State of Oregon

Use Attainability Analysis
And
Site-Specific Criteria

Internal Management Directive

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Acknowledgments

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List of Acronyms

BA	Biological Assessment
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CSO	Combined Sewer Overflow
CWA	Clean Water Act
DMAs	Designated Management Agencies
EMT	Executive Management Team
EPA	Environmental Protection Agency
EQC	Environmental Quality Commission
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
IBI	Index of Biotic Integrity
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OWEB	Oregon Watershed Enhancement Board
PHABSIMM	Physical Habitat Simulation Model
TAG	Technical Advisory Group
TMDLs	Total Maximum Daily Loads
UAA	Use Attainability Analysis
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
WQMP	Water Quality Management Plan

Executive Summary

State designated uses

Federal regulations require states to develop water quality standards. The uses specified by states in their water quality standards are designated uses.

Federal definition of a use attainability analysis

If a state decides to remove a designated use from the water quality standards this is done by completing a use attainability analysis (UAA). According to federal regulations (40 CFR Section 131.3(g)) a UAA is:

"a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in Sec. 131.10(g)."

Purpose

This document is intended to describe a process for determining if a use attainability analysis or adoption of site specific criteria is appropriate and if so, what information should be reviewed.

Scope

The information provided in this document is meant to guide DEQ in its internal procedures for applying existing statutes and rules related to use attainability analysis and site specific criteria. As such, the Internal Management Directive does not create rights or obligations on the part of the public or regulated entities.

Applicability

This internal management directive may be reviewed and implemented by:

- Staff responsible for reviewing and revising water quality standards;
- Staff issuing new or renewal NPDES permits, in which water quality standards attainment is an issue;
- Staff issuing 401 water quality certifications in which water quality standards attainment is an issue;
- Staff developing TMDLs.

Components of this internal management directive

This directive addresses procedural and data requirements for a use attainability analysis (UAA) or site specific criteria to be considered for review by DEQ. The document also contains background information describing the various state and federal regulations that will influence the analysis. The document is not meant to be a primer on the Clean Water Act or federal regulations addressing water quality or threatened and endangered

species. The reader is referred to appropriate citations.

DEQ's expectations and limitations

DEQ expects that existing water quality will be maintained and improved. At the time of adopting this Internal Management Directive, DEQ does not have sufficient general fund revenue to support changing the water quality standards via a use attainability analysis or adoption of site specific criteria. DEQ currently does not have a fee structure for this work. DEQ would consider receipts authority only after requesting the Legislature or, in the interim, the Emergency Board provide general funds for the work. If the Legislature does not provide general funds, DEQ would consider receipts authority only as part of a transparent public process and public comment opportunity on the question of whether the work should be done under receipts authority. Following the public comment on use of receipts authority DEQ may decide to proceed using receipts authority. DEQ cannot commit to a rulemaking and as a result may decline to proceed at any time in the process.

In determining whether to pursue a change to the designated use or adopt site specific criteria DEQ may consider if the process will lead to an overall environmental improvement. Economic benefit will be part of the analysis but will not be the main consideration in changing a water quality standard. Any proposed changes to designated uses or adoption of site specific criteria will be subject to an open public process and likely undertaken as part of the water quality standards triennial review.

Contact for Questions

For questions about this directive contact the water quality standards staff in the Water Quality Division.

Chapter 1: Water Quality Standards Overview

Purpose

The purpose of this chapter is to provide an overview of the federal and state regulations that govern the development of water quality standards. Specifically the chapter discusses federal regulations regarding removal of designated uses or adoption of sub-categories of designated uses and development of site specific criteria.

Goals of the Clean Water Act

The objective of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Section 101(a)). In order to achieve this objective the Act sets an interim goal of water quality to provide for the protection and propagation of fish, shellfish, and wildlife and provide for recreation in and on the water.

Review of federal regulations

Federal regulations require states[1] to develop water quality standards. Water quality standards are "provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses"[40 CFR Section 131.3(i)]. In addition, States develop an antidegradation policy to protect existing water quality. States must specify appropriate uses to be achieved and protected. Such uses may include "public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation" [40 CFR Section 131.10 (a)].

What are designated uses?

The uses specified by States in their water quality standards are referred to as "designated uses." Designated uses are specified for a waterbody or a waterbody segment and may or may not be currently attained. Oregon defines a designated beneficial use as "the purpose or benefit to be derived from a waterbody" (OAR 340-041-0002(17)). The term "designated beneficial use" is the same as the term "designated use" in federal regulations.

[1] States include: The 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and Indian Tribes that EPA determines to be eligible for purposes of water quality standards program. (40 CFR 131.3(j))

What are existing uses?

Federal regulations require states to protect existing uses which are defined as *"...those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards"* [40 CFR Section 131.3(e)].

If the existing use is not included in the water quality standards, the water quality suitable to support the existing use must be protected. As stated in 40 CFR Section 131.12(a)(1):

> *"Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."*

Oregon's designated uses

Oregon's designated uses are contained in Oregon Administrative Rules (OAR) Division 41 (see:http://arcweb.sos.state.or.us/rules/OARs_300/OAR_340/340_041.html).

OAR 340-041-0101 through 340-041-0340 contains designated use tables for the 19 major river basins in the state. Numeric criteria to support the designated uses are found in OAR 340-041-0009 through 340-041-0036 as well as in basin specific sections. Frequently, the designated uses apply basin wide and state-wide since the uses are often repeated for each basin. In Oregon, for example, the designated use "water contact recreation" is applied to all waters in the state, except the Bull Run River and its tributaries. Oregon's designated uses include :

- Public and private domestic water supply
- Industrial water supply
- Water contact recreation
- Fishing
- Fish and aquatic life
- Hydropower, and others.

An example of a general designated use table for the Willamette Basin is shown in Table 1.

Beneficial Uses	Willamette River Tributaries						Mainstem Willamette River			
	Clackamas River	Molalla River	Santiam River	McKenzie River	Tualatin River	All Other Streams & Tributaries	Mouth to Willamette Falls, Including Multnomah Channel	Willamette Falls to Newberg	Newberg to Salem	Salem to Coast Fork
Public Domestic Water Supply[1]	X	X	X	X	X	X	X	X	X	X
Private Domestic Water Supply[1]	X	X	X	X	X	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X	X	X	X	X	X
Irrigation	X	X	X	X	X	X	X	X	X	X
Livestock Watering	X	X	X	X	X	X	X	X	X	X
Fish & Aquatic Life[2]	X	X	X	X	X	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X	X	X	X	X	X
Fishing	X	X	X	X	X	X	X	X	X	X
Boating	X	X	X	X	X	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X	X	X	X[3]	X	X
Aesthetic Quality	X	X	X	X	X	X	X	X	X	X
Hydro Power	X	X	X	X	X	X	X	X		
Commercial Navigation & Transportation							X	X	X	

[1] With adequate pretreatment and natural quality that meets drinking water standards.

[2] See also Figures 1 and 2 for fish use designations for this basin.

[3] Not to conflict with commercial activities in Portland Harbor.

Table 1: Designated Beneficial Uses
Willamette Basin
(340-041-0340)

Oregon's fish use designation maps

Maps are available that note the spatial extent of particular designated uses for fish as related to temperature criteria only. The designated uses for fish identified in the maps include:

- Salmon and steelhead spawning (with timing periods)
- Bull trout spawning and juvenile rearing
- Core cold water habitat

- Salmon and trout rearing and migration
- Salmon and steelhead migration corridors
- Redband and Lahontan cutthroat trout
- Cool water species

Examples of designated fish use maps for the same basin are shown in Figures 1 and 2, respectively.

Figure 1: Fish Use Designations Willamette Basin

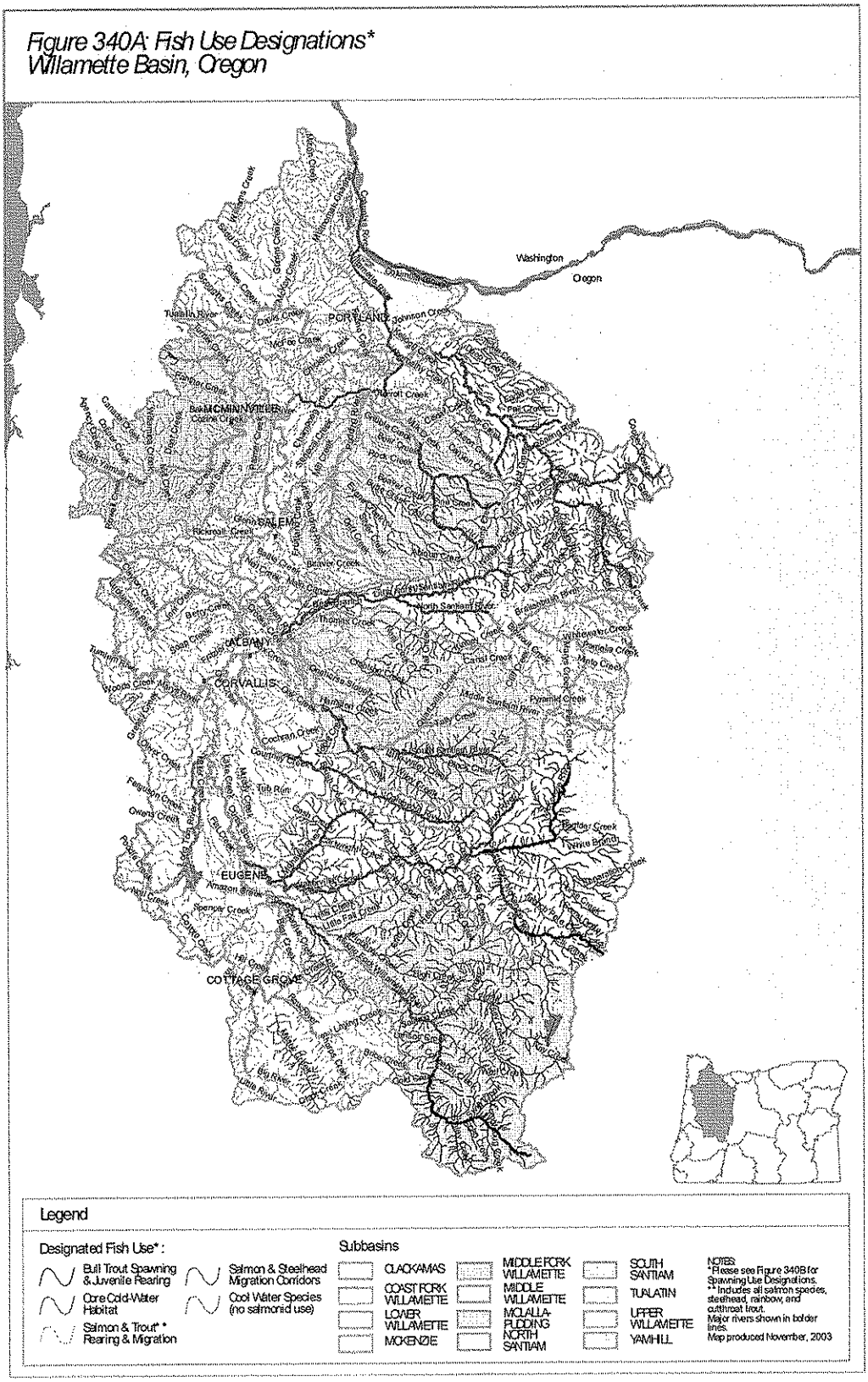
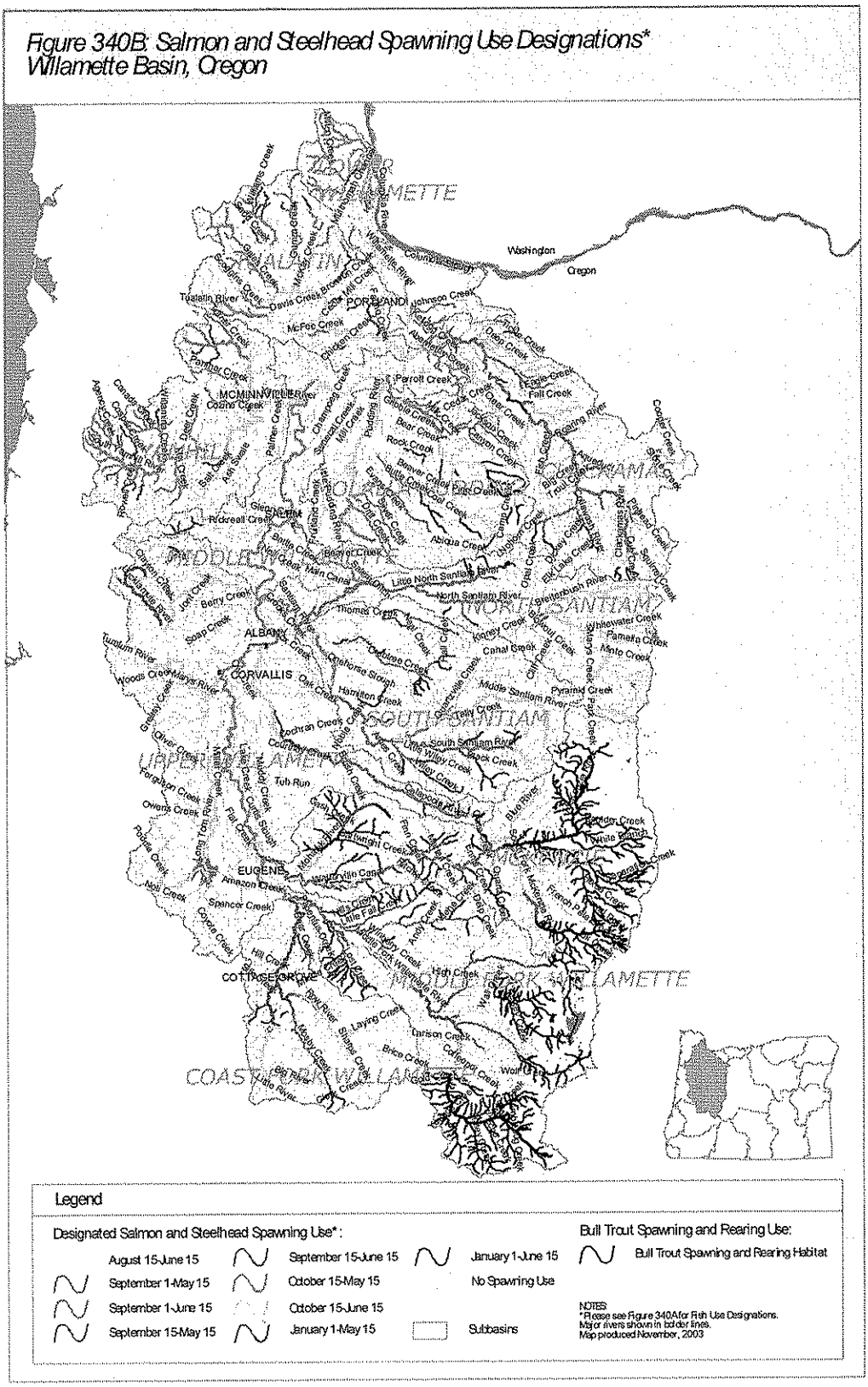


Figure 2: Salmon and Steelhead Spawning



How are designated uses changed?

