Internal Management Directive

Implementing Site-Specific Background Pollutant Criteria for NPDES Permit Holders Revision 1.0

State of Oregon
Department of
Environmental
Quality

Water Quality Division
Surface Water Management
811 SW 6th Avenue
Portland, OR 97204
Phone: (503) 229-5696
(800) 452-4011
Fax: (503) 229-6762
Contact: Spencer Bohaboy
www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water

Last Updated:6/1/2012
By: Spencer Bohaboy
DEQ12-WQ-0016-IMD
Web Pub.#12-WQ-039
Version 1.0

Disclaimer

This internal management directive (IMD) represents the Department of Environmental Quality's current directions to staff on how to implement OAR 340-041-0033(6). This rule governs DEQ's development of site-specific background pollutant criteria for NPDES permit holders. This IMD is not a final agency action and does not create any rights, duties, obligations, or defenses, implied or otherwise, in any third parties. This directive should not be construed as rule, although some of it describes existing state and federal laws. The recommendations contained in this directive should not be construed as a requirement of rule or statute. DEQ anticipates revising this document from time to time as conditions warrant.

Document Development

Prepared By: Spencer Bohaboy, Policy Development Specialist, WQ Permitting, HQ
Andrea Matzke, WQ Standards Specialist, WQ Standards and Assessment Section, HQ

Reviewed By: Dennis Ades, Manager Surface Water Management Section, DEQ
Jennifer Wigal, Manager Standards and Assessment Section, DEQ
Scott Hoatson, Agency Quality Assurance Officer, DEQ

Approved By: Gregory K. Aldrich, Administrator, DEQ
Water Quality Division, HQ

Signed Copy on file at DEQ HQ Date _____

Table of Contents

1. Introduction and Background 1

1.1 Purpose and Content
1.2 History and Development
1.3 Description of Tool
1.4 Applicability
1.5 Regulatory Objectives

2. Conditions for Granting a SSBPC 3

2.1 Threshold Conditions
2.1.1 The discharger has a current NPDES permit
2.1.2 The pollutant under consideration must be a carcinogen
2.1.3 There are no Waste Load Allocations assigned (or under consideration) for the pollutant in the receiving waterbody
2.1.4 The discharger withdraws the intake water containing the pollutant from the "same body of water" into which the effluent is discharged
2.2 Operational Conditions
2.2.1 The permittee must use any feasible pollutant reduction measures available and known to minimize the pollutant concentration in their discharge
2.2.2 The pollutant discharge has not been chemically or physically altered in a manner that causes adverse water quality impacts that would not occur if the intake pollutants were left in-stream.
2.2.3 The timing and location of the pollutant discharge would not cause adverse water quality impacts that would not occur if the intake pollutant were left in-stream.

3. SSBPC Calculation and Evaluation 8

3.1 Modeling Parameters
3.1.1 Ambient Conditions
3.1.2 Water and Pollutant Input Values
3.1.3 Evaporative Loss, Water Removal and Treatment
3.2 Calculating and Selecting Candidate Criteria
3.3 Mass-based Criteria Review

4. SSBPC Implementation and Permit Renewal 14

5. Public Notification Requirements 14

6. DEQ Roles and Responsibilities 15

Appendix A: Revision History 16

Appendix B: Site-Specific Background Pollutant Criterion Rule Language 17

1. Introduction and Background

1.1 Purpose and Content

On June 16, 2011, the Environmental Quality Commission (EQC) adopted a rule (see OAR 340-041-0033(6)) allowing DEQ to establish a Site-Specific Background Pollutant Criterion (SSBPC) when a series of threshold and operational conditions are met as further described below. The purpose of the rule is to allow existing permittees using waters that contain background pollutants a degree of relief from the requirement to treat the pollutants to meet water quality criteria upon discharge. Once granted, the SSBPC would also act as a limitation on future facility growth (through mass limitation) until a TMDL for the water body can be developed[1].

This rule became effective upon Environmental Protection Agency (EPA) approval on October 17, 2011. The purpose of this Internal Management Directive (IMD) is to provide guidance to DEQ staff on how to implement this new provision and how to calculate a SSBPC.

1.2 History and Development

From 2006 – 2011, the DEQ undertook a rulemaking to revise Oregon's human health water quality criteria. During the course of this rulemaking, stakeholders[2] expressed concern that toxic pollutants already present in ambient water ("background pollutants") would create significant challenges for permit holders to meet the more stringent water quality standards. DEQ developed two rules through this stakeholder process to help permit holders address these concerns, the *Intake Credit* and the *SSBPC Rules*. For more information on the Intake Credit Rule, see *Appendix F* in the *Reasonable Potential Analysis Process for Toxic Pollutants Internal Management Directive*[3] (RPA IMD). The SSBPC Rule addresses similar situations as the Intake Credit, but is narrower in application as further described below. Final SSBPC rule language is found in *Appendix B* of this directive. For additional information on the Intake Credit, SSBPC and other tools developed for the purposes of implementing the human health criteria in NPDES permits, see the *DEQ Issue Paper: Implementing Water Quality Standards for Toxic Pollutants in NPDES Permits*[4]

1.3 Description of Tool

The SSBPC is a performance-based criterion that can be used where the permit writer establishes that the discharging facility is operating within specified conditions. The criterion is developed based on the background pollutant concentration of the source/receiving waterbody and the impact of the background concentration on the amount of pollutant in the final discharged effluent. The SSBPC should not be confused with the development of site-specific criteria for a stream segment or entire waterbody. Though the two site specific criterion are similar, the development of the SSBPCis different in that a specific procedure with certain limitations and defined thresholds that must be followed. As a performance-based standard provision (i.e. predictable, repeatable and transparent), DEQ is not required to get individual approval from the EPA when developing and implementing the SSBPC provision for each discharger.

---

[1] In the interim, additional growth would only be allowed if the discharger were able to free-up additional capacity through source reduction measures or additional treatment to offset any increase in pollutant load.
[2] The workgroup was comprised of industrial, municipal, and environmental representatives, in addition to DEQ, EPA, and the Confederated Tribes of the Umatilla Reservation staff
[3] DEQ. Version 3.1. February 13, 2012. See: http://www.deq.state.or.us/wq/pubs/imds/rpaIMD.pdf
[4] DEQ. Issue Paper: Implementing Water Quality Standards for Toxic Pollutants in NPDES Permits. May 24, 2001.

DEQ has concluded that the pollutant concentration increase allowed in circumstances governed by this provision continue to protect human health.

Limitations: This provision has the following limitations:

- the provision is limited to human health toxics that are carcinogens and is not applicable for aquatic toxicity or non-carcinogenic, human health water quality criteria
- the pollutant must be from the "same body of water"
- the SSBPC applies in the vicinity of the permitted discharge for the sole purpose of establishing permit effluent limits for an existing NPDES discharger
- in no case could a current effluent concentration to a water body be allowed to increase as a result of implementation of the provision
- the underlying water body criterion remains applicable for all other Clean Water Act programs and actions, such as 303(d) listing and TMDL development
- a slight increase in effluent concentration may be permitted so long as the designated uses of the water body are protected and the increase in the final in-stream concentration is less than or equal to 3% and a cancer risk of 10^{-4} is not exceeded[5][6]

the SSBPC may not result in an increase of the mass load in the receiving water body. Finally, the rule requires that the application of the SSBPC criteria be re-evaluated upon permit renewal.
Procedural Overview: The SSBPC Rule establishes a site-specific criterion based upon the most stringent of the:

(1) in-stream pollutant concentration following mixing of current discharge (given feasible pollutant reductions) into the receiving water,
(2) in-stream pollutant concentration based on an increase of 3% above background,
(3) in-stream pollutant concentration based on the water quality criterion at a 1×10^{-4} risk level, or
(4) in-stream pollutant concentration that would not result in an increase in the mass loading of the pollutant.

