

Deschutes River, Capitol Lake, and Budd Inlet TMDL Advisory Group Meeting

Thursday, November 15, 2012, 9:20 a.m. – 11:45 a.m.
Tumwater Fire Department, 311 Israel Rd. SW, Tumwater

Attendees

Black Hills Audubon Society

- Sue Danver

Capitol Lake Improvement and Protection Association (CLIPA)

- Bob Holman

Citizen

- John DeMeyer

Deschutes Estuary Restoration Team (DERT)

- Cliff Mitchell
- Sue Patnude

Ecology, WA State Dept. of

- Anise Ahmed
- Bob Bergquist
- Kim McKee
- Mindy Roberts
- Lydia Wagner

Enterprise Services (DES), WA Dept. of

- Nathaniel Jones

Environmental Protection Agency (EPA)

- Dave Ragsdale

LOTT Clean Water Alliance

- Karla Fowler
- Laurie Pierce

Olympia, City of

- Laura Keehan
- Patricia Pyle

Olympia Yacht Club

- Jim Lengenfelder

Thurston County Environmental Health

- Sue Davis

Thurston Public Utility District

- Chris Stearns

Transportation, WA State Dept. of

- Jeff Williams

Tumwater, City of

- Dan Smith

General Updates

- Thurston County Commissioners Briefing: Ecology staff met with the Thurston County Commissioners on August 29 to provide an update on the status of this TMDL effort. The presentation is available online at www.ecy.wa.gov/programs/wq/tmdl/deschutes/advgrp/111512ThurstonCountyComm29Aug12BriefingFinal.pdf.
- Revised Timeline: Ecology will update the draft timeline and provide it at a future meeting.
- 2013 Meeting Dates: Ecology reserved the Tumwater Fire Department training room for all of 2013 and will provide the meeting dates in December. The list is available online at www.ecy.wa.gov/programs/wq/tdm/deschutes/advgrp/111512DeschutesAdvGroup2013MtgDates.pdf.

Deschutes TMDL Status Update

Bob Bergquist, Kim McKee, and Lydia Wagner, Ecology, Water Quality Program

Bob spent some time explaining why this TMDL effort was delayed the past few months. There were two major issues Ecology needed to address.

- *What is the natural baseline condition related to Capitol Lake?*
- *What is the appropriate northern boundary condition to use for the Budd Inlet modeling?*

The Water Quality Program (WQP) asked the Environmental Assessment Program (EAP) to provide a series of analysis. Ecology staff from both programs had discussions with the Attorney General's Office to determine the "natural condition" for Capitol Lake. They looked at other completed TMDLs, such as the Spokane River and Lake Spokane Dissolved Oxygen TMDL for comparison. This TMDL had a large Federal Energy Regulatory Commission (FERC) hydropower dam impounding Spokane Lake behind it. This is not the case with Capitol Lake. Based on the resulting conversations, Ecology has determined the natural background condition and baseline to use is without the dam in place.

Supplemental information: The Spokane River and Lake Spokane Dissolved Oxygen Total Maximum Daily Load: Water Quality Improvement Report is available online at <https://fortress.wa.gov/ecy/publications/summarypages/0710073.html>.)

The Northern Boundary for Budd Inlet is impacted by its relationship to the South Puget Sound Dissolved Oxygen (SPSDO) Study. The SPSDO model results indicate pollution is coming into Budd Inlet from anthropogenic sources farther north than previously thought. (*Mindy and Anise provided more information in their presentation.*)

We've struggled with both of these issues. Complex questions kept arising over the past few months and we needed to address them before we could move on with this TMDL effort. We stepped back to reevaluate the situation and decided to focus our efforts on where the science is leading us. We had no other motivations to come to a decision on the natural background. We wanted to anchor our decisions based on sound science and within appropriate legal criteria. We'll move on soon to having discussions about load and wasteload allocations and implementation actions. We will also update the timeline and still intend to submit the completed Water Quality Improvement Report (WQIR) to the Environmental Protection Agency (EPA) in 2013.

General discussion on this agenda item:

Q: *Were the legal issues surrounding the dam and background conditions rooted in the Clean Water Act?*

A: Yes; we carefully looked at the Water Quality Standards.