Federal regulations establish six conditions under which a designated use may be removed. The same six conditions must be reviewed and one or more must be met for a sub-category of a designated use to be adopted.

Six conditions allowing removal of a designated use

A State may remove a designated use or establish a sub-category of a use, if the State can demonstrate that attaining the designated use is not feasible because [40 CFR Section 131.10(g)]:

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

Federal definition of a use attainability analysis

The process for considering the removal of a designated use or adoption of a sub-category of a designated use is called a use attainability analysis (UAA). According to federal regulations (40 CFR Section 131.3(g)) a UAA is:

> *"a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in Sec. 131.10(g)."*

The use attainability analysis is only the analysis to support the decision as to

whether the removal of a designated use is appropriate. If the analysis supports removal of the designated use (or adoption of a sub-category of a designated use), there is a separate rule-making process to change the water quality standard.

When is a use attainability analysis required?

Under federal regulations [40 CFR Section 131.10(j)], a use attainability analysis must be done whenever:

- *The State designates or has designated uses that do not include the uses specified in section 101(a)(2) of the Clean Water Act ("water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water") [40 CFR Section 131.10(j)(1)]; or*
- *The State wishes to remove a designated use specified in section 101(a)(2) of the Act or adopt subcategories of the uses specified in section 101(a)(2) of the Act that require less stringent criteria [40 CFR Section 131.10(j)(1)].*

What are criteria?

As stated in 40 CFR 131.3(b): "Criteria are elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use."

How states develop criteria

States must provide a scientific rationale with any criteria submitted to EPA for approval. As stated in 40 CFR 131.11(a) "(1) States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use."

Federal regulations addressing site specific criteria

When States submit site specific criteria to EPA for review the State must submit "the methodologies used for site-specific criteria development," as well as "any general policies applicable to water quality standards and any revisions of the standards to the Regional Administrator of EPA for review and approval, within 30 days of the final State action to adopt and certify the revised standard,.." (40 CFR 131.20(c)).

When are site specific criteria appropriate?

Under section 304(a) of the Clean Water Act, EPA publishes water quality criteria based on scientific information regarding concentrations of specific chemicals or levels of parameters in water that protect aquatic life and human

health (USEPA 1994). EPA's section 304(a) guidance on water quality criteria, which are intended to provide protection for all surface waters on a national basis, is broad. These broad criteria can be tailored to select localized, site-specific conditions. Site-specific criteria (SSC) are sometimes justified because:

- Species at the site may be more sensitive or less sensitive than those used by EPA to develop Section 304(a) criteria (USEPA 1994);
- Physical and/or chemical characteristics of the site alter the biological availability and/or toxicity of the chemical (e.g., alkalinity, hardness, pH, suspended solids and salinity influence the concentration(s) of the toxic form(s) of some heavy metals, ammonia and other chemicals) (USEPA 1994);
- EPA may not have criteria recommendation for a pollutant adversely affecting the designated use at a particular location.

What are the differences between a UAA and adopting site specific criteria?

Under a UAA:

- Designated uses may be removed only if one of six conditions are met as discussed on page 1-7;
- The designated use must be determined to not be feasible to attain before it can be removed;
- Feasibility may include a consideration of costs;
- Factors affecting attainment of the designated use must be described;
- The attainable use must be described;
- Appropriate criteria must be applied or site specific criteria developed;
- The most sensitive designated use must be protected by the criteria.

Site specific criteria:

- Federal regulations do not describe any unique conditions to allow adoption of site specific criteria (i.e. there is no comparable language to that in 40 CFR Section 131.10(g));
- Site specific criteria must be based on sound scientific rationale;
- The designated use is not changed;
- Are preferable when the designated use is an existing use;
- Feasibility of attaining the criteria is not considered;
- The most sensitive designated use must be protected by the criteria.

Chapter 2: Process for Site Specific Criteria or Use Attainability Analysis

Purpose

The purpose of this chapter is to describe the process that will likely occur in the development and completion of a use attainability analysis or development of site specific criteria. This chapter outlines steps that will be taken by DEQ staff as well as those likely to be taken by the entity requesting the change to the water quality standards. Details on some of the steps are provided in later chapters which are cited when appropriate.

How is the process initiated?

The applicant for the use attainability analysis or development of site specific criteria should send a letter of request to the regional water quality manager and the manager of the water quality standards program at DEQ headquarters. Alternatively, DEQ may decide to initiate a UAA or adopt site specific criteria. In this case the process would begin with the triennial review.

Decision on scoping discussion

Following receipt of a request for DEQ to develop a use attainability analysis or site specific criteria, the regional water quality manager and the manager of the water quality standards program at DEQ headquarters will decide whether to proceed with a "scoping" discussion. As part of the decision the managers will consider whether DEQ has the funding to undertake the scoping work. The decision whether to conduct a scoping discussion will be documented in a memo to the water quality standards files and to the applicant for the change in the water quality standards. If the managers decide to proceed to a scoping discussion, the applicant and DEQ water quality standards staff and appropriate regional staff will discuss the following issues:

- Funding – whether DEQ has funding to undertake the rulemaking that would be required for a change to designated uses or adoption of site specific criteria;
- Water quality standards interpretation and application, including identification of the designated uses and existing uses, as well as the applicable time period for the criteria;
- Water quality limited status for any parameters;
- Status of TMDL development;
- Ability of the applicant to achieve water quality standards through allocations in a TMDL;
- Status of development of the temperature management plan, water quality management plan or other implementation plans. Specifically DEQ will determine whether an implementation plan has been submitted and if the plan is adequate. The contents of an

implementation plan are described in OAR 340-042-0080(3)(a);
- Status of implementation of technology based controls for point sources;
- Status of draft 401 certification application, if a 401 hydropower certification is required by the applicant;
- Information availability. Such information may include water quality data and data on the status of the designated use. Available data must be compared to the water quality standards;
- Alternatives to changing water quality standards such as variances, compliance schedules, department orders or trading.

Staff recommendation memo

After the scoping discussion the DEQ headquarters water quality standards staff and regional staff will make a recommendation as to whether DEQ should proceed with the use attainability analysis or review of site specific criteria. The staff recommendation memo will:

- Identify the proponents of the change to the water quality standards;
- Identify funding and resource limitations, if any, and proposed sources of funding;
- Describe any possible potential benefit to the environment;
- Determine if the effluent limits required under sections 301(b) and 306 of the Clean Water Act have been implemented. The effluent limits are those developed under EPA's effluent guidelines program. These effluent limits must be implemented before a rule change proceeds;
- Evaluate whether the waterbody is water quality limited. The TMDL allocations should be evaluated to determine if the water quality standard could be attained by re-allocation of the pollutant load;
- Determine if the implementation plans have been written. The rulemaking should not proceed until the implementation plans have been reviewed to determine if the standard can be attained;
- Determine if the cost-effective and reasonable best management practices have been implemented. If the practices have been implemented, adaptive management is preferred to a rule change;
- Identify the environmental problem to be addressed;
- Describe the magnitude, extent, duration and timing of the problem;
- Discuss the evaluation of alternatives;
- Estimate staff resources needed to undertake the work (including work with advisory committees);
- Identify existing information;
- Identify information gaps;
- Determine whether the change to the water quality standards will remove a designated use or set site specific criteria.

Decision memo

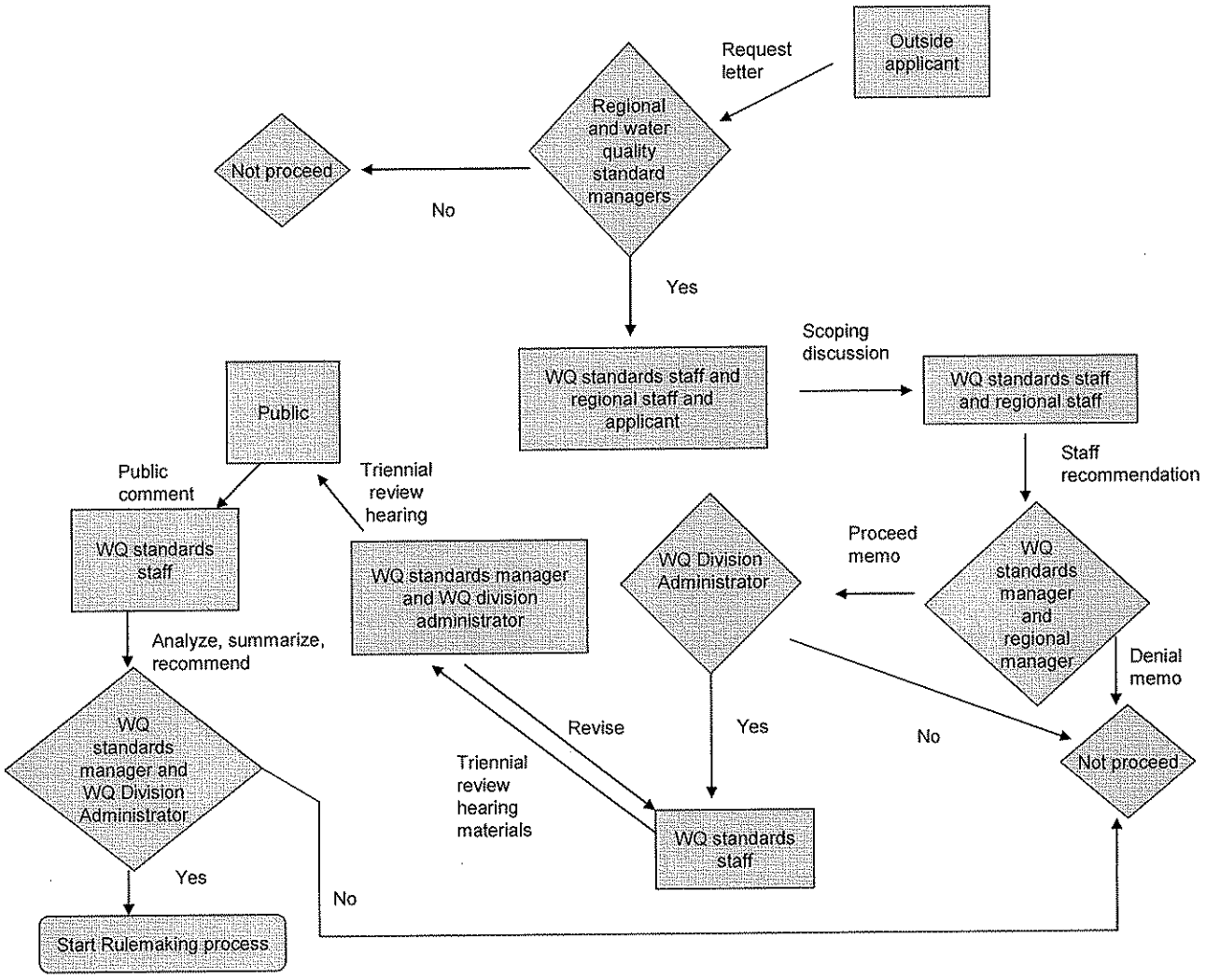
The manager of the water quality standards program and the regional water quality manager will review the recommendation of the staff and issue a recommendation memorandum to the water quality division administrator confirming or rejecting the staff recommendation. Water quality standards staff, the applicant and the regional water quality staff and manager will be copied on the memorandum.

If the water quality division administrator decides that the work should proceed, the proposal generally will be included in the triennial review. The water quality division administrator's decision will be documented in a decision memorandum.

What is the triennial review?

According to 40 CFR 131.20 States must hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. This review must take place at least once every three years. As part of the triennial review DEQ will select potential rule changes and accept public comment on the proposal at an initial public hearing. Waterbodies approved for use attainable analysis or site specific criteria by the water quality division administrator will be part of this triennial review hearing. Following the review, the water quality division administrator, in consultation with the water quality standards manager will determine which proposed changes to the water quality standards will proceed to the rulemaking process. The standards review process is outlined in Figure 3. The next step is to plan the rulemaking, which is described in Chapter 5 and is the first step in Figure 4 in Chapter 5.

Figure 3: UAA/SSC Review Process



What if the timeline for a rule change does not coincide with a triennial review?

If the request for DEQ to develop a use attainability analysis or site specific criteria will take place on a different timeline than the triennial review process, and DEQ decides to proceed with the request, DEQ staff may use the following process:

- DEQ may hold a public meeting on the request for a water quality standards review.
- DEQ may provide the request letter and decision memo to the public as part of the public review and comment.
- Following the review, the water quality division administrator, in consultation with the water quality standards manager, may determine which proposed changes to the water quality standards will proceed to the executive management team for the start rulemaking discussion.

How will the work be paid for?

DEQ does not have staff available to change the water quality standards via a use attainability analysis or adoption of site specific criteria without the commitment of additional resources. DEQ will only conduct such work if funds are made available. DEQ prefers not to accept receipts authority from a private party to change water quality standards. DEQ will consider receipts authority only after requesting the Legislature or, in the interim, the Emergency Board to provide general funds for the work. If the Legislature does not provide general funds, DEQ would consider receipts authority only as part of a transparent public process and public comment opportunity on the question of whether the work should be done under receipts authority. Following the public comment on use of receipts authority DEQ may decide to proceed using receipts authority. DEQ cannot commit to a rulemaking and as a result may decline to proceed at any time in the process.

Government to Government Relations

DEQ water quality standards staff must consider tribal interests when considering a water quality standards change. Tribes are sovereign governments and Oregon's legislature has directed state agencies to develop a policy that "promotes positive government-to-government relations between the state and tribes" (ORS 182.164(c)). Staff should determine which tribes have (1) indicated an interest in UAAs or SSC and (2) have fishing rights or other rights (such as ceremonial rights) in the waterbody of interest. DEQ has a designated tribal liaison who should be contacted for this information. DEQ water quality standards staff should then contact the affected tribes prior to proceeding with the water quality standard review process outlined in this chapter. If the tribes raise issues or concerns about the standards review, DEQ staff should be prepared to meet with the tribal contacts one-on-one as part of the government-to-government obligations. Issues raised by the tribes should be included in the information provided to DEQ's executive management team, as described in the next section.

Additional information about government-to-government relations is provided in Chapter 5.

Executive Management Team Review

Once the water quality division administrator has determined that a rule change is appropriate to propose, the project lead (the designated water quality standards staff) will scope the rulemaking. The rulemaking proposal must be presented to the executive management team (EMT). The EMT includes the agency director, the deputy director, and the administrators of the divisions as well as the administrators of the regional offices and the laboratory. DEQ water quality standards staff will draft a "start rulemaking proposal."