Once the most stringent site-specific criterion is determined, the permit writer uses this criterion to calculate a Water Quality Based Effluent Limit (WQBEL) (see *Section 3*).

1.4 Applicability

The SSBPC may only be used by currently NPDES permitted[7] domestic and industrial dischargers that withdraw their source waters (municipal or process) from waterbodies that periodically or chronically exceed the water quality criterion and the effluent is returned to the same body of water. The most likely application for this provision will be non-contact cooling applications that use source waters containing background pollutants taken from a point upstream of the facility, and returned downstream. Here, the volume of the process water is decreased through evaporative cooling, resulting in an overall increase in pollutant concentration and would not result in an increase in the mass loading of the pollutant.

1.5 Regulatory Objectives

[5] The EPA believes that highly exposed populations should not exceed a cancer risk of 1 x 10^{-4} (1 in 10,000 additional incidents of cancer). The fish consumption rate of 175 g/day used in developing carcinogenic human health criteria is representative of populations that are highly exposed (i.e. regularly eat fish & shellfish). As a matter of policy, the Department determines its human health criteria using a risk factor of 10^{-6}. Note: this provision will not be available for arsenic human health criteria because the criterion already reflects a risk of 10^{-4}.
[6] The SSBPC is similar to the Intake Credit Rule in concept and variable inputs, but it differs in that a slight increase in concentration is permitted
[7] per OAR 340-041-0033(6)(c)

Where a water body exceeds a water quality criterion, any facility withdrawing water would normally be required to remove the excess pollutants and meet the water quality criterion at the point of discharge without the benefit of dilution or assimilative capacity. This has the effect of making the users (though not the polluters) of a water body responsible for the restoration of water quality and can impose a significant economic and technical burden on them. The objective of this provision (and IMD) is to allow facilities and municipalities to continue to utilize the state's water resources in a manner that protects human health, prevents further environmental degradation, reduces the economic and technical burden and is an incremental step towards the development of a watershed restoration plan.

2. Conditions for Granting a SSBPC

In order for a facility to qualify for a SSBPC, the permit writer must complete the following:

- *Threshold Conditions*: the permit writer must review the existing permit development information and evaluate whether each of the threshold conditions described in the rule can be met prior to continuation of the process (see *Section 2.1*).
- *Sample Plan Development*: Once the permit writer has established the threshold conditions have been met, they will consult with the permittee to include the various monitoring, source investigations and/or engineering study requirements necessary to support the evaluation of the operational conditions and the development of an SSBPC into a *Sampling Plan*[8].
- *Operational Conditions*: Once the permittee has collected the pre-requisite information, the permit writer must evaluate whether each of the operational conditions described in the rule can be met during the permit term (see *Section 2.2*.)

This process is very similar to the conditions required as part of an intake credit analysis, so the Sampling Plan should be designed to address both evaluations. The permit writer should document the SSBPC development process and resulting decisions in the Permit Evaluation Report (PER).

2.1 Threshold Conditions

2.1.1 The discharger has a current NPDES permit

The permit writer should ensure that either the owner or operator of the facility has an active NPDES permit. By rule, a SSBPC is not available for new permit applications. The permit writer should review the facility status on the Water Quality Source Information System (SIS) Database at the following link: http://www.deq.state.or.us/wq/sisdata/sisdata.asp.

2.1.2 The pollutant under consideration must be a carcinogen

The permit writer should ensure that the pollutant for which a SSBPC is being considered is identified as a human health carcinogenic pollutant. The status of each pollutant is described on Table 40, Human Health Water Quality Criteria for Toxic Pollutants.

2.1.3 There are no Waste Load Allocations assigned (or under consideration) for the pollutant in the receiving waterbody

The permit writer should determine if a Total Maximum Daily Load (TMDL) has been completed and a Waste Load Allocation (WLA) assigned for the pollutant under consideration for a SSBPC. If the discharger has been assigned a WLA for the pollutant, then a SSBPC is not allowed and the WLA would

[8] This is the same Sampling Plan as required in Schedule B permit language and RPA IMD.

be used to develop an effluent limit. If a TMDL or WLA is under consideration for the receiving waterbody, the permit writer should contact the appropriate basin coordinator for more information. The Department maintains a list of TMDLs and resources on line at the following address: http://www.deq.state.or.us/wq/tmdls/tmdls.htm.

2.1.4 The discharger withdraws the intake water containing the pollutant from the "same body of water" into which the effluent is discharged[9]

An intake pollutant is considered to be from the "same body of water" as the discharge if the department finds that the *intake pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee*. Accordingly, water withdrawn from upstream tributaries and hydrologically connected[10] ground waters may also be used in the establishment of a SSPBC. However, ground waters containing anthropogenically created pollutants (e.g. industrial, commercial, or municipal operations, disposal actions, etc.) cannot be counted in the calculation of a SSBPC (per OAR 340-041-0033(6)(a)(C)(ii)(II)). For facilities with multiple water sources, only those sources from the "same body of water" may be counted in the calculation of the SSPBC. In this case, the intake concentration should be flow-weighted to reflect only those sources that meet the rule's condition. See *Section 3.1.2* for additional information.

The permit writer should develop a Location Map establishing the location of the source water intake points, their location relative to the outfall and any other relevant information (See *Figure 1*). The map should be sufficiently detailed as to document the information the permit writer used to establish that the various threshold conditions and requirements have been met (i.e. same body of water, source is upstream, separation from anthropogenically contaminated ground waters, etc.). The following are likely sources of information that can be used for performing these evaluations and developing the map:

- DEQ's drinking water program for well locations and logs: http://www.deq.state.or.us/wq/dwp/contacts.htm
- DEQ's LASAR and USGS's Water Data for Oregon databases for surface and ground water quality data
- Oregon's municipal Drinking Water Data Online database for municipal intake concentrations, source type and well locations
- Facility permit renewal application data summary (facility file) and Discharge Monitoring Reports
- Municipal drinking water and waste water treatment plant flow and pollutant concentration records