Comment: *There is a difference between the Spokane Dam and the Capitol Lake Dam. The Capitol Lake dam was put in for aesthetics.*

Ecology response: The dam (which can also be described as a tide gate) is an unlicensed facility. It does not produce any hydropower. The only purpose of the dam was to promote the lake as a reflecting pool for the Capitol and to control some downtown flooding.

Q: *Is there a government agency looking at the dam for structural integrity?*

A: The Department of Enterprise Services (DES), formerly known as General Administration (GA), manages the lake as part of the Capitol Campus.

Supplemental information: Although it is generally referred to as the Capitol Lake Dam, the official name is Olympia Fifth Avenue Dam. In October 2008, Moffatt & Nichol prepared a report for GA, "Capitol Lake Dam Condition Assessment and Life Expectancy" and is available online at www.ecy.wa.gov/programs/wq/tmdl/deschutes/advgrp/111512CapitolLakeDamConditionAssessmentAndLifeExpectancy2008.pdf. More information about Capitol Lake is available online at <http://www.ga.wa.gov/CapitolLake/FAQ.htm>.

Q: *How does changing the background condition change the analysis?*

A: We have not changed what we call “natural conditions” or “background”.

Q: *Did Ecology choose a time period to determine natural conditions?*

A: We considered two components.

1. We looked at what would be delivered into the watershed (no change from the technical report). We looked at data from the 1980s through mid-2000s and looked at trends.
2. Whether the dam was a natural condition. The water quality standards refer to changing natural conditions. They are hybridizing data and some of this will be shown in the presentation to follow.

Q: *Has Ecology considered looking at today’s population, reduce by 50% and compare the two scenarios?*

A: This is a complicated situation. Land cover in the Deschutes River watershed is a mix of commercial, residential, agriculture, and forest. Over time the transition has been from agricultural use to more residential. We cannot use population as the only surrogate.

Model Scenario Results for Budd Inlet

Anise Ahmed and Mindy Roberts, Ecology, Environmental Assessment Program

The following are some notes from their presentation. See the complete PowerPoint presentation for more information. It is available online at

www.ecy.wa.gov/programs/wq/tmdl/deschutes/advgrp/111512DeschutesAdvMtgBuddModelAhmedRoberts.pdf.

The WQP asked EAP staff the following:

1. *Can Budd Inlet meet water quality standards with the Capitol Lake dam **in** with all possible point and nonpoint source reductions within the model domain and outside the model domain?*
2. *Would Budd Inlet meet water quality standards with the Capitol Lake dam **out** with all existing anthropogenic source reductions inside and outside the model domain?*

Slide 4: The answer to Question #1 is **No**. The graphic on this slide shows the effect of just the dam in place with no other human influences.

Slide 6: This is a time series plot. The baseline we used has a higher level of dissolved oxygen (DO) under natural conditions. This cell was chosen because it had the worst violation of DO. This cell shows the maximum effect; however we have noticed the same pattern in other cells of East Bay. The impacts are throughout southern Budd Inlet. We must meet the water quality standards in all of them. The model indicates that human influences are amplified with the dam in place.

Slide 7: The answer to Question #2 is **No**. In this scenario the lake is now an estuary. The cells in West Bay show significant reduction but there are still violations of the dissolved oxygen water quality standards due to the combined effect of local and external point and nonpoint sources.

Slide 8: This slide shows the effect of providing advanced nitrogen removal at all wastewater treatment plants (WWTPs), indicated by yellow asterisks *, on the dissolved oxygen violations. As a reminder, LOTT Clean Water Alliance (LOTT) is already providing advanced nitrogen treatment. The three other WWTPs in this area

relatively small and located further north of the impacted area. They do not have any impact on violations to the dissolved oxygen standard following advanced nitrogen removal treatment.

Slide 9: This slide shows the effect of moving the LOTT outfall from its existing location (left slide) to north of Priest Point (middle slide) and to Boston Harbor (right slide) on the violations to the dissolved oxygen standards.