In the "start rulemaking proposal" staff need to provide enough information on the proposal so that the EMT can consider alternative approaches to rulemaking, cross program coordination, priority policy issues, key stakeholders, resource constraints and issues requiring special management attention.

The EMT will determine if the rulemaking is a priority for DEQ. If the EMT decides against proceeding with the rulemaking then the process ends and no further action will be taken on the request for a UAA or a SSC. The rulemaking process is described in more detail in Chapter 5.

Petition to the Environmental Quality Commission

In addition to the internal process, any interested person may file a petition with the Environmental Quality Commission (EQC) for a rule modification. The EQC has 90 days to decide whether to grant or deny the petition. If the EQC grants the petition DEQ must initiate a rulemaking.

Technical Peer Review

If the EMT determines that a change to the beneficial uses or adopting a site specific criterion is a rulemaking priority or if the EQC decides to grant a petition for rulemaking, DEQ will provide for technical peer review. The review may be conducted by a technical advisory group (TAG), by an existing committee, such as the Independent Multidisciplinary Science Team (IMST) or by selected technical experts. The purpose of the technical review is to identify and review the information the applicant for the standards change should provide to DEQ for DEQ to make a decision regarding changing the water quality standard.

Who should be part of the technical review?

The technical review may involve staff from:

- DEQ;
- USEPA;
- Oregon Department of Fish and Wildlife (ODFW);
- Other affected state agencies;
- NOAA Fisheries Service and the US Fish and Wildlife Service if the waterbody under review has threatened and endangered species;
- Tribal technical staff if a tribe(s) is a co-manager of the fishery resource;
- Other technical experts (e.g. university faculty); and
- The applicant for the water quality standards change.

Role of the technical review group

After review of the available information, the reviewers may determine any of the following:

- Future additional studies must be conducted and evaluated;
- The designated use should be removed; a sub-category of the designated use should be adopted; or site-specific criteria should be developed;
- There is insufficient basis or support for proceeding with the UAA or SSC proposal;
- An alternative to meet the water quality standard exists.

As part of the technical review, DEQ will determine if it is appropriate to retain the designated use as a goal for the waterbody. If so, and if the review determines that an alternative to meet the water quality standard exists, the DEQ staff may issue a memo to the water quality division administrator and the water quality standards manager recommending that the rule change not proceed.

If the technical review demonstrates that additional studies should be conducted, DEQ will ask the reviewers to:

- Identify additional studies and methodologies;
- Review the survey design (for biological and habitat surveys);
- Review a quality assurance project plan (for chemical surveys);
- Review the study or survey results;
- Review alternatives;
- Develop technical basis for the change to the water quality standard; and
- Recommend criteria.

Policy review and stakeholder input

DEQ will also provide for review of the policy issues raised by the proposal for a water quality standards change. The review may include formation of a policy advisory committee to consider the social, economic and political implications of policy decisions. Generally, the technical review would identify the technically sound option for the policy advisory committee to consider. The policy advisory committee is expected to provide consultative recommendations (i.e. consensus is not expected). DEQ may also hold town hall meetings or public hearings for review of the policy issues.

Who should be part of a policy advisory committee?

- Stakeholders from the regulated community affected by the proposed rulemaking;
- Stakeholders from the conservation community with an interest in the proposed rulemaking;
- Representatives of tribal governments with an interest in the proposed rulemaking;
- Stakeholders from agriculture, forestry and fishing with an interest in the proposed rulemaking;
- Representatives from EPA and other federal agencies to serve as ex-officio members;
- Representatives from state agencies to serve as ex-officio members.

Nominating committee for Use Attainability Analyses

If DEQ receives a request for a use attainability analysis, and funding for the work is secured, DEQ will convene the nominating committee per ORS 468B.062. DEQ will convene the committee to recommend for which waters it believes a UAA is most warranted. DEQ may use either a technical advisory committee or a policy advisory committee as the nominating committee.

Fiscal Impact Considerations

Under ORS 183.333, if DEQ appoints an advisory committee for consideration of a rule DEQ shall seek the committee's recommendations on whether the rule will have a fiscal impact, what the extent of that impact will be and whether the rule will have a significant adverse impact on small businesses. If DEQ does not appoint an advisory committee, DEQ may be required to convene a fiscal impact advisory committee, if at least 10 persons likely to be affected by the rule object to DEQ's statement of fiscal impact.

Antidegradation review

Proposed changes to the water quality standards are required to undergo the State's antidegradation review. DEQ water quality standards staff will conduct the antidegradation review. Oregon's antidegradation policy is designed to protect existing water quality. Therefore, a change which will not degrade existing water quality would not require a detailed antidegradation review. For more information on antidegradation consult the water quality standards staff.

Final DEQ staff review

Once the policy advisory committee has made a recommendation or series of recommendations to DEQ for a change to designated uses or site specific criteria, DEQ staff should review the following questions:

- Will adoption of the new water quality standard result in better protection of the resource?
- Is the designated use an existing use? The existing use must be protected. If the water quality criterion can't be attained, site specific criteria should be proposed.
- Have all technologically feasible options to attain the designated use been evaluated? If not, additional options should be reviewed before a rule change is adopted.
- If a technologically feasible option to attain the designated use exists, has it been demonstrated that the option is not economically feasible?
- Has water quality trading to attain the designated use been evaluated?
- Has it been demonstrated that downstream designated and existing uses will not be impacted by removal of the designated use or adoption of a sub-category of the designated use?
- Has it been demonstrated that downstream designated and existing uses will not be impacted by adoption of site specific criteria?
- Will any new activity that will degrade existing water quality be proposed based on removal of the designated use or adoption of a sub-category of the designated use or adoption of site specific criteria? If so, an in depth antidegradation review will be required before the new activity can occur.
- Has the UAA or SSC received comprehensive internal review, including review by regional staff, water quality model staff and lab staff?

Public Comment

DEQ is required to receive public comment on the proposed rule change. The rulemaking coordinator in the water quality program can provide more information about the public comment process.

Environmental Quality Commission Role

The changes to water quality standards require adoption by the EQC, DEQ's policy and rulemaking board. The EQC meets regularly to, among other business; adopt rules including those constituting changes in Oregon's water quality standards. As a part of the documentation for the rule change, staff drafts a report outlining the proposed changes and implications. An issue paper is often included as an appendix to this staff report, which provides a more detailed description of the proposed changes.

Environmental Protection Agency Review

The changes adopted by the EQC must be approved by EPA. EPA reviews the changes to determine compliance with the Clean Water Act (CWA) and applicable federal regulations. If threatened and endangered species are present, EPA reviews the request to meet the requirements of the Endangered Species Act (ESA) in consultation with the U.S. Fish and Wildlife Service (USFWS) and NOAA's National Marine Fisheries Service (NOAA Fisheries Service) as appropriate. Additional information on EPA review and consultation is provided in Chapter 5.

DEQ Triennial Review

If DEQ removes any designated use that is specified in section 101(a)(2) of the Clean Water Act, DEQ must determine if any new information has become available as part of the next triennial review (40 CFR 131.20(a)). If such new information indicates that the uses specified in section 101(a)(2) of the Act are attainable, DEQ will revise its standards accordingly.

Chapter 3: Technical Basis

Purpose

The purpose of this chapter is to describe the information that will provide the technical basis for the issue paper provided to the Environmental Quality Commission as an addendum to the Director's staff report.

Who will provide the information?

DEQ expects that individuals or groups will request a change to the water quality standards as described in Chapter 2. If a third party requests the change and funding is secured, the technical basis outlined in this chapter will be reviewed by DEQ staff and the TAG. DEQ staff will then write a technical basis review memo which will describe whether the TAG and DEQ concur with the results and conclusions of the technical information provided by the applicant. The technical basis memo provides the basis for the issue paper provided to the Environmental Quality Commission as the Commission determines whether to adopt a change to the water quality standards.

If DEQ initiates the review, DEQ staff will generate the technical information described in this chapter.

DEQ staff roles

DEQ water quality standards staff will review the technical basis for completeness. DEQ laboratory staff may be asked to assist in the review of waterbody survey data and conclusions. DEQ modeling staff may be asked to assist in the review of analysis of alternatives to determine the attainable use. If the proposed water quality standard change is for a waterbody affected by a hydropower facility, the regional 401 certification staff will be asked to assist in the review of the data and analysis of alternatives.

Elements of the technical basis for a UAA

The technical information expected to be part of a use attainability analysis are summarized below and described in more detail in the remainder of the chapter.

- Identification of the designated uses. Is the designated use an existing use?
- Determination of whether a waterbody survey is needed, and if so, summarize the results of the survey.
- Determination of the causes of impairment of the designated use.
- Identification of control strategies or management practices to attain the designated use.
- Identification of the costs of control strategies or management practices to attain the designated use.
- Identification of the attainable use, if it is not feasible to attain the designated use.

Will all UAAs require the same technical information?

DEQ anticipates that there will be situations in which the UAA will not require all of the technical information described in this chapter. This may be the case if:

- The designated use is not an existing use.
- The designated use is not necessary as a goal for the waterbody.
- The proposed changes to a designated use are corrections to the water quality standards. For example, when DEQ adopted the revisions to the temperature standard in 2003, the designated uses were based on large scale data. However, if site specific information has become available to refine the large scale data then some of the designations which were based on the professional judgment of the fisheries biologists who participated in the rulemaking or were based on default assumptions may need to be updated. The data may also be refined as the Oregon Department of Fish and Wildlife update their fish distribution database.
- The designated use is not impaired due to an anthropogenic impact.

In these cases the new technical information may support removing the designated use without a detailed study of the status of the waterbody or an analysis of the attainable use.

Elements of the technical basis for a SSC

The technical information expected to be part of a justification for site specific criteria is summarized below and described in more detail in the remainder of the chapter.

- Use status – Identify the designated use. Is the designated use an existing use?
- Determine if a waterbody survey is needed, and if so, summarize the results of the survey.
- Determine if species specific or waterbody specific studies are needed. If so, summarize the results of the studies.
- Identify the site specific criteria to protect the designated use.

Analysis of Use

What are the designated beneficial uses?

The technical basis should include a section entitled *Designated Beneficial Uses* which identifies the designated beneficial uses as currently defined in Oregon Administrative Rules for all waters that are within the scope of the review. The corresponding criteria to protect the beneficial use should also be identified.

What are the existing uses?

The determination of whether the designated uses are existing uses is a critical component of a UAA since federal regulations prohibit the removal of existing uses (40 CFR Section 131.10(h)(1)). Designated uses are assumed to be existing uses unless proven otherwise. An existing use is defined as those uses actually attained in the waterbody on or after November 28, 1975.

How can the existing uses be documented?

The technical basis should provide a comprehensive description of the methodology, sources of information, and rationale used to make the determination regarding existing uses.

The technical basis should include a review and summary of existing information on the existing uses in the waterbody for which the change is being requested. Sources of such information include:

- ODFW fish distribution database;
- DEQ and ODFW monitoring results;
- Oregon Water Resources Department (OWRD) basin plans;
- Watershed councils;
- Tribal contacts;
- Watershed analyses;
- Bureau of Land Management;

- US Forest Service;
- USFWS;
- NOAA Fisheries Service;
- Oregon Parks Department (on boating, windsurfing);
- Oregon Health Division (swimming or fishing);
- Municipalities; counties; regional governments;
- Universities.

According to EPA, small marginal populations may not constitute an existing use, if the natural conditions are not suitable for that use. An analysis should be conducted to determine if the population is a stable population (USEPA 1994).

Assuming that the information review indicates that the designated uses have not been observed (e.g., evidence that swimming, salmonid spawning or other designated uses do not occur), the next step is to determine if physical conditions of the waterbody support the uses. For example, because it is difficult to prove that salmonids are not in a particular stream (and have not been since November 28, 1975), field observations may be used to indicate some likelihood that salmonids are not present. Since anadromous fish may not be present in waterbodies that do not provide suitable habitat DEQ staff should review the technical basis for descriptions of limiting factors regarding habitat in the relevant waterbodies that affect support of the designated use. Some limiting factors include: gradient; watershed size/flow; natural barriers; channel confinement (floodplain, restricted by rock); and manmade barriers (dams without provisions for fish passage that existed prior to November 28, 1975).

If DEQ determines the designated use is an existing use after review of this information, the designated use may not be removed. Development of site specific criteria should be considered by DEQ and the applicant at this point.

Waterbody Survey

Purpose of a waterbody survey

A waterbody survey should help determine the existing uses and the most sensitive use as well as identify the natural or anthropogenic factors influencing use attainment. DEQ staff and the TAG should review the waterbody survey to ensure the inclusion of an assessment of the physical, chemical and biological factors that affect attainment of the designated use.

Waterbody survey overview

A UAA or SSC addressing aquatic life uses may require biological data, chemical data, and physical data. Staff should remember that the aquatic life beneficial use is not limited to fish species. As stated in OAR 340-041-0002(6): Aquatic species means plants or animals that live at least part of their life cycle in waters of the State. DEQ staff should be involved in at least two phases of the waterbody survey: the initial review of the design and the review of the results.

Prior to conducting the survey DEQ staff should review the waterbody survey design to ensure that the survey will provide data that can be used as the basis for making water quality management decisions regarding existing uses, most sensitive uses and attainable uses. The survey design should identify (1) the survey objectives (2) what new data should be collected and analyzed (3) approved methodologies/tools (4) a quality assurance project plan. As stated in Chapter 2, the TAG may help to review the waterbody survey design. DEQ staff will issue a review memo on the design of the waterbody survey.

Waterbody Survey Design Review

What are the objectives of the survey?

The survey should provide enough information to:

- **determine which aquatic life uses are currently being achieved in the waterbody.**

  The determination of the aquatic life uses attained in the waterbody will require the evaluation of the biological data and the existing uses previously defined for the waterbody. For example, it may have been determined that the beneficial use "fish and aquatic life" is an existing use in the waterbody, but the specific species present have not been identified. The biological data should help to identify the specific species present in the waterbody; therefore the design should be reviewed with this in mind. The data will also help identify the most sensitive aquatic life use to be protected.

- **determine the causes of any impairment of the aquatic uses.**

  It may not be possible to identify the causes of impairment, but the data collected in the survey will be necessary to make a thorough evaluation as to whether or not that is the case.

Waterbody survey parameters

The types of information that might be needed to characterize the waterbody are discussed below, and are summarized in a checklist in Appendix A. Not all of the data described will need to be collected in all cases. Some information can be found in existing databases or publications. Some information may be derived from maps. However, in many cases, not all of the information needed to assess use status will be available, and further monitoring of relevant indicators will be needed to provide adequate data to support a change to water quality standards. The indicators measured will be different according to the type of waterbody (e.g., marine, streams, lakes). The indicators should be described in the applicant's monitoring plan and survey design. DEQ staff and the TAG should use the following indicators to review both the waterbody survey design and the results of the waterbody survey.