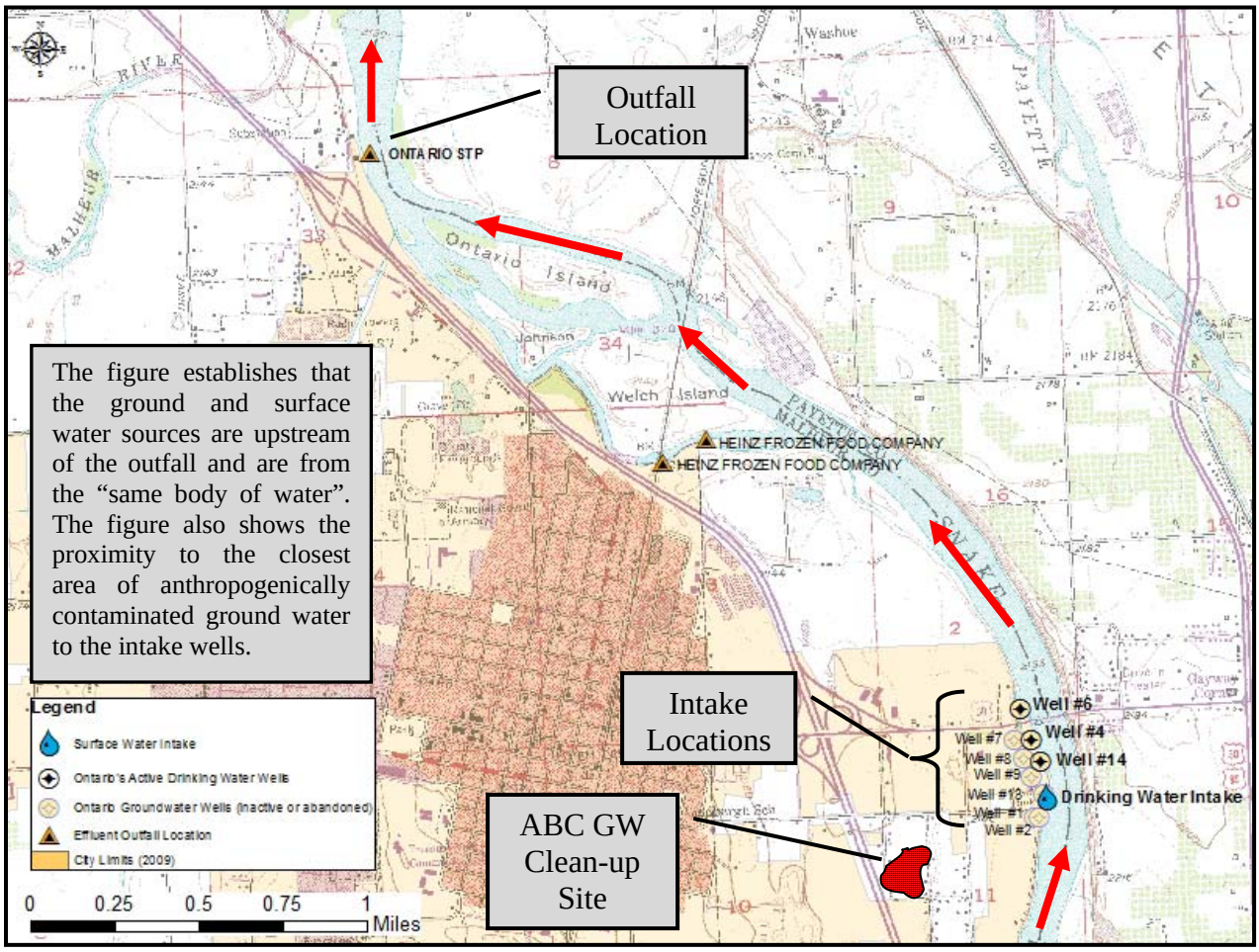
Additionally, the permit writer should identify any potential sources of anthropogenic ground water contamination (if applicable) for inclusion in the map and the PER. A likely source of information regarding the presence of active ground water cleanup sites and the location of their discharge (i.e. municipal sewerage system) is available from the Department's Land Quality Division, Environmental Cleanup Section.

---

[9] The rule language addressing this subject was developed to mirror similar rule language for the use of intake credits. Accordingly, the Intake Credit Guidance described in Appendix F of the RPA IMD offers a more detailed description of the evaluation process. (http://www.deq.state.or.us/wq/pubs/imds/rpaIMD.pdf)

[10] A simple way to determine if a ground water well is considered "hydrologically connected" is to reference Oregon's municipal Drinking Water Data Online database. If the database lists the source well as "*GU - Under direct influence of surface water*" and it is upstream of the surface water discharge, the permit writer can considered this hydrologically connected without additional geotechnical investigation.

Figure 1
Example of an SSBPC Evaluation Map



2.2 Operational Conditions

Once the permit writer has established that all of the threshold conditions are met, he/she will need to meet with the permittee and review the operational conditions that will need to be evaluated. Based on this discussion, any additional monitoring, data collection, source investigation or engineering studies necessary to support the evaluation of the operational conditions should be included in the Sampling Plan and gathered during the 3rd (third) year of the permit term. Without this data, the operational conditions cannot be evaluated and a SSBPC cannot be granted.

Once the necessary information has been collected, the permit writer must then evaluate each of the following conditions and determine if they can be met during the upcoming permit term[11]. The permit writer will need to include provisions in the permit language to ensure that the operational conditions are maintained throughout the course of the permit term.

[11] If a permittee cannot currently meet an Operational Condition, but can demonstrate that they can do so by the permit renewal a SSBPC may still be feasible. In this case the permit writer may proceed with the permit development (year 4 to 5) but the Operational Conditions must be met prior to permit renewal at the end of the fifth year.

2.2.1 The permittee must use any feasible pollutant reduction measures available and known to minimize the pollutant concentration in their discharge

Before a SSBPC can be approved, a discharger must have identified and evaluated any feasible pollutant reduction measures to minimize increases in pollutant concentration. At a minimum, the discharger must have quantified the primary pollutant sources and processes resulting in increased concentration, and have evaluated each one for reduction potential. The discharger must have also evaluated the economic and technical feasibility of making operational changes or capital improvements to their treatment systems to minimize pollutants.

The challenge for the permit writer in evaluating this condition is meeting the letter of the following requirement when determining if pollution reduction steps or treatment alternatives are "feasible":

Requirement: "A site-specific background pollutant criterion may be established where … the permittee uses any feasible pollutant reduction measures available and known to minimize the pollutant concentration in their discharge"

Often the processes that are designed to address other environmental concerns (i.e. temperature) or minimize water consumption thus conserving water withdrawn from ground and/or surface supplies can increase pollutant concentration. When evaluating the conditions, the permit writer should also weigh these alternative benefits as compared to the impacts of increased pollutant concentration.

When calculating the facility's "In-stream Concentration at Current Performance" as part of the implementation procedures (see *Section 3.2*), the permit writer should factor in selected reduction measures. The expectation is the discharger will implement and maintain all selected reduction measures as a condition of applying for and maintaining the SSBPC. In no case could the current pollutant mass discharge to a water body be allowed to increase as a result of implementation of the provision.

2.2.2 The pollutant discharge has not been chemically or physically altered in a manner that causes adverse water quality impacts that would not occur if the intake pollutants were left in-stream.

The objective of this condition is to prevent adverse changes to the pollutants or waters as they pass through the facility. To determine if an "adverse change" has occurred, the permit writer must incorporate sampling for both the intake waters and effluent into the Sampling Plan. The permit writer should evaluate both physical and chemical changes.[12]

Typically, physical parameters such as dissolved oxygen, total dissolved solids or temperature are evaluated as part of the normal permit development process. The permit writer should be sensitive to any synergistic or ancillary effects of changes in these physical parameters that might result in an adverse condition. For example, a seemingly benign change in stream temperature might result in an adverse change in dissolved oxygen (or salinity or chemical volatility).

