerations:

- a. The statute, or rules promulgated pursuant to the statute, contain explicit reference to water quality and are applicable to the proposed project.
- b. The statute, or rules promulgated pursuant to the statute, address factors that are necessary for maintenance of water quality in conjunction with the proposed project, or for evaluation of water quality impacts of the proposed project.
- c. The statute, or rules promulgated pursuant to the statute, authorize, require, or control actions or activities that may, in conjunction with the proposed project, be reasonably expected to impact

water quality.

Based on these initial criteria, DEQ has identified the following as potential water quality-related requirements of state law:

8.1 Laws Administered by the Oregon Department of State Lands

ORS 196.795 to 196.990 requires that permits be obtained from the Department of State Lands prior to any fill and removal of material from the bed or banks of any stream. Such permits, when issued, may be expected to contain conditions to assure protection of water quality so as to protect fish and aquatic habitat.

8.2 Laws Administered by Oregon Department of Fish and Wildlife

ORS 496.012 sets wildlife policy for prevention of depletion of indigenous species and toward wildlife resource decisions to be made in the best social, economical and recreational interests of all user groups

ORS 496.164 provides for cooperation and technical assistance to other agencies with regard to wildlife resource management

ORS 496.170 to 496.192 requires collection and analysis of scientific data to determine and inventory biological status of species, develop conservation strategies, and provide recommendations to other agencies regarding actions affecting threatened or endangered species

OAR 635-007-0502 et. seq. native fish conservation policy – protection of natural ecological communities and habitats tailored to individual watersheds and situations

OAR 635-059-0000 et. seq. aquatic invasive species control

OAR 635-100-0150 requires consultation with ODFW on affects to endangered species

OAR 635-410-0000 natural resource losses

OAR 635-412-0005 et. seq. addresses fish passage

OAR 635-413-0000 et. seq. fish habitat mitigation policy

OAR 635-500-0002 et. seq. addresses fish management plans

8.3 Laws Administered by Department of Environmental Quality

ORS 468B.155 prevention of groundwater contamination

ORS 468B.160 (5) triggers action to prevent groundwater contamination or restore acceptable levels

OAR 340-040-0030 permitted operation (5) action requirements and (6) remedial action requirements

OAR 340-045 pertaining to NPDES and WPCF permits

ORS 466.635 to 466.645 requirements for reporting and cleanup of spills of petroleum products and hazardous materials

8.4 Laws Administered by Department of Land Conservation and Development

Oregon has a comprehensive system of statewide land use planning requirements. These are based on state statutes and administrative rules adopted by the Land Conservation and Development Commission under ORS chapter 197. The rules include substantive and procedural requirements known as Statewide Goals and also implementing rules for the Goals and other statutes. Statewide Goals are implemented through comprehensive land use plans and regulations adopted by local governments and through state agency decisions when those decisions have the potential to affect land use. Under ORS 197.180, state agencies are required to make decisions in programs affecting land use that comply with Statewide Goals and that are compatible with those local land use plans and regulations that have been determined to comply with the Goals. Plans and regulations that comply with the Goals are referred to as “acknowledged.”

DEQ’s section 401 program is a program affecting land use for purposes of ORS 197.180. OAR 340-018-0030. Goals designed to protect water resources and implementing local comprehensive plan and regulations relating to those Goals are “other appropriate requirements of State law” for purpose or CWA Section 401(d). *Arnold Irrigation Dist. v. DEQ*, (79 Or. App. 136, rev. den, 301 Or. 756 (1986)). Goals that are water quality related include Goals 5, 6 and 16.

In addition, DEQ’s rules governing applications for Section 401 certificates require applicants to supply a land use compatibility determination from the affected local government or in the alternative to identify the specific provisions of the acknowledged local land use plans and implementing regulations that are applicable to the activity at issue. The applicant must further discuss whether the local provisions have any direct or indirect relationship to water quality. OAR 340-048-0015(i).

The applicant provided DEQ Land Use Compatibility Statements signed by representatives from the City of Portland, Clackamas County, and the City of Milwaukie, and the associated local approvals tied to the Metro Council Final Land Use Order – Resolution No. 08-3964, dated July 17, 2008.

8.5 Laws Administered by Oregon Water Resources Department

OAR 690-009 groundwater interference with surface water

OAR 690-010 appropriation and use of groundwater

OAR 690- 012 out-of-basin diversion

OAR 690-020 dam safety

OAR 690-28 surface water registrations

OAR 690-033 standards for new appropriations

OAR 690-051 standards for appropriation and use of water for hydroelectric projects

OAR 690-077 instream water rights

OAR 690-086 water management and conservation plans

8.6 Laws Administered by Oregon Watershed Enhancement Board

ORS 541-351 et. seq. Oregon Plan for Salmon and Watersheds

8.7 Summary

Pursuant to 33 USC 1341(d) and OAR 340-048-0025, DEQ has included conditions in the 401 WQC that are consistent with these other requirements of state law. However, issuance of a 401 WQC does not obviate the need for any applicable permits, licenses, or other permissions required by local, state, or federal laws as interpreted by the agency charged with implementing the laws.

9. EVALUATION OF COMPLIANCE WITH SECTIONS 301, 302, 303, 306, AND 307 OF THE CLEAN WATER ACT

In order to certify a project pursuant to Section 401 of the federal Clean Water Act, DEQ must find that the project complies with Sections 301, 302, 303, 306, and 307 of the Act and state regulations adopted to implement these sections, provided appropriate permits are obtained as required.

Sections 301, 302, 306, and 307 of the federal Clean Water Act deal with effluent limitations, water quality related effluent limitations, national standards of performance for new sources, and toxic and pretreatment standards. All of these requirements relate to point source discharges and are the foundation for conditions to be incorporated in National Pollutant Discharge Elimination System (NPDES) permits issued to the point sources. Evaluation of this proposal for 401 WQC is predicated on the applicant applying for, obtaining, and implementing the requirements of all applicable NPDES and other state discharge and effluent management permits.

Section 303 of the Act relates to Water Quality Standards and Implementation Plans. The EPA has adopted regulations to implement Section 303 of the Act. The EQC has adopted water quality standards consistent with the requirements of Section 303 and the applicable EPA rules. The EQC standards are codified in Oregon Administrative Rules Chapter 340, Division 41. The EPA has approved the Oregon standards pursuant to the requirements of Section 303 of the Act. Therefore, the applicant's project must comply with Oregon Water Quality Standards and TMDLs to qualify for certification. The Water Quality Standards Section of this evaluation and findings report detailed the considerations necessary for DEQ to include in the 401 WQC decision as conditions in order to ensure compliance with water quality standards, TMDLs, and other policies.

9.1 Finding

DEQ is reasonably assured that conducting these projects will comply with Sections 301, 302, 303, 304, 306, and 307 of the Clean Water Act if the applicants meet the conditions provided in the certification for these projects.

10. CONCLUSIONS AND CERTIFICATION DECISION

As described in the individual findings sections above, DEQ is reasonably assured that the proposal will be in compliance with: the relevant sections of the Clean Water Act; other relevant state laws; and water quality standards and policies, including Antidegradation, provided TriMet applies all proposed and other practicable and effective management practices and control measures and complies with all conditions of the 401 certification.

11. REFERENCES

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Rosetta, Tom. 2005 (October). Draft Technical Basis for Revising Turbidity Criteria. Oregon Department of Environmental Quality.