Biological Indicators

Reference Sites

Ideally, reference sites should represent minimally disturbed locations that have similar physical and hydrological characteristics to the sites being evaluated. For example, a comparison of benthic invertebrate or fish communities found in the fast flowing headwater regions of a stream with populations found further downstream in slower-moving pool habitats would not be appropriate. Reference sites are often used to provide a measure of what is optimal for aquatic life. Suitable reference sites may not be found within a given watershed and it may be necessary to make comparisons with other similar watersheds, or to develop hypothetical biological indices that characterize the "potential aquatic community."

Fish and Vertebrate Sampling

Fish or vertebrate samples should be collected following the Environmental Monitoring and Assessment Protocols (EMAP) (Peck et al. 2001) developed by EPA. The results can be analyzed to determine vertebrate community composition. Depending upon the waterbody or stream size, an Index of Biological Integrity (IBI) (Hughes 1987, Hughes 2004, Mebane 2003) can also be calculated. The individual metrics (e.g., percent coldwater native species) that make up an IBI can be used to evaluate the aquatic life use status, as well as allow for comparison to reference conditions.

Invertebrate Sampling

Stream invertebrates can also be analyzed to determine community composition. The invertebrates should be collected following DEQ protocols (DEQ 2003). The biological integrity of the site can be directly compared to the reference conditions using a predictive model such as PREDATOR (PREDictive Assessment Tool for ORegon) (Shannon Hubler, personal

communication 10/19/2006).

When should monitoring occur?

Biological data generally should be collected during the time of greatest stress for the macroinvertebrates and vertebrates. Generally, this occurs during the low flow periods when stress is most pronounced (due, for example, to low dissolved oxygen and high temperature). Additionally, fine sediment that has accumulated during the higher flow periods and is associated with poor bank stability/land use sources at all times of the year can still be detected during the summer low flow period (Doug Drake, DEQ, personal communication, 3/2/2005). The summer low flow period should be chosen because it represents the period of greatest stability and thus lowest error in sampling and assessments. Spawning and rearing uses, however, should be assessed at appropriate seasons for the species of interest.

Assessing impairment

Indices of biotic integrity or predictive models can measure changes in biological communities, be compared to reference sites and be used to infer potential impacts on biological communities. It may not be possible to identify the causes of impairment, but the biological data will be necessary to make a thorough evaluation as to whether or not that is the case. The identification of stressors (suspected causes) is a process that DEQ is currently developing (Shannon Hubler, DEQ, personal communication, 9/13/2006) for temperature and sediment. The tools are most highly developed to identify stressors to macroinvertebrates but could also be expanded to include aquatic vertebrates (fish and amphibians).

Water Quality Indicators

What water quality data should be collected?

The examination of water quality parameters may allow identification of factors that may be impairing the propagation and protection of aquatic life. Chemical and physical properties of the waterbody (see checklist in Appendix A) should be collected to determine if water quality meets the applicable water quality criteria for the designated use under review. Results for toxic pollutants must be compared to the applicable criteria in OAR Division 41 Tables 20, 33A and 33B. The data will also indicate whether water quality is within a range that can support the aquatic life species encompassed in the designated use.

When and how should data be collected?

Data should be collected to evaluate the status of the designated use during applicable time periods stated in the water quality standards or when the designated use is expected to occur or during the time periods proposed for a

seasonal water quality standard. Temperature data should be collected as continuous samples to allow for comparison with the seven day moving average maximum temperature as defined in the water quality standards. The presence of cold water refugia (as defined in OAR 340-041-0002(10)) should be documented. If only certain parameters are chosen for analysis, an explanation should be given.

Chemical samples should be analyzed in accordance with methods cited in the most recent edition of *Standard Methods for the Examination of Water and Waste Water,* or using EPA approved methods listed in the most recent update of 40 CFR Section 136 or peer reviewed methodologies used for the determination of contaminant levels in the water column.

Habitat Indicators

What indicators should be evaluated?

The examination of physical parameters may allow identification of factors that may be constraining the propagation and protection of aquatic life. The physical parameters that describe the habitat of a waterbody are useful to assess the nature of the aquatic ecosystem and the types and number of species that can reside in a particular body of water. Parameters in this category include descriptions of watershed characteristics (e.g., watershed area, precipitation and water flow characteristics, and watershed land use descriptions), bank and riparian condition (e.g., streamside vegetative cover, overhead canopy cover, bank material composition, bank slope, and presence of bank erosion), channel morphology and structure (e.g., water channel dimensions, channel gradient, percentage of the stream comprised of pools, riffles and runs, presence of large in-stream structures, channel alterations and natural barriers to fish passage), and streambed composition (percent composition of streambed material, percent embeddedness, and the percentage of small and particulate organic material).

What protocols should be used?

The EMAP protocol (Peck et al. 2001) describes many physical habitat indicators. Although use of the EMAP protocol is not required, DEQ has developed a dataset of approximately 200 reference sites for first, second and third order wadeable streams. These sites represent stream segments with the least amount of human disturbance for a given region. Some of the reference data have been collated by ecoregion, basin or in some cases, by geology. The availability of the reference dataset allows for assessment of current conditions in a waterbody versus those expected in an undisturbed system.

Additional data regarding riparian characteristics, stream channel and bed features can be collected following protocols developed for Rosgen Level III analysis (Rosgen 1996). These data can be used to assess the stability of the stream channel. Some of these data will be similar to those collected under the EMAP protocols.

When should data be collected?

Although physical habitat can be evaluated during any season, it would be most effective if habitat evaluations were concurrent with biological sampling. According to EPA, generally the most advantageous time for biological sampling is in a low flow season and not closely following major flood events (Kaufmann 1999). Some of the physical habitat indicators are flow dependent, such as width, depth, % pools, and % riffles. Because these parameters are flow dependent it may be necessary to collect these data other than during the low flow season. The season(s) chosen should reflect the time period when the designated use being evaluated is expected to occur or when the designated use applies according to the water quality standards. Other indicators are not flow dependent, such as canopy, shade and substrate, so collection of data during the low flow season is appropriate.

If seasonal site specific criteria are proposed the data should be collected during the proposed period of application of the criteria.

Additional indicators

Anthropogenic alterations and disturbances should be described. An assessment of the frequency and extent of in-channel human activities and disturbances should be conducted. In-channel disturbances include channel revetment, pipes, straightening, bridges, culverts, trash (e.g., car bodies, grocery carts, pavement blocks, etc.), and gravel bar mining extractions. Anthropogenic barriers should be noted including dams and water withdrawal. The date dams and other hydrological modifications and water withdrawals were put in place should be documented. Natural barriers, such as waterfalls, should be described as well.

Finally, ODFW and other natural resource agencies should be consulted regarding their available data for the waterbody, their management objectives for the waterbody, and their perspective on the aquatic resource potential of the waterbody.

Review of Waterbody Survey Results

Interpretation of waterbody survey results

The technical basis should include a summary and interpretation of the results of the waterbody survey. DEQ staff and the TAG will review the results and analysis of the waterbody survey for the accuracy of its conclusions. DEQ staff will include an evaluation of the technical basis in the technical basis review memo. The technical basis review memo will include:

- An analysis that identifies and documents precise sampling site location(s), preferably by latitude and longitude in decimal degrees;
- A description of why the sampling locations are considered representative of the waterbody;
- A reference to the date and time the samples were collected;
- A map of the waterbody with sampling locations noted;
- Any physical or hydrologic barriers;
- The presence and abundance of the species present;
- The biological assemblage used to determine the dominant aquatic life present such as cold versus cool water fish or cool versus warm water fish;
- The macroinvertebrate data used to determine if the site is impaired for aquatic life uses by comparison with the biological community in reference sites;
- The biological indicators used to infer the relative impact of sources or anthropogenic activity on the biological communities;
- The water quality data used to compare to the applicable criteria. The data analysis should present the magnitude, duration, and frequency of exceedance of the applicable criteria;
- A reference to the water quality status of the waterbody (e.g. is the

waterbody on the 303(d) list for any parameters);
- The extent of impact of any identified impairment;
- Any causes of designated use impairment that have been identified; and
- Any conclusions that may be drawn from the habitat survey. The waterbody survey results should serve as the basis for evaluation of control strategies or restoration options discussed in the following sections.

Attainable Use

Determining the attainable use

In addition to design, implementation and interpretation of a waterbody survey, the determination of attainable uses within a waterbody may require that DEQ staff:

- Consider best management practices and pollution control strategies to determine the water quality that can be achieved;
- Use water quality data, habitat data and biological data to determine the highest level of use attainable;
- Evaluate alternatives to support the attainable use.

DEQ staff will review the information provided by the applicant for the UAA in the technical basis. DEQ staff will then, in consultation with the TAG, determine whether the review of management practices and control strategies is complete. Finally, DEQ staff will summarize the results of the review in the technical basis review memo.

Must alternatives always be evaluated?

Not all of the data described below will be necessary for every UAA. For example, if a designated use is not identified as an existing use, the determination of the attainable use may not require an analysis of control strategies. As an example, salmonid spawning may have been identified in the water quality standards as a designated use above a waterfall. The natural barrier prevents the attainment of the designated use. The UAA should identify the natural barrier as the cause of non-attainment of the designated use.

Management practices and control strategies

As stated in 40 CFR Section 131.10(g) in order to remove a designated use or establish a sub-category of a use, a State must demonstrate that attaining the designated use is not feasible. To determine feasibility, the applicant should evaluate control strategies to address the source of impairment identified in the waterbody survey. This evaluation should be part of the technical basis reviewed by DEQ staff and the TAG.

The technical basis should include an evaluation of management and control strategies to determine whether the designated use is attainable and if not, the highest level of use attainment feasible. The strategies will vary with the source of the impairment and the extent (temporal and spatial) of the impairment.

DEQ staff must determine if the following federal requirements have been met: "At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under sections 301(b) and 306 of the Act and cost-effective and reasonable best management practices for nonpoint source control" (40 CFR Section 131.10 (d)). DEQ staff and the TAG should review the alternatives analyzed and determine if the analysis is complete. DEQ staff should then document the conclusions in the technical basis review memo.

Point Source and Nonpoint Source Controls

What alternatives should be considered for dams?

Several alternatives for dam operation and design may be evaluated. The options will depend on many project-specific details (e.g. mode of operation, civil structure constraints, size of the reservoir, etc.) and the parameter affected. The following options, while not a comprehensive list, are examples of alternatives that may be evaluated in the technical basis. For any water quality parameter the analysis should include a review of alternatives to current operation and maintenance of the dam that could improve water quality, including coordination of operations between dams and any structural modifications to the dam that could improve water quality.

Some options to manage dams for discharge temperatures are:

- Alternative methods of operating turbines to encourage better mixing where there is a horizontally- or vertically-stratified forebay;
- Modifications to flood control curves to allow additional flows in the summer months without impacting refill;
- Modifications to upper reservoir refill probabilities to allow additional flows in the summer months;

- Flow augmentation;
- Reductions in the cross section areas of the water column behind the dams;
- Temperature control structures;
- Bubble upwelling;
- Installation of pumps to bring cooler water into fishways;
- Shading of fishways;
- Evaluation of structural versus operational alternatives; and
- Evaluation of short term versus long term alternatives.

Some options to manage dams for total dissolved gas are:

- Install deflectors;
- Install or extend flow separation walls at appropriate dams;
- Add spillbays to spread out spill and dissipate energy;
- Selective use of spillgates and bays yielding reduced elevation of total dissolved gas;
- Schedule routine turbine maintenance and repair during low-power load and river flow periods;
- Provide preventive maintenance of turbines to prevent breakdown;
- System management of water release from upstream storage reservoirs to minimize involuntary spills at dams;
- Improve management of storage and water release at the given dam to minimize spill events;
- Raise stilling basins;
- Raise tailraces;
- Optimize power purchasing to allow maximum use of powerhouse capacity and minimization of involuntary spill.

Controls for nonpoint sources

Cost-effective and reasonable best management practices for nonpoint source control have not been identified by EPA regulations. If DEQ determines that nonpoint sources are impairing the designated use, DEQ will first require that adaptive management be implemented to meet the standards instead of changing the water quality standards. This decision may be made after the scoping discussions outlined in Chapter 2 or may be made after evaluation of the waterbody survey results. Under adaptive management, an iterative approach is used to determine which management practices are protective of water quality, the water quality to be monitored and the management practice adjustment needed to improve water quality. DEQ will work with the designated management agencies to identify and implement the management practices prior to any consideration of a change to the water quality standards.

Who are the designated management agencies?

On federal lands, the management agency, principally the USDA Forest Service or US Department of the Interior (USDI) Bureau of Land Management is responsible for meeting water quality standards on lands they administer. Agency land management plans and federal rules are the principal mechanisms for compliance.

For privately owned lands and lands administered by state and local government, state statutes assign designated management agency responsibility to the state Department of Agriculture (ODA) for agricultural and developed rural lands and to the Board of Forestry and Department of Forestry (ODF) for forest lands.

When would DEQ consider a change to a water quality standard related to nonpoint sources?

At a minimum, DEQ would not consider a UAA or SSC request unless all management practices under the Forest Practices Act were being complied with and, for agriculture, all BMPs were implemented or all prohibited conditions were ended as required by ORS 568.900 - 933. DEQ would have to exhaust procedures in statute which describe interaction between DEQ and the Board of Forestry or the Department of Agriculture before a UAA or SSC on waters impacted by nonpoint sources could be considered.

Who is responsible for agricultural controls?

The water quality program at Oregon Department of Agriculture (ODA) is responsible for addressing water quality problems associated with agricultural lands and activities. ORS 568.900-933 authorizes ODA to develop Agricultural Water Quality Management Area Plans which outline ways to mitigate the water quality problems. To implement ORS 568.900-933, ODA developed goal-oriented approaches, not prescriptive approaches for landowners to follow in order to be in compliance with the rules. Landowners are given an opportunity to achieve the conditions described in the management plan voluntarily, but ODA can require specific practices of landowners.

Technical assistance is available for landowners from the Natural Resource Conservation Service, the local Soil and Water Conservation District and the Oregon State University agricultural extension service.

How does DEQ coordinate with ODA?

DEQ nonpoint staff participates in the review of agricultural water quality management area plans. If DEQ receives a request to change the water quality standard (either through removal of a designated use or adoption of site specific criteria) for a waterbody impacted by agricultural sources, DEQ water quality standards staff will consult with the DEQ nonpoint source staff and DEQ regional water quality basin coordinators to determine the status of implementation of the BMPs.

Who is responsible for forestry controls?

The State Forest Practices Act (ORS 527.610 to 527.770, 527.990 (1) and 527.992) provides the legislative framework for regulation of forest operations on private and non-federal public ownership. The Act assigns " . . the State Board of Forestry exclusive authority to develop and enforce statewide and regional rules . . .." (ORS 527.630 (3)) This includes BMPs to maintain water quality. The statue states "The board shall establish best management practices and other rules applying to forest practices as necessary to insure that to the maximum extent practicable nonpoint source discharges of pollutants resulting from forest operations on forestlands do not impair the achievement and maintenance of water quality standards established by the Environmental Quality commission for waters of the state" ((ORS 527.765 (1)). The management practices are established in OAR 629-600 – OAR 629-665.