To evaluate chemical changes, the permit writer should begin with pH, electrical conductivity and hardness, and the speciation of any pollutant parameter sensitive to changes in these parameters. An adverse condition might stem from a direct change in the pH of the receiving waterbody or as a secondary impact where a pH change might result in a change in species equilibrium and increased toxicity. The permit writer might also consider monitoring for the decomposition products of the subject pollutant parameter and evaluate any change in toxicity.

[12] This evaluation is the same as the "chemical or physical alteration" evaluation required for an Intake Credit. See RPA IMD, Appendix F for more information.

For example, if a discharger was requesting a SSBPC for chromium III, the Sampling Plan should include provisions to assess the potential for a shift in chemical speciation (Cr III & VI) of the pollutant of concern that can increase overall toxicity. Required actions might include a bench study or additional monitoring at the intake and effluent locations. If there is a shift from Cr III to Cr VI resulting in an increase in toxicity, then a SSBPC could not be allowed. Furthermore, the permit writer would need to conduct a reasonable potential analysis for Cr VI to determine if the water quality criterion is being exceeded.

2.2.3 The timing and location of the pollutant discharge would not cause adverse water quality impacts that would not occur if the intake pollutant were left in-stream.

The objective of this condition is to determine if the timing and location of the effluent discharge would cause an adverse water quality impact. This condition will be of greatest concern in streams with low or effluent dominated flow régimes. The permit writer should identify any on-going or intermittent uses of the receiving water body in the proximity of the discharge (i.e. drinking water intake, agricultural withdrawals, fish migration, spawning bars, etc.) and determine their sensitivity to the timing, magnitude or nature (temperature, pH, toxic exposure, etc.) of the discharge. Accordingly, the discharger should incorporate ambient flow monitoring into their Sampling Plan in conjunction with toxicity or temperature monitoring to determine loading rates. The permit writer would then review the results of the Sampling Plan to determine if an adverse condition exists (i.e. stream scouring, thermal shock loading, disruption of fish spawning, egg rearing, etc.). Examples of facilities that might have these types of issues are those with large storage capacity, treatment lagoons, batch treatment, multiple (primary or secondary) outfalls or discharge via force main.

3. SSBPC Calculation and Evaluation

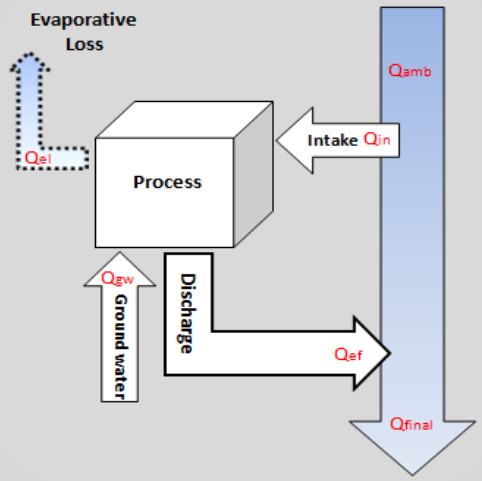
Once the permit writer has confirmed that all threshold and operational conditions have been met, they can then calculate the SSBPC.

Worksheet: The SSBPC Worksheet has been developed to calculate the SSPBC and, working in conjunction with the RPA Workbook, the resultant effluent limits (see *Figure 2*). The worksheet includes a series of modeling parameters that describe the ambient and effluent flow conditions as well as other factors (i.e. evaporation, ground water inputs) that could influence the calculation of the candidate criterion. The permit writer may need to modify the worksheet according to variables present at their particular facility or the type of receiving water body[13]. Examples include adding model inputs to reflect multiple water sources or curtailing the allowable amount of dilution for the Columbia or main-stem Willamette Rivers to 25% of flow. Once ready, the permit writer will use the SSBPC worksheet and the RPA Workbook in an iterative manner to calculate the final criterion and effluent limit as described in the figures and tables below[14].

Figure 2
Example of a Blank SSBPC Worksheet

Industrial Scenario: Simple Non-Contact Cooling from River and Ground Water with Evaporative Loss

Symbol	Model Parameters	Values	Unit
Q_{amb}	Initial Ambient Flow	--	MGD
C_{amb}	Initial Ambient Concentration	--	ug/l
M_{amb}	Initial Ambient Mass Flow	--	g/d
Q_{in}	Intake Flow	--	MGD
C_{in}	Intake Concentration	--	ug/l
M_{in}	Intake Mass	--	g/d
Q_{gw}	Ground Water Flow	--	MGD
C_{gw}	Ground Water Concentration	--	ug/l
M_{gw}	Ground Water Mass	--	g/d
Q_{el}	Evaporative Loss	--	MGD
Q_{ef}	Discharge Flow	--	MGD
C_{ef}	Discharge Concentration	--	ug/l
M_{ef}	Discharge Mass Flow	--	g/d
Q_{final}	Final Ambient Flow	--	MGD
C_{final}	Final Ambient Concentration	--	ug/l
M_{final}	Final Ambient Mass Flow	--	g/d



Current Criteria

Water Quality Criteria	Value	Unit
10^{-6} Water Quality Criteria (current)	--	ug/l

Candidate Criteria Selection

Calculated Candidate Criterion	Value	Unit	Calculated Effluent Limit		Mass Increase?		
			Monthly (AML)	Max Daily (MDL)	Calc. Mass Flow		Y/N
10^{-4} Water Quality Criteria	--	ug/l					
Ambient Conc. at 3% increase	--	ug/l					
In-stream Conc. at Current Performance	--	ug/l	--	--	--	g/d	No

Mass-based Criteria Calculation

Mass-based Criteria	Value	Unit	Mass-based Effluent Limit (ug/l)		Mass Increase?		
			Monthly (AML)	Max Daily (MDL)	Calc. Mass Flow		Y/N
Criteria based on "no increase of mass"	--	ug/l	--	--	--	g/d	No

[13] When addressing more complex scenarios, it is recommended that the permit writer ask for technical assistance with further modification of the spreadsheet from the Surface Water Management Section, Headquarters.
[14] Please note that the following *Figures 3* through *8* are completed examples of various parts the worksheet shown in *Figure 2*

Model Parameters: After modifying the worksheet, the permit writer would then enter the applicable flow, concentration and water loss information into the empty cells. The worksheet would then automatically calculate the source mass loads and final theoretical discharge and ambient mass loads. It should be noted that any non-qualified water (i.e. source water not hydrologically connected to receiving stream) or pollutant loads need not be reflected in this process since the final criterion will be calculated to only reflect the qualified background pollutant load.

Candidate Criteria: The permit writer would then enter the current water quality criterion and the alternative *10^{-4} Risk* criterion is automatically calculated. The worksheet also calculates the *3%* and *Current Performance* candidate criteria. The permit writer would then select the most conservative criterion (of the three), pasting the value into the active RPA Workbook and calculating new effluent limits based upon the selected candidate criterion. The permit writer would then enter the resulting effluent limits into the worksheet where a check is made to ensure that the limits would not result in an increase in the mass load in the receiving waterbody.

Mass-based Criteria: If it is shown that the calculated effluent limits might result in an increase in mass load, then it is necessary to calculate a more conservative, mass-based criterion. The permit writer would then re-paste this criterion into the RPA Workbook and calculate a mass-based effluent limit. These limits are then entered into the highlighted cells in the worksheet as a final check to ensure that a mass load increase does not occur. Once established, the new effluent limits can be placed into the final permit.