How does DEQ coordinate with Oregon Department of Forestry?

DEQ nonpoint source staff provide both technical and policy recommendations to Oregon Department of Forestry during revisions to the Forest Practices Act.

If DEQ receives a request to change the water quality standard (either through removal of a designated use or adoption of site specific criteria) for a waterbody impacted by forestry activities, DEQ water quality standards staff will consult with the DEQ nonpoint source staff and DEQ regional water quality basin coordinators to determine the status of implementation of the best management practices.

Point source controls

The National Pollutant Discharge Elimination System (NPDES) program requires anyone adding a pollutant from a point source into water of the United States to obtain an NPDES permit.

Descriptions of Oregon's NPDES permit process and specific information on different categories of point source dischargers can be found at the following location:
http://www.deq.state.or.us/wq/wqpermit/permits.htm

Effluent guidelines

Sections 301(b) and 306 of the Clean Water Act describe the effluent limitations to be achieved by application of various levels of pollutant control technology depending on the type of pollution or whether the facility is a new source. EPA develops effluent guidelines for point source discharges of pollutants. The guidelines are published in 40 CFR Sections 400-471. If an industry is not subject to these effluent limit guidelines, the permit authority is to develop such requirements based on a best professional judgment basis. A designated use can not be removed from a waterbody if implementation of the technology-based controls would result in attainment of the designated use. DEQ water quality permit staff typically determines if the technology based controls are in place as part of the permit review.

Urban runoff

Some recommended BMPs for urban runoff can be found in *Water Quality Model Code and Guidebook* (Department of Land Conservation and Development and DEQ, 2000).

Section 4.2 of the above reference provides a matrix of BMPs for controlling different parameters of concern (increased erosion and sedimentation; increased runoff volume; nitrogen, phosphorus, metals and other pollutants; temperature).

Concentrated animal feeding operations

Concentrated animal feeding operations are defined as point sources under OAR 340-045-0010(16). These facilities are regulated by NPDES permits. The Oregon Department of Agriculture and DEQ currently work jointly to regulate federally-defined concentrated animal feeding operations under an interagency Memorandum of Understanding. The Memorandum specifies NPDES program roles and responsibilities for each agency until the Department of Agriculture is delegated NPDES authority from the Environmental Protection Agency. (The 2001 Oregon Legislature directed transfer of the NPDES permit program from DEQ to the Department of Agriculture.) Until EPA approves of the transfer, NPDES permits are issued jointly by the Department of Agriculture and DEQ, but Department of Agriculture is the lead agency for day-to-day program operations (e.g., permit registration, inspections, plan review, enforcement, etc).

Selection and evaluation of management practices and control strategies

Practices and strategies should be evaluated to determine which alternatives, if any, will address the causes of impairment that prevent the attainment of the designated use. If the designated use can not be attained, the evaluation of the practices and strategies should demonstrate this. DEQ staff and the TAG will evaluate the results of the evaluation for completeness and DEQ staff will document the results in the technical basis review memo.

Water quality models

The influence of implementation of some of the practices on water quality may be evaluated quantitatively with a water quality model. A comprehensive assessment of available water quality models is available from the water quality modeling staff at DEQ headquarters. Additional information may be found at:

http://www.epa.gov/waterscience/models/

A description of the process to select a water quality model should be included in the technical basis. The selection process may consider factors such as:

- Availability of data sets to calibrate and verify model;
- Cost to develop/run model;
- Expertise of staff;
- Time available for analysis;
- Complexity of the model; and
- Complexity of the system being modeled.

DEQ will review the calibration/verification information for the model and identify any additional data needs. DEQ staff will then summarize the conclusions of the modeling in the technical basis review memo.

Field studies

The effects of control strategies may also be evaluated by field/pilot studies. With either approach, the effect of the strategy on the water quality parameter of interest should be summarized in the technical basis. DEQ will summarize the results of the field/pilot studies in the technical basis review memo.

Qualitative assessment

The effects of some management practices may be evaluated qualitatively when the effectiveness of these practices can not be quantitatively evaluated. In this case, the evaluation should discuss, in general terms, the expected effect on water quality. DEQ will summarize the results of the assessment in the technical basis review memo.

Review of technical basis

The technical basis review memo produced by DEQ staff (in consultation with the TAG) should document:

- If all the best alternatives have been considered;
- What level of water quality can be attained with each alternative;
- Which alternative leads to the maximum protection of the designated use;
- Which alternative leads to the highest level of water quality;
- Which alternative would cause the least environmental damage; and
- If downstream designated uses will be protected.

Trading

The technical basis review memo should describe if water quality trading was evaluated. DEQ is encouraging water quality trading as an innovative way to attain water quality standards and improve habitat. More information on water quality trading may be found at:
http://www.deq.state.or.us/wq/pubs/imds/wqtrading.pdf

Water quality trading is also discussed in more detail in Chapter 7.

Costs of alternatives

If the designated use is not attainable, the highest attainable use must be described in the technical basis. There may be several options to attain the use. If there are competing options, the cost of each should be evaluated. The analysis should also identify the costs to downstream communities associated with water quality impacts. Additional information on economic analysis is provided in chapter 4. As stated in Chapter 4, DEQ may seek funding for the services of the state economist or an economic analysis consultant. If funding is secured, the economist will review the conclusions of the economic analysis.

Site specific criteria

As stated previously, if the designated use is an existing use, DEQ prefers that a site specific criterion be adopted to protect the designated and existing uses. The applicant should determine if site specific criteria support the designated use. The criteria may be based on the species present, the waterbody's characteristics or the health of the population affected by the criteria.

Species specific conditions

If the applicant requesting adoption of site specific criteria believes that the most sensitive use present in the waterbody can be supported with less restrictive criteria, analysis of data should demonstrate that the species present in the waterbody of interest are different than the species used to develop the criteria. This approach may be used for toxic pollutants as well as conventional parameters.

The recalculation procedure is an example of a species specific evaluation. EPA has developed the recalculation procedure to take into account relevant differences between the sensitivities of the aquatic organisms in the national dataset used to develop EPA criteria and the sensitivities of organisms that occur at the site. The recalculation procedure was developed for toxic metal pollutants (USEPA 1994). Under the recalculation procedure, new criteria may be justified by demonstrated toxicological differences between the aquatic species that occur at the site and those that were used in the derivation of the national criterion (USEPA 1994).

Temperature criteria for salmonid designated uses were developed to cover all native salmonids present in Oregon. The criteria are based on the needs of the salmonids most sensitive to water quality and do not account for variability among the species. The species present in the waterbody of interest must be identified. The specific water quality needs of the species present may be gleaned from literature values and field studies. Information on the temperature requirements of salmonids may be found in the Issue Papers prepared as part of the Region 10 temperature criteria guidance development project (USEPA 2001).

DEQ staff will review any conclusions drawn and document the findings in the technical basis review memo.

Waterbody specific conditions

EPA has developed the water-effect ratio procedure to take into account relevant differences between the toxicities of a chemical in laboratory dilution water and in site water. As with the recalculation procedure, the water-effect ratio was developed for toxic metal pollutants. The resident species procedure is intended to address both differences in the sensitivities of organisms and differences between laboratory water and site water (USEPA 1994). Waterbody specific conditions may justify adoption of site specific criteria for other water quality parameters, including dissolved oxygen and temperature. Under this approach, DEQ and the TAG will review data to determine if conditions at a particular location justify an alternative numeric criterion to support the designated salmonid use. The conditions evaluated may include habitat condition and/or lack of specific stressors. DEQ staff and the TAG will review any conclusions drawn and DEQ staff will document the findings in the technical basis review memo.

The temperature criteria

The data needed to support adoption of a site specific criterion under the temperature standard are as follows (OAR 340-041-0028(13)(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.

These characteristics (A-E) may be used to understand the observed temperature. This information may be used to determine the natural or site specific criteria. The habitat quality may affect the water quality needed to support the beneficial use. For example, the presence of cold water refugia may allow for a warmer water temperature that is still protective of the beneficial use. The waterbody survey results will be critical in this evaluation.

Justifying less restrictive criteria

In addition to the factors previously discussed, other factors may be evaluated to determine if less restrictive criteria will support the designated use. For example, criteria may be set at the most conservative values assuming that there are stressors on the species in all waterbodies. If it can be demonstrated that the stressors do not exist in the waterbody of interest, a less conservative criterion may be justified.

For example, according to EPA "Optimal temperature conditions depend, in part, on the food supply. Optimal growth temperatures under limited food supply are lower than those under unlimited/satiated food supply. Generally, EPA believes that laboratory studies under limited food availability are most reflective of environmental conditions fish typically experience. However, there are likely situations where food is abundant, with the result that optimal growth temperatures would be higher" (USEPA 2003 pg. 20). If food abundance is measured and determined to be at a level to allow satiation, the temperature criterion may be increased. "Factors influencing stream productivity include nutrient availability, input of organic matter from external sources, the channel's capacity to store and process organic matter, and light" (Cederholm et al. 2000 as cited by USEPA 2001). Additional stressors include disease, competition and toxics.

Other approaches to site specific criteria

The technical basis for site specific criteria may include the results of studies on the species present in the waterbody of concern to justify a less restrictive criterion. The studies must represent the local population. For example, spawning may be broadly applied in the basin but the specific timing of peak spawning in the waterbody may be reviewed. The current status of the "run" may be compared to the historic status of the run. The studies must identify which water quality or habitat features the local population has acclimated to. The waterbody survey should be designed to address these issues.

Any aquatic life site specific criteria must prevent both lethal and sub-lethal effects that lead to impaired survival of the population. Sub-lethal effects include both behavioral and physiological effects that can be directly linked to impaired survival of the population. In salmonids physiological effects include reduced juvenile growth, increased incidence of disease, reduced viability of gametes in adults prior to spawning, increased susceptibility to predation and competition, increased susceptibility to disease and suppressed or reversed smoltification (USEPA 2003). Behavioral effects that may be linked to impaired population and survival include aggressive behavior, avoidance behavior, and changes to feeding, spawning or migration behavior. DEQ staff and the TAG will review any conclusions drawn regarding lethal and sub-lethal affects and document the findings in the technical basis review memo.

Benefits to the Resource

Habitat restoration

As stated in the Executive summary and Chapter 2, DEQ will consider possible restoration of the resource when reviewing a request to change a water quality standard. Better protection for the resource could be demonstrated by habitat restoration achieved through mitigation or trading.

DEQ encourages the exploration of restoration of habitat to improve the level of use support. For example, opportunities for flow augmentation, riparian restoration, stream channel restoration, building cold water refugia and flood plain restoration may be considered in the technical basis to improve the level of use support. Flow augmentation can reduce stream temperature by increasing stream flow. Increasing the flow in a stream increases both the stream's thermal mass as well as its velocity. This reduces the impact of a given solar load on the stream's temperature. DEQ staff and the TAG will review any proposed habitat improvements and document the findings in the technical basis review memo.

Riparian restoration

Riparian restoration refers to the planting of streamside (riparian) areas. Riparian shade reduces the amount of solar radiation received by the stream, thereby reducing the rate at which the stream warms up. Riparian restoration can also help to restore bank stability, restore natural channel morphology and aid in large woody debris recruitment.

Channel restoration

Channel restoration refers to restoring the channel's natural configuration. Whole channel alterations include restoring meanders in broad flood plain streams, realigning and moving stream channels, re-watering historic channels, dredging and re-sculpting stream channels, and creating or reconnecting side channels or removing side channels along stream reaches (The Oregon Plan for Salmon and Watersheds, May 1999).

By increasing channel sinuosity and complexity, the amount of riparian area is increased. In combination with riparian restoration, this can result in narrower channels with increased shade levels. Reconnecting streams with floodplains can reduce water temperature by increasing groundwater and hyporheic exchanges (USEPA 2003).

Sources of restoration information

The following are some sources of information for assessing physical factors for selecting restoration options. Use of these sources should be documented in the technical basis. DEQ staff and the TAG will review the technical basis and document concurrence or non-concurrence with the findings.

- ***Oregon Watershed Assessment Manual*** – This document provides an overview of watershed processes and how these processes can be altered by human activities, instruction on how to compile and evaluate watershed data, and guidance on how to evaluate the condition of watersheds. http://oregon.gov/OWEB/docs/pubs/ws_assess_manual.shtml

- ***Oregon Aquatic Habitat Restoration and Enhancement Guide*** – Developed by the Oregon Watershed Enhancement Board (OWEB), this document categorizes restoration options as *upslope, riparian/wetlands, and in-channel* watershed function categories. For example, upslope watershed function activities include: correcting road/stream crossing problems; road re-construction/obliteration activities and erosion control. http://oregon.gov/OWEB/docs/pubs/habguide99-complete.pdf

- ***Physical Habitat Simulation Model*** **(PHABSIMM)** – A set of publicly-available programs designed to predict the micro-habitat (depth, velocities, and channel indices) conditions in rivers as a function of stream flow, and the relative suitability of those conditions to aquatic life. http://www.mesc.usgs.gov/products/software/phabsim/phabsim.asp

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How can restoration alternatives be chosen?

The justification for the selection of restoration alternatives may include:

- Available funding to implement the alternative;
- Development of restoration plans by local governments; and
- Interested partners.

As discussed for management options and control strategies, the results of the evaluation should be summarized in the technical basis. The benefit to the resource may need to be evaluated qualitatively.

Outcome of analysis

The technical basis review may result in one of the following outcomes[2]:

- The designated use is confirmed as attainable. The designated use is retained in the water quality standards.
- The designated use is not an existing use, and is removed or a sub-category of the designated use established if the designated use is not attainable.
- The designated use and appropriate criteria are made more stringent based on existing or potential uses.
- The designated use is an existing use. Site specific criteria may be adopted to support the designated use.

The relevant outcome will be documented by DEQ staff in the technical basis review memo.

[2] Adapted from "A Comprehensive UAA Technical Reference," Project 91-NPS-1, Water Environment Research Foundation, 1997.

Chapter 4: Determining the Cost of Use Attainment

Purpose

The purpose of this chapter is to describe the economic and financial analysis that may accompany the biological, chemical and physical information submitted as part of a UAA. The chapter addresses the "ability to pay" of an applicant as well as the evaluation of cost of alternatives to attain water quality standards. Currently DEQ does not have an economist on staff. If funding is secured as described in Chapter 2, DEQ would likely hire the state economist or a consultant to review financial data provided by the applicant for a designated use change.

Economic impact

As discussed in Chapter 1.0, a designated use may be removed, or subcategories of a use adopted, only if one or more of the six conditions specified under 40 CFR Section 131.10(g) are met. Condition (g)(6) specifically refers to substantial and widespread economic and social impact: .. a State can demonstrate that attaining the designated use is not feasible because: Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact." The terms substantial and widespread are defined via analysis of the financial information of the applicant for the water quality standards change and the surrounding community.