3.1 Modeling Parameters

It is important to remember that SSBPC are limited to carcinogenic human health criteria which are calculated to reflect long term, chronic exposure scenarios. Accordingly, the design conditions of the model should also reflect a long term (20 to 30 year) modeling scenario. It is recommended that the permit writer should use the same input variables as are used in the "Human Health" Reasonable Potential Analysis as described in *Section 5* of the *RPA IMD*. The following variables (*Table 1*) should be used for calculating the SSBPC for most applications:

Table 1
Summary of SSBPC Calculation Variables

Symbol	Model Parameters	Values	Unit[1]
Q_{amb}	Initial Ambient Flow	Harmonic Mean Flow	MGD
C_{amb}	Initial Ambient Conc.	Geometric Mean	µg/l
Q_{in}	Intake Flow	Average Annual Flow	MGD
C_{in}	Intake Conc.	Geometric Mean	µg/l
Q_{gw}	Ground Water Flow	Average Annual Flow	MGD
C_{gw}	Ground Water Conc.	Geometric Mean	µg/l
Q_{el}	Evaporative Loss	Average Annual Flow	MGD
M_{tr}	Mass Removal Rate	Average Annual Flow	g/day[2]
Q_{ef}	Discharge Flow	Average Annual Flow	MGD
C_{ef}	Discharge Conc.	Geometric Mean	µg/l

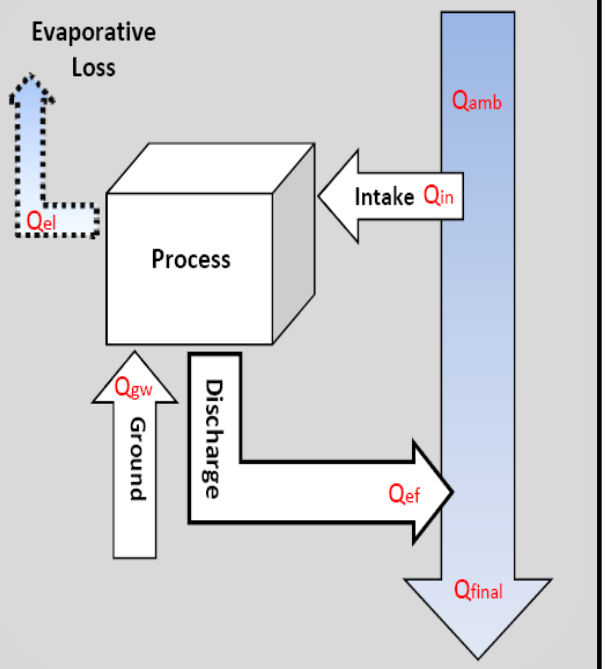
[1] Million Gallons per Day (MGD), grams per day (g/day) and microgram per liter (µg/l)
[2] Conversion factor: [((*Concentration, µg/l) / 1000) x (Flow, MGD) x (8.34)] = lb/day*

Please refer to *Figure 3* (See below) as an example of the completed modeling parameters introducted in *Figrue 2*:

Figure 3
Example of a SSBPC Modeling Parameters

Industrial Scenario: Simple Non-Contact Cooling from River and Ground Water with Evaporative Loss

Symbol	Model Parameters	Values	Unit
Q_{amb}	Initial Ambient Flow	5490	MGD
C_{amb}	Initial Ambient Concentration	0.4	ug/l
M_{amb}	Initial Ambient Mass Flow	8312	g/d
Q_{in}	Intake Flow	5	MGD
C_{in}	Intake Concentration	0.4	ug/l
M_{in}	Intake Mass	7.6	g/d
Q_{gw}	Ground Water Flow	5	MGD
C_{gw}	Ground Water Concentration	0.6	ug/l
M_{gw}	Ground Water Mass	11.4	g/d
Q_{el}	Evaporative Loss	5	MGD
Q_{ef}	Discharge Flow	5	MGD
C_{ef}	Discharge Concentration	1.0	ug/l
M_{ef}	Discharge Mass Flow	18.9	g/d
Q_{final}	Final Ambient Flow	5490	MGD
C_{final}	Final Ambient Concentration	0.401	ug/l
M_{final}	Final Ambient Mass Flow	8324	g/d



This Scenario is an example where multiple sources of water are used in operations. Here the ground water is considered from a different body of water and counts as a mass addition. It is assumed that half of the water used for cooling is lost to evaporation. The stream flow rate used is typical of a harmonic mean flow for a medium sized river.

3.1.1 Ambient Conditions

The permit writer should first review readily available sources of flow and concentration data, ensuring that there is adequate analytical range and a balance of seasonal data points.

Table 2
Water Quality and Stream Flow Databases

Data Source	Data Type	Internet Link
OR. DEQ	Misc. WQ Data	http://deq12.deq.state.or.us/lasar2/
OR DEQ	303d List / TMDL List	http://www.deq.state.or.us/wq/assessment/assessment.htm
NOAA, NW River Forecast Center	Stream Flow Data, Forecasting	http://www.nwrfc.noaa.gov/index.shtml
USACE, Columbia Basin	Temp., TDG and Flow data	http://www.nwd-wc.usace.army.mil/TMT/wqwebpage/mainpage.htm
USEPA, STORET	Misc. WQ Data	http://www.epa.gov/storet/index.html
USGS	Misc. WQ Data	http://waterdata.usgs.gov/nwis
WA. DOE	Misc WQ Data	http://www.ecy.wa.gov/databases/wq.html

If adequate data is not available, the permit writer should work with the discharger to include in the Sampling Plan the provisions to collect a robust and seasonally relevant dataset over the third year of the permit term. Where appropriate, any collection activities should be coordinated with the characterization of other applicable monitoring locations (intake, influent, effluent, etc.).

The permit writer will enter the ambient flow and concentration results into the worksheet, and the ambient mass flow will automatically be calculated. See *Figure 4*.

3.1.2 Water and Pollutant Input Values

The discharger should include in their Sampling Plan a commitment to conduct a source investigation to quantify the water and pollutant inputs into the collection area or industrial process. For dischargers with multiple water sources, the permit writer will need to designate each water source classified as coming from the "same body of water" (see below) on the SSBPC Worksheet. In the example provided (*Figure 3)*, two sources are described, one for surface water and the second for ground water.

Only the pollutant load originating from the "same body of water" can be used in the development of the SSBPC[15]. In the case where dischargers using municipal water that have sources from different water bodies, the permit writer will need to perform flow weighting, so that only the mass from the "same body of water" is reflected on the worksheet. For example, a facility withdraws 10 MGD of ground water where a geotechnical study indicates that the normal exfiltration rate is 4 MGD. So long as there is not a change in pollutant concentration, the calculation must be flow weighted and only 4 MGD can be used to determine the allowable "*Ground Water Mass*" input. Under the calculated SSBPC, the mass associated with the anthropogenically influenced portion of the flow (6 MGD) would need to be removed prior to discharge to prevent an increase in the mass load of the receiving waterbody.

3.1.3 Evaporative Loss, Water Removal and Treatment

Most scenarios addressed by a SSBPC involve an increase in pollutant concentration as the result of evaporative loss or water removal where the pollutant remains. The scenarios where there is a background pollutant and no increase in concentration are more readily addressed through an intake credit. Since the calculation of the criterion is based on a theoretical discharge value[16], it is important to factor in the rate of water removal. The permit writer should determine the annual average rate of evaporative loss or water removal and enter the value, in MGD, in the appropriate cell in the worksheet. If this information is not readily available, then the permit writer should consider back calculation of the removal rate using another method such as an intake/influent comparison.