EPA guidance

EPA has developed guidance which describes the steps involved in the determination of "substantial and widespread economic and social impact" for point sources covered by Sections 301(b) and 306 of the Clean Water Act. The information included in this chapter is primarily derived from this guidance: *Economic Interim Guidance for Water Quality Standards – Workbook* (USEPA 1995). This EPA document is not an exhaustive description of all appropriate economic analysis; additional information and tests may be necessary and/or desirable in certain circumstances (USEPA 1995). Parties requesting a change to the designated use are referred to the EPA guidance. It is reasonable to expect that for EPA to approve the proposed removal of a designated use, the UAA needs to be consistent with the EPA guidance.

Feasibility

Although only condition (g)(6) requires an economic analysis for a UAA, DEQ has determined that feasibility analysis includes the analysis of alternatives described in Chapter 3 as well as their economic feasibility. Economic feasibility analysis includes an analysis of the applicant's ability to pay for water quality or habitat improvements to support the designated use or both as well as the effect on the surrounding community if the applicant does so.

Gaps in EPA guidance

The EPA guidance does not address all entities who may request a designated use change under 40 CFR 131.10(g). Specifically, federal dams and dams that have other types of ownership are not addressed in the EPA guidance. The information in the EPA guidance can be used as a foundation for the economic analysis for these sources. Additional information will be requested on a case-by-case basis with input from EPA Region X.

Two parts of the economic analysis

The economic analysis described in the EPA guidance consists of two parts: determination of substantial adverse impacts and widespread adverse impacts.

- Substantial adverse impacts - for a public-sector or private–sector entity, that the entity would face substantial adverse financial impacts due to the costs of implementing the necessary pollution controls.

- Widespread adverse impacts - the affected community/communities will incur widespread adverse economic and social impacts if the entity is required to meet existing or proposed water quality standards.

Public vs. private entities

The choice of methods used to evaluate the economic impacts of meeting water quality standards depend, in part, on whether pollution control is the responsibility of a private-sector or public-sector entity. In an economic impact analysis, the distinction between private-sector and public-sector entities is important as it determines not only who will pay for the necessary pollution control, but also the types of funding mechanisms available.

What is a public entity?

A public sector entity refers to any governmental unit that must comply with pollution control requirements in order to meet water quality standards. For a public sector entity, the analysis focuses on that entity and the community or communities it serves.

Determining substantial adverse impact on a public entity

The determination of a substantial adverse impact on a public sector entity involves the following five steps. The EPA guidance provides a series of worksheets to complete the five steps as follows (USEPA 1995):

1) Verify the pollution control project costs and calculate the total annualized capital and operating and maintenance cost of the pollution control project;
2) Calculate the total annualized pollution control costs per household served by the public entity;
3) Calculate a "screener" score which identifies only those communities that clearly will not face any substantial impacts;
4) Apply the secondary test – This test indicates the community's ability to obtain financing and describes the socioeconomic health of the community; and
5) Assess where the community falls in The Substantial Impacts Matrix provided in the EPA guidance – This matrix evaluates whether or not communities are expected to incur substantial economic impacts due to the implementation of the pollution control costs.

Additional information

EPA's *Interim Economic Guidance for Water Quality Standards – Workbook* includes a series of worksheets to assist in completion of each step of the analysis. In addition to reviewing the worksheets, the following information may be requested of the applicant:

- A copy of last year's budget, this year's budget, and next year's proposed budget;
- A copy of last year's financial statements (preferably audited), and this year's financial statement (year to date). Financial statements to include (but not limited to): balance sheet, income statement, and cash flow;
- For any major planned project(s) not described in the budget or financial statement or the application worksheets, a description of that project, its planned implementation date and its annualized capital and operation and maintenance costs; and
- Information on assets the entity has available which are not needed for the on-going operation of the entity.

Conclusion of substantial adverse impact analysis

If the previous analysis does not demonstrate substantial adverse impacts, the applicant will be required to meet existing water quality standards. If impacts are expected to be substantial, then the next step is to determine whether they are also expected to be widespread.

Demonstrating widespread impact

In demonstrating that impacts will be substantial, the economist will have determined that compliance with water quality standards would be burdensome to the community. To demonstrate that impacts will also be widespread, the economist should examine the estimated change in socioeconomic conditions that occur as a result of compliance. There are no explicit criteria identified by EPA by which to evaluate widespread impacts. It is recommended that at a minimum, changes in the socioeconomic indicators listed below be considered. For each indicator listed, the economist should estimate the potential change from pre-compliance conditions if the community were to adopt pollution controls:

- Median household income;
- Community unemployment rate;
- Overall net debt as a percent of full market value of taxable property;
- Percent of households below poverty line;
- Impact on community development potential; and
- Impact on property values.

In addition to changes in income, unemployment, and debt, affected communities may be faced with impaired development opportunities if pretreatment requirements or significantly higher user fees are imposed. The analysis should therefore assess the potential for the loss of future jobs and personal income to the community if businesses chose not to locate in the affected community. The potential for impaired development opportunities can be judged, in part, by comparing post-compliance costs to related costs in neighboring communities. The cost of pollution control may also have an adverse effect on property values. Where property taxes are used to finance the project, property values may fall in response to higher taxes. Similarly, if the project will be financed through user fees, demand for property in the community may fall, thus decreasing the value of property in the community.

The extent to which estimated changes can be interpreted as significant will depend on the health of the community before compliance. It is therefore not possible to identify acceptable or unacceptable estimated changes for each indicator. In addition, there may be secondary impacts to the community (e.g., depressed economic activity in a community resulting from loss of purchasing power by persons losing their jobs due to increased user fees).

Determining substantial adverse impact on a private entity

For facilities owned by the private sector, measuring substantial impacts requires estimating the financial impact on the entity that will pay for the pollution controls. If the analysis shows that the entity will not incur any substantial adverse impacts due to the cost of pollution control, then the analysis is complete and there is no need to perform the widespread analysis. However, if the analysis shows that there will be substantial adverse impacts on the entity, then impacts on the surrounding community must be considered. The analysis of substantial impacts for a private sector entity includes two steps (EPA 1995):

1) Verify Project Costs and Calculate the Annual Cost of the Pollution Control Project.
2) Analyze Financial Impact – In this analysis financial tests are applied to measure the impact on the applicant. The primary measure is profitability. The secondary measures include indicators of liquidity, solvency, and leverage. Additional information may also be considered if it provides for better understanding of how the proposed project impacts the entity's financial health.

Additional information

EPA's *Interim Economic Guidance for Water Quality Standards – Workbook* includes a series of worksheets to assist in review of each step of the analysis. In addition to the worksheets, the following information may be reviewed by the economist:

- A copy of previous financial statements (preferably audited) and current financial statements (year to date). Financial statements are to include (but not limited to): balance sheet, income statement, and cash flow.
- A description of any planned major project(s) not described in the financial statements or on the application worksheets. The description of that project should include its planned implementation date and its annualized capital and operation and maintenance costs.
- Information on assets the entity has available which are not needed for the on-going operation of the entity.

Demonstrating widespread impact for a private entity

If the financial tests suggest that a private entity or group of entities will have difficulty paying for pollution controls, then an additional analysis must be performed to demonstrate that there will be widespread adverse impacts on the community or surrounding area. The EPA guidance provides worksheets to help the economist in the determination of widespread impacts.

Opportunity costs

The economic analysis should include a qualitative analysis of the opportunity costs if the water quality standards are not met (e.g. the designated use is removed or a sub-category of the designated use is adopted). Such an analysis should identify the costs to: the resource (loss of fish, other aquatic life); business (loss of customers, loss of fish/water/amenities, and loss of tourism); communities (drinking water, wastewater) and changes in property values in the affected and downstream areas. As a starting point, the beneficial uses for the waterbody should be identified and the effect of non-support of the beneficial uses should be discussed. The discussion of opportunity costs will be part of the information package submitted to the EQC for review.

Evaluation of options

As stated in chapter 3, DEQ staff, in consultation with the technical advisory group and the economist, should determine whether all strategies to support the designated use have been evaluated. If there is no feasible strategy (considering technology and economics) to support the designated use, DEQ staff should determine what designated use can be attained.

Economic benefits of clean water

In many cases, there may be economic benefits that accrue to the affected community from cleaner water. For example, in a rural community where the primary source of employment is agriculture, the reduction of fertilizer and pesticide runoff from farms would reduce the cost of treating source water to drinking water standards for downstream users. The economic benefit is the dollar value associated with the decrease in treatment cost. The types of economic benefits that might be realized will depend on both the characteristics of the polluting entity and characteristics of the affected community, and should be considered on a case-by-case basis.

Chapter 5: Standards Review, Consultation and Approval/Disapproval Process

Purpose

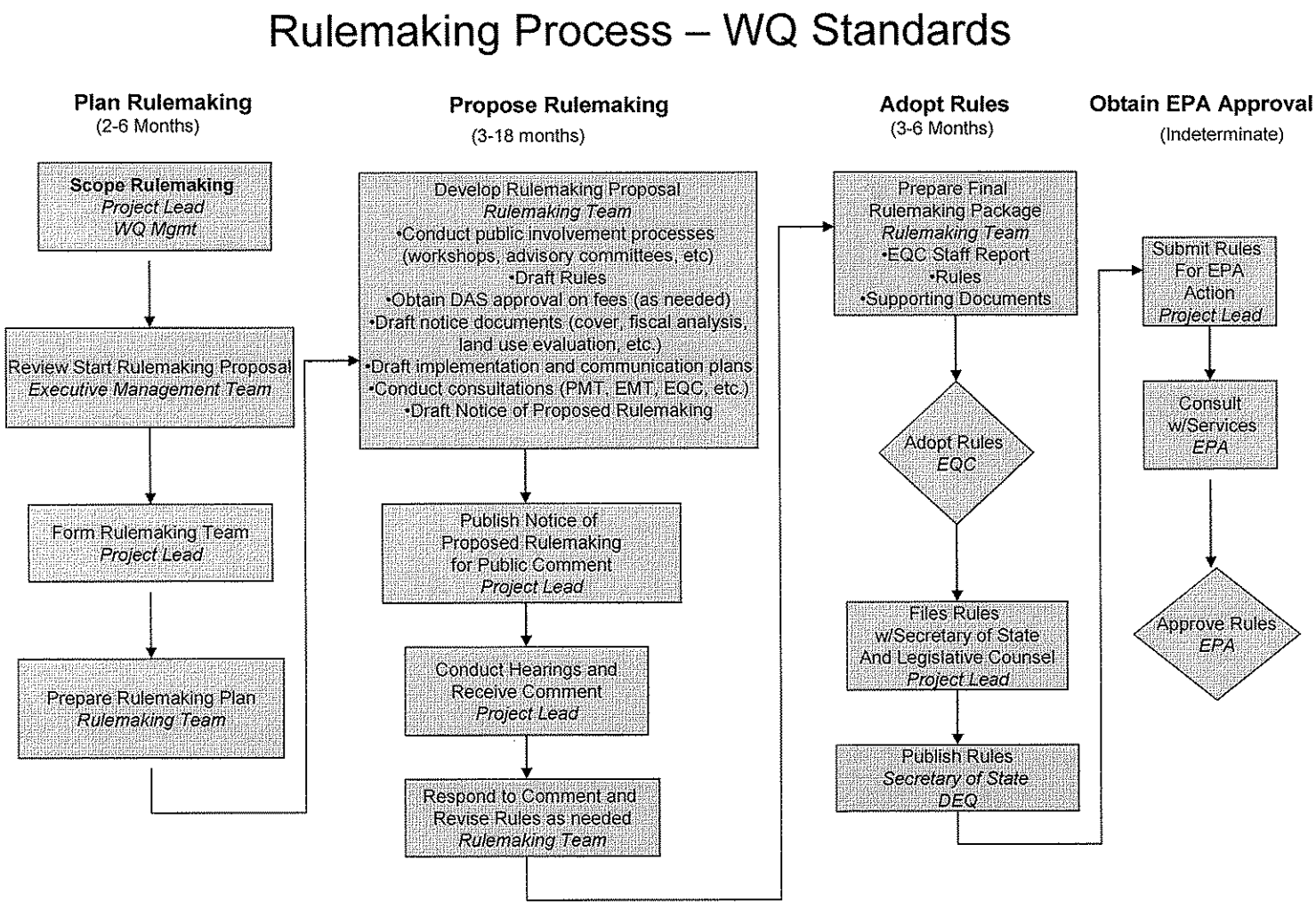
The purpose of this chapter is to further describe the steps that will occur if the EMT agrees that removing a designated use or developing site specific criteria is a rulemaking priority.

DEQ rulemaking process

Any change in Oregon's water quality standards must go through a rulemaking process. Information on DEQ's rulemaking process is available on DEQ's internal website and from the water quality division rule coordinator. The rulemaking process includes: internal review, public participation, responding to comments and revising the rules as needed, submission of proposed rules to the EQC, submission of rules to the agency rules coordinator for filing with the Secretary Of State and Legislative Counsel, and submission of rules to EPA for review and approval/disapproval. The rulemaking process is outlined in Figure 4.

The rulemaking should be included on DEQ's rulemaking agenda, which is updated annually. To support the annual update, prior to October, each division, region, and office must submit to the Executive Management Team (EMT) updates of the proposed rulemaking topics planned for the next two years. Programs must consider the need for, and alternatives to, changing rules and evaluate priorities. Each October, the EMT will review rule modifications proposed for all programs and determine which to include on the DEQ Rulemaking Agenda.

Figure 4: Rulemaking Process



When is consultation required?

Once the EQC adopts a water quality standard change, it is submitted to the EPA for review and approval or disapproval in accordance with Section 303 of the Clean Water Act. If the water quality standard change involves a waterbody with Endangered Species Act-listed species, EPA must consult with NOAA Fisheries Services or US Fish and Wildlife Service or both to determine whether the proposed changes to designated uses or water quality criteria could jeopardize ESA-listed species or adversely modify their critical habitat.

Who is part of the consultation?

The two federal fisheries services are responsible for the protection of different species. The NOAA Fisheries Service is consulted when there are marine mammals or anadromous fish present in the waterbody. USFWS is consulted when resident fish or wildlife are present in the waterbody.

What does EPA do?

EPA must describe the proposed action and its potential for affecting listed species in a document called a biological assessment (BA). The BA must consider:

- Effects on survival of any life stage, including the potential for delayed mortality;
- Effects on behavior, physiology, growth, competitive ability;
- Effects on habitat components and processes;
- Effects on prey base; and
- Effects on predators.

What do the federal services do?

The BA is submitted to the federal fisheries services for review. The information presented in the BA will be used by the Services to decide whether or not to concur with EPA's determination of the effect of the water quality standard change on the listed species. If one of the Services determines that the action is likely to adversely affect a listed species, it will prepare a biological opinion.