3.2 Calculating and Selecting Candidate Criteria

After inputing the *Model Paramaters*, the permit writer should then enter the current water quality criterion into the worksheet. The alternative *10^{-4} Risk* criterion is automatically calculated.[17] Using the data entered into the *Model Parameters* section of the worksheet, the other two alternative criteria are automatically calculated. See *Figure 4*.

For the candidate criterion reflecting the current discharge and treatment performance, if engineering studies show that further pollutant reductions can be achieved by the permit holder, the permit writer should replace the auto-calculated value with one that reflects the current performance minus the estimated

[15] Any other pollutant load must be removed from the system prior to discharge to the receiving water body.
[16] The discharge flow rate is constructed using the qualified system inputs (i.e. intake flow rate + flow weighted ground water flow rate) minus any losses of water volume (i.e. evaporation). The permit writer can always compare the resulting value with actual discharge values as a reality check.
[17] Essentially, this involves moving the decimal point on the criterion to the right two times to reflect a shift in the risk factor from 10^{-6} to 10^{-4}.

reductions. The basis of these estimated reductions (i.e. engineering studies, etc.) should be included in the permit evaluation report.

Once the three candidate criteria are calculated, the permit writer will select the most conservative (*Figure 4*) and use that value in the active RPA Workbook. The workbook will then re-calculate the RPA and effluent limit calculations using the selected candidate criterion (*Figure 5*). The permit writer should then enter the calculated effluent limits into the applicable cells of the SSBPC worksheet (*Figure 6)*. The worksheet would then calculate the resultant pollutant mass flow and report (in the "*Mass Increase*" cell) if the effluent limits would result in an increase in the ambient mass flow.

Figure 4
Example of a SSBPC Calculation

Current Criteria

Water Quality Criteria	Value	Unit
10^{-6} Water Quality Criteria (current)	0.018	ug/l

The Current Water quality criteria of 0.018 ug/l would result in a effluent limit of 0.19 ug/l (monthly avg.) and 0.28 ug/l for a maximum daily.

Candidate Criteria Selection

Calculated Candidate Criterion	Value	Unit	Calculated Effluent Limit		Mass Increase?	
			Monthly (AML)	Max Daily (MDL)	Calc. Mass Flow	Y/N
10^{-4} Water Quality Criteria	1.8	ug/l				
Ambient Conc. at 3% increase	0.412	ug/l				
In-stream Conc. at Current Performance	0.401	ug/l	0		g/d	Yes

Enter this value into the RPA Workbook

Here the three criteria are calculated and the most conservative is selected (in-stream criteria of 0.401 ug/l). The criteria is used to calculate effluent limits using 25% of the stream flow which are evaluated to determine if it results in an increase in mass load to the receiving water body. A mass load increase is noted and a mass-based effluent limit is necessary.

Figure 5
Examples of a RPA and WQBEL Calculations

Determine Monitoring Reqs.			Identify Pollutants of Concern					In-stream Conc.		Determine Reasonable Potential			
Pollutant Parameter	Carcinogen Status	Evaluation required?	# of Samples	Effluent Conc.	Coefficent of Variation	Estimated Max Eff. Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at RMZ	WQ Criteria Water + Fish	WQ Criteria Fish	Is there Reasonable Potential to Exceed? (Y/N) Water + Fish	Is there Reasonable Potential to Exceed? (Y/N) Fish
Pollutant Type	(Y/N)	(Y/N)		µg/l	default=0.6	µg/l	(Y/N)	µg/l	µg/l	µg/l	µg/l	Water + Fish	Fish
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD													
Nitrates-Nitrite	N	Yes	4	nd	0.60	--	Non-Det.	*	--	10000	na	--	--
Table 2 Effluent Parameters for Selected POTWs													
Table 2: Metals (total recoverable), cyanide and totoal phenols													
Antimony	N	Yes	4	nd	0.60	--	Non-Det.	*	--	5.1	64	--	--
Arsenic (Inorganic)	Y	Yes					Non-Det.	*	--	2.1	2.1	--	--
Copper	N	Yes					t.	*	--	1300	na	--	--
Methyl Mercury	N	*					nce	and follow guidance		na	.040 mg/kg	na	--
Nickel	N	Yes					t.	*	--	140	170	--	--
Selenium	N	Yes					t.	*	--	120	420	--	--
Thallium	N	Yes					t.	*	--	0.043	0.047	--	--
Zinc	N	Yes					t.	*	--	2100	2600	--	--
Cyanide (Total)	N	Yes					t.	*	--	130	130	--	--
Table 2: Volatile organic compounds													
acrolein	N	Yes					t.	*	--	0.88	0.93	--	--
acrylonitrile	Y	Yes						0.40	0.4017	0.401	0.401	YES	YES
benzene	Y	Yes	4	nd	0.60	--	Non-Det.	*	--	0.44	1.4	--	--
bromoform	Y	Yes	4	nd	0.60	--	Non-Det.	*	--	3.3	14	--	--
carbon tetrachloride	Y	Yes	4	0.01	0.60	0.03	No	*	--	0.10	0.16	--	--
chlorobenzene	N	Yes	4	nd	0.60	--	Non-Det.	*	--	74	160	--	--
chlorodibromomethane	Y	Yes	4	nd	0.60	--	Non-Det.	*	--	0.31	1.3	--	--
chloroform	N	Yes	4	3.00	0.60	7.76	No	*	--	260	1100	--	--

RPA: For example, w/ *acrylonitrile*, the criteria of 0.018 and 0.025 ug/l would both be replaced w/ 0.401 ug/l

Figure 5 (Continued)

Pollutant Parameter	Carcinogen Status	RP Status		WQ Criteria		Ambient Conc.	Waste Load Allocations		CV	Monitoring Req.	Effluent Limits	
		Water + Fish	Fish	Water + Fish Consumption	Fish Consumption		Water + Fish	Fish			95% Monthly (AML)	99% Max Daily (MDL)
	(Y/N)	(Y/N)	(Y/N)	ug/l	ug/l	µg/l	µg/l	µg/l		#/month	µg/l	µg/l
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD												
Nitrates-Nitrite	N	--	--	--	--	--	--	--	--	*	--	--
Table 2 Effluent Parameters for Selected POTWs												
Table 2: Metals (total recoverable), cyanide and totoal phenols												
Antimony	N	--	--	--	--	--	--	--	--	*	--	--
Arsenic (Inorganic)	Y	--	--	--	--	--	--	--	--	*	--	--
Copper	N	--	--						--	*	--	--
Methyl Mercury	N									*	Contact HQ for technical	
Nickel	N	--	--						--	*	--	--
Selenium	N	--	--							*	--	--
Thallium	N	--	--						--	*	--	--
Zinc	N	--	--						--	*	--	--
Cyanide (Total)	N	--	--						--	*	--	--
Table 2: Volatile organic compounds												
acrolein	N	--	--						--	*	--	--
acrylonitrile	Y	Yes	Yes	0				0	0.6	1	**0.7**	**1.0**
benzene	Y	--	--	--	--	--	--	--	--	*	--	--
bromoform	Y	--	--	--	--	--	--	--	--	*	--	--