What is DEQ's role in the consultation process?

In order to expedite review of the proposed water quality standard, DEQ staff should include staff from EPA and the federal fisheries services on the Technical Advisory Group. Such participation may allow DEQ to be forewarned of the concerns of EPA and the fisheries services. Participation on the TAG should help EPA and the fisheries services understand DEQ's issues.

DEQ staff should be prepared to explain to EPA why DEQ believes the water quality standards are protective of the listed species. This information is usually summarized in the issue papers or technical support documents which are sent to EPA and the fisheries services with the proposed water quality standard change.

DEQ staff should be prepared to answer questions from EPA and the fisheries services about any of the following issues:

- Implementation of the proposed water quality standard;
- Criteria for protection of healthy populations or populations at risk;
- Uncertainties associated with the new criteria; and
- Alternatives to changing the designated use/criteria.

Ideally, DEQ staff should work with EPA and the fisheries services throughout the water quality standard development process to address issues and concerns in a pre-emptive manner.

EPA to Tribal Government Consultation

When EPA reviews the water quality standard change proposal, it must consider its tribal trust responsibilities. Tribes are sovereign governments and under Clean Water Act Section 518, EPA is authorized to treat tribes as states under certain circumstances. In addition, the federal government has special trust responsibilities with respect to tribal governments and tribal members. These trust responsibility arise out of constitutional doctrines and treaty obligations.

The federal responsibility to tribes is outlined in executive orders, treaties and case law. Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, describes the fundamental principles that should guide federal agencies in formulating or implementing policies that have tribal implications (Federal Register 65, No. 218, November 9, 2000). Section 5 of the Executive Order specifies that "Each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications."

Since a change to a designated use or adoption of site specific criteria is a change to water quality standards, EPA will follow Agency tribal consultation policies and guidance for EPA's mandatory duty under Section 303(c)(2)(A) of the CWA. EPA must review the state's proposed water quality standard revision for consistency with requirements of the CWA and to approve or disapprove the standard change. EPA can offer tribal governments the opportunity to consult as soon as UAA or SSC work efforts may start to enable adequate time for necessary consultation and coordination on EPA's final decision under Section 303(c). EPA can provide different forums for tribal government consultation and coordination including letters, meetings, conference calls and other ways to share information.

Oregon State policy on State to Tribal Government Relations

Under ORS 182.164 state agencies are required to have reasonable policies for relationships and cooperation with tribes. These policies must promote "government-to-government" relationships and address both the development and implementation of programs that affect Tribes. (By an earlier executive order, the Governor has also directed state agencies to engage in government-to-government relations with the nine federally recognized tribal governments in the State. [EO-96030])

DEQ statement of intent

In response to the statute, DEQ adopted a statement of intent on January 14, 2002. Under this policy, staff is directed, among other things, to:

- Establish a list of key tribal contacts and provide these contacts with notice of department policy and planning efforts;
- Request at least biennially that the tribes update or identify DEQ programs that affect or are of interest to the tribe;
- Support the exchange of data collected by DEQ staff and tribal governments;
- Support and participate in cooperative efforts between federal, tribal, state, and local entities to address environmental concerns that cross jurisdictional boundaries; and
- Invite tribes to participate on DEQ advisory committees that are of interest to the tribes and to provide tribes with annual updates of advisory committee activities that are of interest to the tribes.

DEQ submission of water quality standards revisions

When DEQ submits the water quality standards revisions to EPA DEQ must submit any supporting information for the use attainability analysis, the methodologies used for site-specific criteria development, and any general policies applicable to water quality standards. The revisions to the water quality standards must be submitted to the EPA Regional Administrator for review and approval within 30 days of the final State action to adopt and certify the revised standard.

EPA Action and timelines

Requirements for EPA action on the States revision to water quality standards are outlined in 40 CFR Section 131.21. After DEQ submits its officially adopted revisions, EPA shall either: (1) notify DEQ within 60 days that the revisions are approved, or (2) notify DEQ within 90 days that the revisions are disapproved. If EPA disapproves the revisions, EPA shall explain why the revisions do not comply with the requirements of the CWA and federal regulations. The original designated use will remain in effect.

What are the components of the packages to be submitted to EPA?

Appendix B summarizes the information expected to be developed and submitted to the Environmental Quality Commission and the Environmental Protection Agency.

Chapter 6: Integration of UAAs and Site Specific Criteria with other Water Quality Programs

Purpose

The purpose of this chapter is to describe those water quality programs in which standards attainment must be determined and describes when initiation of the standards review process may be appropriate in relationship to these water quality programs.

Total Maximum Daily Loads

When a waterbody is determined to be water quality limited, a TMDL must be developed. A TMDL must be calculated for each pollutant that contributes to water quality standards violations. When the TMDL is developed, it must be calculated based on the current applicable water quality standards. In general, before DEQ would consider undertaking water quality standards review, DEQ needs to review information demonstrating that the applicable standards are unattainable through the load allocations and waste load allocations. Much of the information would be developed in a TMDL analysis. The analysis would include: a review of current water quality data; determination of the magnitude, frequency and duration of the criteria exceedances; evaluation of the management alternatives; and evaluation of restoration alternatives.

Water Quality Management Plans

In addition to the TMDL, DEQ writes a water quality management plan (WQMP) which identifies the designated management agencies (DMAs) responsible for developing implementation plans. Under State regulations the implementation plan must identify the management strategies the DMA will use to achieve the load allocations. If during evaluation of the management strategies the DMA determines that the allocations are unattainable, the DMA should initiate discussions with DEQ. DEQ will determine whether: the allocation strategy should be revised, whether other alternatives should be reviewed, or if the applicable water quality standards should be reviewed.

401 Certifications

Under Section 401 of the Clean Water Act, a water quality certification must be issued for any activity that requires a federal permit or license if that activity may result in a discharge to waters of the State. The 401 certification will have conditions to ensure that water quality standards will be met. DEQ can deny a 401 certification if the project can not meet water quality standards. Once DEQ has received a complete application for a 401 certification, DEQ has one year to issue the 401 or waives its right to issue the 401 certification. 401 certifications can be divided into non-hydropower and hydropower activities. Non-hydropower activities that require a 401 certification include but are not limited to:

- Creek crossings
- Dredging
- Placing fill materials in waterways or wetlands
- Constructing Docks/marinas
- Restoring Wetlands
- Restoring Streams
- Replacing Culverts

In the case of non-federal hydroelectric projects, the Federal Energy Regulatory Commission (FERC) administers the licensing program, and DEQ certifies the project's application for licensing or re-licensing. Hydropower 401 certifications are incorporated into FERC licenses, which are issued for a 30-50 year time period.

The 401 certification must be based on current applicable water quality standards. Whether the activity is hydropower or non-hydropower, if a water quality standard change is desired the change must be completed (including EPA approval) before a 401 certification determination can be made under the new water quality standard.

In general, before DEQ would consider undertaking a water quality standards review, the applicant for the 401 certification would be expected to demonstrate that the attaining the applicable water quality standards is not feasible. If removal of a designated use is proposed the feasibility analysis includes an analysis of the control strategies and their costs.

NPDES Permits National Pollutant Discharge Elimination System (NPDES) permits are written to meet current water quality standards and approved waste load allocations. If a permittee believes that a designated use for the receiving waterbody is not an existing use and is not an attainable use, or that site specific criteria will protect the designated use, the permittee should discuss this with the DEQ permit writer well before the permit is up for renewal. The permit writer should discuss the issue with the water quality standards staff and determine if the issue may be addressed during the triennial review of the water quality standards.

If the designated use is an existing use, adoption of site specific criteria may be considered before the permit is up for renewal. As discussed previously, the permittee will have to demonstrate that they have evaluated available technologies to support the designated use. The permit review and renewal will not be held up for a review of the water quality standards. If the permittee needs additional time to comply with permit limits, a variance from the water quality standards may be requested. The EQC determines whether to grant the variance. The variance must be submitted to EPA for review and approval. According to OAR 340-041-0061(2)(d)(B) the variance may not exceed three years or the term of the NPDES permit, although the variance may be renewed. The variance is not effective until approved by EPA (OAR 340-41-0061(2)(d)(C)). Variances are discussed in more detail in Chapter 7.

Chapter 7: What alternative methods are available?

Purpose

The purpose of this chapter is to explore alternatives to changing water quality standards.

Variances

Variances

When a point source cannot meet water quality standards, a variance may be granted under certain circumstances. The variance applies only to the point source requesting the variance and only the pollutant or pollutants specified in the variance. The authority for states to grant variances is provided in 40 CFR 131.13 which describes general policies pertaining to water quality standards, and states:

> *States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances. Such policies are subject to EPA review and approval.*

When may a variance be granted?

The Oregon Administrative Rules describe how such variances may be applied. Specifically, OAR 340-041-0061 states:

(2) Water quality variances. The commission may grant point source variances from the water quality standards in this Division where the following requirements are met.

> *(a) The water quality variance may apply only to the point source for which the variance is requested and only to the pollutant or pollutants specified in the variance; the underlying water quality standard otherwise remains in effect.*
>
> *(b) A water quality standard variance may not be granted if:*
>
> > *(A) Standards will be attained by all point source dischargers implementing effluent limitations required under sections 301(b) and 306 of the federal Clean Water Act and by nonpoint sources implementing cost-effective and reasonable best management practices; or*
> >
> > *(B) The variance would likely jeopardize the continued existence of any threatened or endangered species listed under section 4 of the Endangered Species Act or result in the destruction or adverse modification of such species' critical habitat.*

Under what conditions may a variance be granted?

Before a variance can be granted, the applicant must demonstrate that one of the six conditions listed in OAR 349-041-0061(2)(c) applies. These six conditions are as follows:

(A) Naturally occurring pollutant concentrations prevent the attainment of the use.

(B) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable uses to be met without violating state water conservation requirements.

(C) Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.

(D) Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way which would result in the attainment of the use.

(E) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and unrelated to water quality preclude attainment of aquatic life protection uses.

(F) Controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act would result in substantial and widespread economic and social impact.

How is a variance different from a use attainability analysis?

The six conditions listed under OAR 340-041-0061(2)(c) are the same conditions under federal regulation to allow removal of a designated use or adoption of a sub-category of a designated use. A removal of a designated use or adoption of a sub-category of a designated use applies to the waterbody. Variances are granted for individual dischargers for a limited time with the expectation that they will be able to comply with water quality standards by the time their variance expires (EPA 1995). Under a variance the water quality standards do not change. A variance is preferable to a removal of a designated use since other dischargers, who are capable of meeting the standards, must comply with the standards through their permits (EPA 1995).

Procedures by which a variance is granted

OAR 340-41-061(2)(d) describes the procedures by which a variance may be granted. These procedures are as follows:

> *(d) Procedures. An applicant for a water quality standards variance must submit a request for a variance to the department. The application must include all relevant information showing that the requirements for a variance have been satisfied. The burden is on the applicant to demonstrate that the designated use is unattainable for one of the reasons specified in subsection (c) of this section. If the department preliminarily determines that grounds exist for granting a variance, it must provide public notice of the proposed variance and an opportunity for public comment.*
>
> > *(A) The department may condition the variance on the performance of additional studies, monitoring, management practices, and other controls deemed necessary. These terms and conditions will be incorporated into the applicant's NPDES permit or department order.*
> >
> > *(B) A variance may not exceed three years or the term of the NPDES permit, whichever is less. A variance may be renewed if the applicant reapplies and demonstrates that the use in question is still not attainable. Renewal of the variance may be denied if the applicant does not comply with the conditions of the original variance or otherwise does not meet the requirements of this section.*
> >
> > *(C) DEQ approval of a variance for a point source is not effective under the federal Clean Water Act until submitted to and approved by EPA.*

Trading

Trading

Trading programs allow regulated parties to meet their obligations (e.g. permit limits) by implementing environmentally equivalent or greater protection from another point or nonpoint source. Trading to offset a temperature load is discussed in detail in this chapter although other water quality parameters can be "traded" as well. DEQ developed a trading policy which outlines protocols to quantify trades for several parameters. The trading document may be viewed at:

http://www.deq.state.or.us/wq/pubs/imds/wqtrading.pdf

Clearly defined units of trade are necessary for trading to occur. These may be expressed in terms of energy or mass per unit of time as appropriate to the pollutant to be traded, and consistent with the time periods that are used to determine compliance with permit conditions or other regulatory requirements. Under NPDES permits and 401 certifications, the trading must correct the water quality standards violations in-situ.

Quantifying temperature impact

Point sources and dams can impact temperature. This impact can be quantified as follows:

Heat load = Q x ΔT_{max} x Specific Heat of Water X Density of Water

Where:

Q = Average flow of the effluent
ΔT_{max} = Maximum temperature impact.

This equation provides a measure of the heat load that an entity may choose to offset through pollutant trading.

Offset options

Temperature effects can be offset by riparian restoration, which is the planting of streamside (riparian) areas. Riparian shade reduces the amount of solar radiation received by the stream, thereby reducing the rate at which the stream warms up. Riparian vegetation also stabilizes stream banks and can help to restore deeper channels and pools over time. The impact of riparian restoration can be estimated if the site potential vegetation for the watershed is known. Temperature effects may also be offset by flow augmentation. There are many other measures that may be taken to restore watersheds that are not listed here, primarily because their impact on temperature is not well-

established. These measures include but are not limited to: road removal, reduction of impervious surface area and floodplain restoration. If the impact of these measures can be quantified, they may be suitable measures to offset the impact of temperature loads. These offset options must result in water quality standards compliance within the affected waterbody.

Quantifying the impact of riparian restoration

The magnitude of the impact of shade achieved through riparian restoration will depend on the amount of stream surface that is shaded. This impact may be quantified as follows:

Heat load offset by shade =
Area of Stream Shaded x Increase in Shade Density x Solar Insolation Rate

Each term is explained below:

- Area of Stream Shaded = Average Stream Width x Stream Length
- Increase in Shade Density = Projected Shade Density – Initial Shade Density. Shade density can be measured via a solar pathfinder, densiometer or alternate method as long as adequate justification is provided. Projected shade density is the shade level associated with site potential vegetation. In areas where restoration projects have already occurred, shade density values should be informed by experiences to date.
- The solar insolation rate is the amount of solar radiation that hits a stream surface (after blockage by cloud cover, vegetation, etc). The Department of Energy publishes solar insolation rates for different parts of the country. The solar insolation rate used to evaluate the impact of shade should correspond to the critical period, usually mid to late summer.

The above methodology does not take into account the ancillary benefits associated with riparian shading projects, such as improved habitat and reduced erosion. These ancillary benefits will accrue on a year-round basis, though the warming impact that the riparian restoration is intended to offset may only occur during part of the year.