WQBEL: For example, w/ *acrylonitrile*, the new criteria of 0.401 ug/l would result in limits of 0.7 ug/l and 1.0 ug/l

Figure 6
Example of Entering WQBEL Values

Current Criteria

Water Quality Criteria	Value	Unit
10^{-6} W	018	ug/l

The Cu ould result in a effluent limit of 0.19 ug/l (monthly avg.) and 0.28 ug/l for a maximu

Enter these values into "Effluent Limit" cells. Mass flow is calculated and determines if it would result in an increase. In this example there is a mass increase and additional work is required

ndidate Criteria Selection

C	ue	Unit	Calculated Effluent Limit		Mass Increase?		
			Monthly (AML)	Max Daily (MDL)	Calc. Mass Flow		Y/N
10^{-4} W	1.8	ug/l					
Ambient Conc. at 3% increase	0.412	ug/l					
In-stream Conc. at Current Performance	0.401	ug/l	0.7	1.0	**13.2**	g/d	Yes

Here the three criteria are calculated and the most conservative is selected (in-stream criteria of 0.401 ug/l). The criteria is used to calculate effluent limits using 25% of the stream flow which are evaluated to determine if it results in an increase in mass load to the receiving water body. A mass load increase is noted and a mass-based effluent limit is necessary.

3.3 Mass-based Criteria Review

Where the calculated effluent limits result in a mass load increase to the receiving waterbody, the permit writer will need to iteratively adjust the effluent limits until there is no increase in mass. The worksheet will calculate a criterion based on a "no increase in mass" (*Figure 7*).

Figure 7
Example of Calculating "No-increase" Criterion

Mass-based Criteria Calculation

Mass-based Criteria	Value	Unit
Criteria based on "no increase of mass"	0.400	ug/l

In this case, effluent limits calculated using the "in-stream" criteria wo intake mass of 7.6 g/d. This is due to the addition of pollutant load fr calculated and used to derive effluent limits.

Since the use of Candidate Crit. Resulted in a mass load increase, the worksheet will auto-calculate a "mass-based" criterion. Enter this value into the RPA Workbook to calculate final effluent limits. See *Figure 8*

The permit writer will then need to re-enter the criterion into the active RPA workbook and calculate another effluent limit. These limits should then be entered into the final section of the worksheet for a

final confirmation that a mass increase will not occur (*Figure 8*).

Figure 8
Example of Entering "No-increase" Effluent Limits

Mass-based Criteria Calculation								
Mass-based Criteria	Value	Unit	Mass-based Effluent Limit (ug/l)		Mass Increase?			
			Monthly (AML)	Max Daily (MDL)	Calc. Mass Flow		Y/N	
Criteria based on "no increase of mass"	0.400	ug/l	0.4	0.6	7.6	g/d	No	
In this case, effluent limits calculated using the "in-stream" criteria would result in a mass load (13.2 g/d) that is greater than the intake mass of 7.6 g/d. This is due to the addition of pollutant load from groundwater. A mass-based criteria of 0.4 ug/l was calculated and used to derive effluent limits.								

The permit writer should be aware that when working with small values (i.e. <1), maintaining the number of significant digits and rounding in the calculations can result in variation of the calculated mass loading, subsequently impacting the criteria and effluent limit calculation. The permit writer should follow the guidance in the IMD entitled The Use of Significant Figures and Rounding Conventions in Water Quality Permitting. In the example above, there is a drift of 5.7 g/d between the initial mass load (18.9 g/d) (*Figure 3*) and the mass load calculated from the effluent limits (13.2 g/d) (*Figure 6)*. These two values should be equal. When significant drift is noted, the permit writer should contact technical staff to identify statistical, analytical or monitoring methodologies that can result in greater statistical precision.

4. SSBPC Implementation and Permit Renewal

Once the SSBPC calculations have been finalized, the resulting effluent limits must be included into the draft permit renewal (*Schedule A*) along with the appropriate compliance monitoring requirements in *Schedule B*. Additionally, the permit must require the permittee to maintain the operational requirements throughout the permit term as described in *Schedule D*. If the permittee violates the operational requirements during the permit term, the permit writer must follow the Enforcement Guidance applicable to permit violations (which also describes a no-penalty justification process). In the event that the operational requirements cannot be maintained, the permit must be re-opened and the SSBPC-based effluent limit must be replaced with one based upon the original water quality criterion[18]. A note describing the re-opener clause must be included with the limit in *Schedule A*, of the permit per OAR 340-041-0033(6)(h). The finalized SSBPC and the underlying conditions used to develop it must be re-evaluated as part of each subsequent permit renewal process.

5. Public Notification Requirements

If DEQ proposes to grant a site-specific background pollutant criterion, it must provide public notice of the proposal and hold a public hearing (per OAR 340-041-0033(6)(i)(A)). The public notice may be included in the public notification of a draft NPDES permit renewal or other draft regulatory decision that would rely on the criterion. The public notice will consist of the draft NPDES permit and evaluation report

[18] When non-compliance with the operational conditions is determined, the permit writer has enforcement discretion, including "no-enforcement" options. The permit writer should determine the cause and severity of the non-compliance when applying their enforcement discretion. When there are multiple, successive periods of non-compliance that indicate that a significant change in the collection area, facility or receiving waterbody has occurred, and the operational conditions can't be reliably maintained, the permit writer will need to re-open the permit and re-evaluate to address the significant changes.

which includes the terms and conditions on which the SSBPC is based and for compliance with the SSBPC.

Water quality standards staff will publish a list online of all site-specific background pollutant criteria approved pursuant to this rule (per OAR 340-041-0033(6)(i)(B)). Newly approved SSBPCs will be added to this list within 30 days of their effective date. The list will identify: the permittee; the site-specific background pollutant criterion and the associated risk level; the waterbody to which the criterion applies; the allowable pollutant effluent limits; and how to obtain additional information about the criterion.

The SSBPC will be effective upon department issuance of the permit. At the time of permit renewal, the permit writer will reassess the applicability of a SSBPC for the term of the renewed permit.

6. DEQ Roles and Responsibilities

Regional permit staff are expected to be the primary implementers of this guidance through the development of a SSBPC. Technical assistance is available from the Surface Water Management Section at headquarters.

Since a SSBPC represents a change in the water quality criterion, the SSBPC, draft permit, evaluation report and supporting information should be reviewed (for consistency with the rule) and approved by the Water Quality Standards (WQS) section (located at headquarters) prior to submittal of the draft permit for applicant review. Upon finalization of the permit, the permit writer will again notify the WQS section so that they will post the addition of the SSBPC to the list of waters with a SSBPC. Any changes to the SSBPC in later permits must also be reviewed by the WQS section.

Appendix A: Revision History

Revision	Date	Changes	Editor
Version 1.0	6/1/2012	Initial Publication	S. Bohaboy

Appendix B: Site-Specific Background Pollutant Criterion Rule Language

340-041-0033(6) Establishing Site-Specific Background Pollutant Criteria: This provision is a performance based water quality standard that results in site-specific human health water quality criteria under the conditions and procedures specified in this rule section. It addresses existing permitted discharges of a pollutant removed from the same body of water. For waterbodies where a discharge does not increase the pollutant's mass and does not increase the pollutant concentration by more than 3%, and where the water body meets a pollutant concentration associated with a risk level of $1x10^{-4}$, DEQ concludes that the pollutant concentration continues to protect human health.

(a) Definitions: For the purpose of this section (OAR 340-041-0033(6)):

(A) "Background pollutant concentration" means the ambient water body concentration immediately upstream of the discharge, regardless of whether those pollutants are natural or result from upstream human activity.

(B) An "intake pollutant" is the amount of a pollutant that is present in public waters (including groundwater) as provided in subsection (C), below, at the time it is withdrawn from such waters by the discharger or other facility supplying the discharger with intake water.

(C) "Same body of water": An intake pollutant is considered to be from the "same body of water" as the discharge if the department finds that the intake pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee. This finding may be deemed established if:

(i) The background concentration of the pollutant in the receiving water (excluding any amount of the pollutant in the facility's discharge) is similar to that in the intake water;

(ii) There is a direct hydrological connection between the intake and discharge points; and

(I) The department may also consider other site-specific factors relevant to the transport and fate of the pollutant to make the finding in a particular case that a pollutant would or would not have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee.

(II) An intake pollutant from groundwater may be considered to be from the "same body of water" if the department determines that the pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee, except that such a pollutant is not from the same body of water if the groundwater contains the pollutant partially or entirely due to past or present human activity, such as industrial, commercial, or municipal operations, disposal actions, or treatment processes.

(iii) Water quality characteristics (e.g., temperature, pH, hardness) are similar in the intake and receiving waters.

(b) Applicability

(A) Site-specific criteria may be established under this rule section only for carcinogenic pollutants.

(B) Site-specific criteria established under this rule section apply in the vicinity of the discharge for purposes of establishing permit limits for the specified permittee.

(C) The underlying waterbody criteria continue to apply for all other Clean Water Act programs.

(D) The site-specific background pollutant criterion will be effective upon department issuance of the permit for the specified permittee.

(E) Any site-specific criteria developed under this procedure will be re-evaluated upon permit renewal.

(c) A site-specific background pollutant criterion may be established where all of the following conditions are met:

(A) The discharger has a currently effective NPDES permit;

(B) The mass of the pollutant discharged to the receiving waterbody does not exceed the mass of the intake pollutant from the same body of water, as defined in section (6)(a)(C) above, and, therefore, does not increase the total mass load of the pollutant in the receiving water body;

(C) The discharger has not been assigned a TMDL wasteload allocation for the pollutant in question;

(D) The permittee uses any feasible pollutant reduction measures available and known to minimize the pollutant concentration in their discharge;

(E) The pollutant discharge has not been chemically or physically altered in a manner that causes adverse water quality impacts that would not occur if the intake pollutants were left in-stream; and,

(F) The timing and location of the pollutant discharge would not cause adverse water quality impacts that would not occur if the intake pollutant were left in-stream.

(d) The site-specific background pollutant criterion must be the most conservative of the following four values. The procedures deriving these values are described in the sections (6)(e) of this rule.

(A) The projected in-stream pollutant concentration resulting from the current discharge concentration and any feasible pollutant reduction measures under (c)(D) above, after mixing with the receiving stream.

(B) The projected in-stream pollutant concentration resulting from the portion of the

current discharge concentration associated with the intake pollutant mass after mixing with the receiving stream. This analysis ensures that there will be no increase in the mass of the intake pollutant in the receiving water body as required by condition (c)(B) above.

(C) The projected in-stream pollutant concentration associated with a 3% increase above the background pollutant concentration as calculated:

(i) For the mainstem Willamette and Columbia Rivers, using 25% of the harmonic mean flow of the waterbody.

(ii) For all other waters, using 100% of the harmonic mean flow or similar critical flow value of the waterbody.

(D) A criterion concentration value representing a human health risk level of 1×10^{-4}. This value is calculated using EPA's human health criteria derivation equation for carcinogens (EPA 2000), a risk level of 1×10^{-4}, and the same values for the remaining calculation variables that were used to derive the underlying human health criterion.

(e) Procedure to derive a site-specific human health water quality criterion to address a background pollutant:

(A) The department will develop a flow-weighted characterization of the relevant flows and pollutant concentrations of the receiving waterbody, effluent and all facility intake pollutant sources to determine the fate and transport of the pollutant mass.

(i) The pollutant mass in the effluent discharged to a receiving waterbody may not exceed the mass of the intake pollutant from the same body of water.

(ii) Where a facility discharges intake pollutants from multiple sources that originate from the receiving waterbody and from other waterbodies, the department will calculate the flow-weighted amount of each source of the pollutant in the characterization.

(iii) Where intake water for a facility is provided by a municipal water supply system and the supplier provides treatment of the raw water that removes an intake water pollutant, the concentration and mass of the intake water pollutant shall be determined at the point where the water enters the water supplier's distribution system.

(B) Using the flow weighted characterization developed in Section (6)(e)(A), the department will calculate the in-stream pollutant concentration following mixing of the discharge into the receiving water. The resultant concentration will be used to determine the conditions in Section (6)(d)(A) and (B).

(C) Using the flow weighted characterization, the department will calculate the in-stream pollutant concentration based on an increase of 3% above background pollutant concentration. The resultant concentration will be used to determine the condition in Section (6)(d)(C).

(i) For the mainstem Willamette and Columbia Rivers, 25% of the harmonic mean

flow of the waterbody will be used.

(ii) For all other waters, 100% of the harmonic mean flow or similar critical flow value of the waterbody will be used.

(D) The department will select the most conservative of the following values as the site-specific water quality criterion.

(i) The projected in-stream pollutant concentration described in Section 6(e)(B);

(ii) The in-stream pollutant concentration based on an increase of 3% above background described in Section (6)(e)(C); or

(iii) A water quality criterion based on a risk level of 1×10^{-4}.

(f) Calculation of water quality based effluent limits based on a site-specific background pollutant criterion:

(A) For discharges to receiving waters with a site-specific background pollutant criterion, the department will use the site-specific criterion in the calculation of a numeric water quality based effluent limit.

(B) The department will compare the calculated water quality based effluent limits to any applicable aquatic toxicity or technology based effluent limits and select the most conservative for inclusion in the permit conditions.

(g) In addition to the water quality based effluent limits described in Section (6)(f), the department will calculate a mass-based limit where necessary to ensure that the condition described in Section (6)(c)(B) is met. Where mass-based limits are included, the permit shall specify how compliance with mass-based effluent limitations will be assessed.

(h) The permit shall include a provision requiring the department to consider the re-opening of the permit and re-evaluation of the site-specific background pollutant criterion if new information shows the discharger no longer meets the conditions described in subsections (6)(c) and (e).

(i) Public Notification Requirements.

(A) If the department proposes to grant a site-specific background pollutant criterion, it must provide public notice of the proposal and hold a public hearing. The public notice may be included in the public notification of a draft NPDES permit or other draft regulatory decision that would rely on the criterion and will also be published on the water quality standards website;

(B) The department will publish a list of all site-specific background pollutant criteria approved pursuant to this rule. A criterion will be added to this list within 30 days of its effective date. The list will identify: the permittee; the site-specific background pollutant criterion and the associated risk level; the waterbody to which the criterion applies; the allowable pollutant effluent limit; and how to obtain additional information about the criterion.