Quantifying the impact of flow augmentation

Modeling may be used to develop empirical equations that relate instream flow to temperature. These equations can then be used to determine how much thermal credit can be given for a particular rate of flow augmentation. The credit will be in effect for as long as the source chooses to practice flow augmentation.

Addressing uncertainty

Offset options can be expected to have uncertainty associated with them, and this uncertainty needs to be addressed in the temperature management plan. Three different approaches for dealing with uncertainty are discussed below along with appropriate applications of each. The third approach was written for BMPs for nutrient control, however it could apply to other types of BMPs as well.

- **Margins of Safety.** Margins of safety are an appropriate means for dealing with negative circumstances that have a reasonable likelihood of occurring within a permit cycle. As an example, though NPDES permits are written for a five year period, a margin of safety that would take into account natural disturbances that might occur only once in ten years, such as a ten year drought, would be appropriate.
- **Monitoring of surrogates.** When the water quality parameter that is being traded is variable, DEQ may elect to monitor a surrogate. For example, stream temperature varies with weather as well as with the amount of flow in the stream, and these impacts to stream temperature can negate, at least temporarily, the impact of riparian planting/shading. Therefore, in a temperature trade that involves shade creation via riparian planting, DEQ may elect to require the permit holder to monitor plant survival and later on, shade density in lieu of stream temperature.
- **Trading ratios.** The use of trading ratios is appropriate in conjunction with BMPs, the impact of which is inherently variable. For example, the amount of pollutant reduction that will occur as the result of installing a vegetative buffer will depend on the amount of pollutant delivered to the buffer, the nature of the soils present, the amount of rainfall, and the density/type/age/health of the vegetation itself. For such BMPs, DEQ will elect to use trading ratios to account for the uncertainty associated with them. Appendix C of DEQ's trading policy lists trading ratios for BMPs to reduce nutrient loading to streams.

Public participation

DEQ views public participation as critical to the success of trading. Public participation may be achieved through stakeholder involvement as well as during the public comment period for the NPDES permit.

Implementation

Trading partners must be prepared to provide reasonable assurance that the proposed action(s) will be implemented. For point source credits, NPDES permit provisions will provide such assurances. For nonpoint source credits, examples of reasonable assurance include but are not limited to: performance bonds, memoranda of agreement, and third party contracts.

For temperature, compliance with the approved trade will be established by the schedule in the NPDES permit. If riparian planting is used to offset a temperature load, compliance will initially be determined by compliance with an approved schedule for planting. As plantings become established, compliance will be determined by plant survival rates and shade density measurements.

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Appendix A

Checklist of Aquatic Life Indicators

The following checklist summarizes the categories of indicators discussed in Chapter 3, and should be used by the applicant during the planning phases of a UAA or studies to support adoption of site specific criteria. This list does not include all possible types of information that might be needed to support removal of a designated use or adoption of site specific criteria.

Aquatic Habitat Checklist

General Watershed Information

Ecoregion (Level III or IV)
Gradient
Elevation
Area and relief
Stream order
Channel type
Valley bottom and containment
Hydrologic layers
Identification of fish barriers

Physical Information

Land use/land cover, including impervious surfaces. Includes type and stage of vegetative cover (e.g., non- forest, mixed, conifer, seral stage) and type of land use (e.g., forested, urban, agriculture, open) across the landscape. Hard surfaces such as roads, rooftops, and parking lots which affect the pattern and extent of factors such as surface run-off (hydrograph), sedimentation, and stream temperature.)

Geomorphology/geomorphic index (including floodplain lateral connectivity) (Characterizes stream channel structure in floodplain areas and connectivity to floodplain.)

Road density

Landslides

Wetlands

Riparian cover and condition – banks and other riparian characteristics (Riparian areas are complex ecological systems that are important for maintaining the vitality of streams. They strongly affect streams by influencing hydrological patterns, recruiting of large woody debris, stabilizing banks, sequestering nutrients, controlling light regime, and controlling seasonal nutrient contribution to organisms.)

Large wood - (Large wood influences channel hydraulics, energy dissipation and sediment effects on channel complexity. The location, number, area, and volume of pools and substrate/gravel are affected by large wood.)

Pools and other channel morphology structures - (Important habitat features where channel deepens and flow slows.)

Stream substrate – streambed composition (Result of geomorphology and interacting habitat-forming processes. Substrate composition (e.g. gravel, embeddedness) can be highly variable across small spacial scales).

Rosgen Level III Stream Assessment

Bankfull width
Mean depth
Cross section area at bankfull
Width/depth ratio
Width flood prone area
Entrenchment ratio
Channel materials
Water surface slope
Valley type
Channel sinuosity
Riparian vegetation
Canopy density
Riparian plant communities
Streamflow regime
Stream order
Depositional feature
Meander patterns
Debris and channel blockages

Marine physical parameters – some may be applicable to freshwater and estuarine systems

Shoreline modifications (fill, bulkheads, overwater structures, clearing, diking)

Status and trends of substrate

Intertidal vegetation

Biological Parameters – Freshwater

Fish and other vertebrates

Aquatic macroinvertebrates (infaunal and/or epifaunal)

Aquatic macrophytes

Algae

Quantitative fish population surveys

Biological Parameters – Marine

Submerged vegetation (eelgrass, kelp, general seaweeds)

Floating kelp canopy

Infaunal biota

Substrate

Emergent vegetation (salt marsh, spit/berm, forested wetlands

Chemical Parameters – Freshwater (with density stratification of monitoring parameters, if appropriate)

Dissolved oxygen – continuous summer and winter surveys

Continuous temperature stream monitoring conducted during the time period designated for the fish use in the water quality standards (i.e. during the warmest part of the year for non-spawning uses)

pH – continuous summer and winter surveys

Turbidity

Total phosphorus

Total nitrogen

Chlorophyll-a

Water clarity

Toxic substances in water

Toxic substances in sediment

Toxic substances in tissue

Chemical – Marine (with density stratification of monitoring parameters, if appropriate)

Dissolved oxygen

Temperature

pH

Turbidity

Total phosphorus

Total nitrogen

Chlorophyll-a

Water clarity

Nutrients

Ammonium concentrations

"DIN" (Dissolved inorganic nitrogen)

Toxic substances in water

Toxic substances in sediment

Toxic substances in tissue

Appendix B

Checklist for EQC Submission

Submission to the EQC of the rule modification to remove a designated use or adopt site specific criteria will include the following information:

EQC Staff Report for rule adoption with the following attachments:

- Proposed rule revisions;
- Summary of Public Comments and Agency Responses;
- Advisory Committee Membership and Report;
- Presiding Officer's Report on Public Hearings;
- Statement of Need and Fiscal and Economic Impact;
- Land Use Evaluation Statement;
- Relationship to Federal Requirements Questions.

Instructions for completing the EQC staff report may be found on DEQ's intranet in the Rulemaking Resource Center. Staff may also seek assistance from the water quality division rulemaking coordinator.

Additional documents for the EQC may include an issue paper and memos of explanation.

Checklist for EPA submission

When submitting a change to the water quality standards to EPA for review DEQ provides the following:

- The rule as filed by the Secretary of State;
- EQC staff report and attachments;
- Any additional documents provided to the EQC such as the issue paper;
- Certification by the State Attorney General that the water quality standards were duly adopted pursuant to State law.

Federal rules describe the requirements of a rule submission to EPA for review and approval. These requirements include: the Certification by the State Attorney General; methods used and analyses conducted to support water quality standards revisions and water quality criteria sufficient to protect the designated uses (40 CFR 131.6).

Appendix C

Regional and national context for UAAs

Purpose

The purpose of this appendix is to explore how the UAA development process in Oregon fits within the regional and national context by answering the following questions:

- What is the status of UAA activity in EPA Region 10?
- In what other states around the country have UAAs been conducted?
- What beneficial uses have been addressed in these existing UAAs?
- Are there examples of UAA Guidance in other states?

UAA Activity in Alaska

The State of Alaska has completed two Use Attainability Analyses:

- Nolan Creek. Revised designated uses for Nolan Creek were submitted to EPA in September of 1984. EPA approved the revised uses in December of 1984.

- Red Dog and Ikalukrok Creeks. A use attainability analysis for Ikalukrok Creek, Red Dog Creek, and several small tributaries to Red Dog Creek were submitted to EPA for review in 1997. This resulted in the aquatic life use being removed from a small stream segment, minor modifications to recreational uses, and removal of the drinking water use from approximately 40 miles of the waterbody portions in question. The UAA also resulted in the removal of sulfate limits from the final permit. Metals limits and the TDS limit, however, which were based on aquatic life use, were not affected by the UAA and were retained in the final permit. The reclassifications of the designated uses were approved by EPA in February of 1998.

UAA Activity in Idaho

The State of Idaho has completed 5 UAAs: The Westfork of Blackbird Creek UAA, the Blackbird Creek UAA, the Bucktail Creek UAA, the Soda Creek UAA, and the Brownlee Reservoir UAA. EPA approved the Westfork Blackbird, Blackbird and Bucktail Creek UAAs. The Soda Creek UAA was subsequently withdrawn by IDEQ and the Brownlee Reservoir UAA has not yet been reviewed by EPA.

- The Westfork of Blackbird Creek UAA, the Blackbird Creek UAA, and the Bucktail Creek UAA were all tied to operation of the Blackbird Mine in Lemhi County, Idaho. Due to the mine's status as a Superfund site, a significant amount of data was available to conduct analysis on these three drainages.

- Example: Bucktail Creek. In the Bucktail Creek UAA, the State was able to determine that due to the steep, shallow and intermittent nature of the creek, contact recreation and aquatic life use are not existing beneficial uses. Furthermore, the State was able to use CERCLA documents to analyze copper concentrations in Bucktail Creek. Using this information, the State concluded that it is unlikely that in the foreseeable future (e.g. 10-20 years) copper concentrations will decline to the point of meeting aquatic life criteria. As such, it was concluded that within the foreseeable future, human caused sources of pollution preclude the attainment of use and cannot be remedied.

- Idaho has also conducted a UAA that did not result in a use change. The Paradise Creek UAA was completed in 1994. This report determined that the currently designated uses of cold water and secondary contact recreation were attainable. It also determined that salmonid spawning, although not an existing or designated use was probably an attainable use.

- The State of Idaho in March 2002 submitted for EPA review and approval two UAA documents in support of both recreational and aquatic life use designation changes on 5 tributaries (subdivided into 8 "waterbody units") to the lower Boise and Snake Rivers. These tributaries were existing creeks, swales, or depressions that had been modified (e.g., straightened, deepened, and otherwise modified in many portions) in the mid 1800s to early 1900s to serve as irrigation conveyances, and continue to be operated and maintained by irrigation districts for this purpose. The State of Idaho sought to change the designated recreational use on six waterbody units from primary to secondary contact recreation (PCR to SCR) due to safety concerns or because of insufficient water to support PCR. It is important to note that the Idaho bacteria criteria used for compliance purposes for PCR and SCR are the same. The State also sought to change the designated aquatic life uses in eight waterbody units, citing 40 CFR 131.10(g)(2), (4), and (5) in support of these changes. EPA reviewed and in November 2004 approved the six recreational use designation changes, but disapproved the eight aquatic life use designation changes. Issues that led to EPA's disapprovals included segmentation of the waters that blurred hydrologic boundaries, inconclusive information regarding existing use and current conditions, and lack of attainability analyses. Consultation in this case was not required because EPA's action on aquatic life use designation changes did not result in changes to the State's standards.

UAA Activity in Washington

In the state of Washington, one UAA has been submitted and withdrawn, and one UAA is under development:

- In 2002, the town of Quincy, Washington submitted a UAA in support of removing aquatic life use in an agricultural irrigation ditch that was receiving wastewater discharge. Upon review, Washington DOE found the data and analysis insufficient to support removing the full suite of uses recommended in the report. The state responded to Quincy with a letter that summarized the modifications that the report would support. To date, the town of Quincy has not resubmitted a revised package.

- Another UAA is known to be under development for the Spokane River from RM 96 to RM 33.9[3]. The objective of this UAA is to determine whether the beneficial uses designated for Lake Spokane and the Spokane River are existing and attainable, and thereby suitable as the basis for TMDL targets for the Spokane River.

UAA Activity in Oregon

UAA-related activity in the state of Oregon has, to date, been limited to a case study conducted in the 1980s:

- In the1980s, DEQ reviewed a portion of the Malheur River as part of a US EPA field test of the draft "Waterbody Surveys and Assessments Guidance" for conducting a use attainability analysis[4]. The portion of the river examined was largely influenced by a complicated system of irrigation canals, laterals, and irrigation return flows. Given the level of human influence on the waterbody, an analysis was conducted to determine if the designated use (salmonid fishery) was in fact an existing or attainable use. The case study concluded that uses designated for the segment of the Malheur River in question should be changed to reflect achievable uses based on the existing resident fish populations and aquatic life.

[3] http://www.spokaneriveruses.net/backgroundinfo.htm

[4] See Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analysis, Volumes 1-3, 1983-84 (PDF, 37M). Link available at: http://www.epa.gov/waterscience/library/wqstandards/

State with completed UAAs

A total of 24 states have completed UAAs, though some states have been more active in this arena than others. The following table summarizes where and how frequently UAAs are being used:

Number of UAAs Prepared	State Where UAA Conducted
More than 100	KS, NY, OH, OK
11–100	AZ, CO, IN, PA, WY
1-10	AK, AL, CA, FL, GA, ID, KY, ME, MA, MN, NJ, NM, OR, TX, VA

Beneficial Uses considered in UAAs

The following table summarizes which categories of designated uses have been subject to Use Attainability Analysis, and in what states those analyses were conducted.

Designated Use Category	No. of States	States
Aquatic/Wildlife Use	18	AL, AZ, CA, CO, GA, ID, IN, KS, MA, ME, MN, NM, NY, OH, OK, OR, PA, VA, WY
Recreational Use	15	AZ, CA, CO, ID, IN, KS, MA, ME, MN, NM, NY, OH, OK, VA, WY
Agricultural Use	9	AL, AZ, CA, IN, KS, MA, NM, OH, WY
Industrial Use	5	AL, CA, MA, ME, WY
Public Water Supply Use	5	CA, ME, NM, OH, WY
Navigation Use	2	CA, ME
Outstanding Water Supply Use	2	OK, PA

UAA guidance in other states

A number of states have developed guidance for Use Attainability Analysis, though it should be noted that these documents are often specific to a particular category of use. The following table summarizes available guidance by state. Directly below the table are specific references for many of these documents, and websites if available.

Designated Use Category	No. of States	States
Aquatic/Wildlife Use	5	KS, OK, PA, WA, WI
Recreational Use	4	CO, KS, MO, OK, WA
Industrial Use (CSO)	1	IN
Public Water Supply Use	1	KS

Kansas
Kansas Department of Health and Environment. (2001). *Guidance Document for Use Attainability Analysis (UAAs)*. 69 pages. Available at: http://www.kdhe.state.ks.us/befs/uaas/UAAGuidance.pdf

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