Slide 10: This slide presents four scenarios. (NP: nonpoint sources; OB: open boundary)

1. Existing condition.
 2. 50% reduction of nonpoint sources.
 3. 50% reduction at the open boundary (approximately 200 kg/day of nitrogen).
 4. Remove the LOTT wastewater treatment plant.
- Arrows: Indicate the magnitude of anthropogenic sources at the open boundary.
 - Green arrows: Anthropogenic sources influence
 - Blue arrows: LOTT wastewater treatment plant influence

Q: What would happen if the creek piped into East Bay was day lighted to allow for proper amount of flow? What would happen if we could open up all the areas previously filled in?

A: Someone would need to quantify the flow. We need a change in the flow, nitrogen, and dissolved oxygen. Ecology isn't aware of anyone who has looked into these issues. We acknowledge dredging has occurred but the specifics are unknown.

We have evaluated scenarios that reduce the three types of sources one at a time:

- Reducing nonpoint sources within Budd Inlet by 50%
- Reducing external point and nonpoint sources affecting the northern boundary by 50%
- Removing the LOTT outfall entirely

No single scenario eliminated the violations in Budd Inlet. We have not evaluation combinations of scenarios.

Slide 11: This slide shows all tributaries at natural conditions. The highlighted cells indicate the impact from anthropogenic loads at the open boundary model domain.

Slide 12: This map illustrates the span of the Puget Sound wide and South and Central Sound models. Edmonds is at the top of the South and Central Sound model and Budd Inlet is highlighted red at the bottom of the slide.

Q: Is Ecology looking into anthropogenic sources outside the Budd Inlet model domain?

A: We are using the same model for the South Puget Sound Dissolved Oxygen (SPSDO) Study. We had to wait for the model to be calibrated. Afterwards we were able to turn on and off different sources. The model for the SPSDO study only turned on and off all nonpoint sources. Running the model scenarios takes a long time (approximately 15 consecutive days). If the run is stopped for any reason (for example power outages) then it has to start all over again. We still need to figure out where the nonpoint sources are coming from and how far out they are from the Budd Inlet model domain.

Q: What now? What will be the responsibilities of the various jurisdictions (for example, Thurston County, City of Olympia, and City of Tumwater)?

A: The WQP will address these issues through development of the Implementation Strategy as part of the Water Quality Improvement Report (WQIR) with more details provided in the subsequent Water Quality Implementation Plan (WQIP). The Deschutes TMDL Advisory Group (DAG) will continue to have involvement in both of these documents. We have some information about relative contributions. Even considering the dam there are other sources to control. There are external sources, internal point sources, and internal nonpoint sources.

Q: *Are there other factors besides dissolved oxygen that Ecology is modeling?*

A: Model runs for the Deschutes River watershed, Capitol Lake, and Budd Inlet have already been completed and the results presented to the DAG. The new development for the Budd Inlet model is changing the baseline condition with the dam out.

As a reminder, there are four factors we need to consider for the lake and entire watershed.

1. Human influences
2. Internal point sources
3. External anthropogenic point and nonpoint sources
4. Nonpoint sources

Sediments

Q: There is a difference due to change of circulation which is dependent on bottom bathymetry. The information is based on United States Geological Survey (USGS) reports. *Did Ecology consider sediments when running the models?* There could be a 6-8 ft. difference after a period of time and the area would turn into a mud flat. Ecology selected areas that are not typical.

A: We used the USGS' pseudo-steady-state bathymetry from their sediment transport modeling conducted as part of the Deschutes Estuary Feasibility Study. The outlet width under the estuary alternative is comparable to what the USGS used, and we adjusted bathymetry in the area currently covered by Capitol Lake. The biggest changes were in West Bay.

Supplemental information: The USGS predicted no substantive change in bathymetry in East Bay. Green means no change in the graphic on the cover of their report. The Deschutes Estuary Feasibility Study is available online at www.ecy.wa.gov/programs/wq/tmdl/deschutes/advgrp/111512DEFSFinal2008.pdf.

Q: *Are there any violations of water quality standards (WQS) for fine sediments in Budd Inlet? If we removed the dam and put a load of fine sediments into Budd Inlet, wouldn't this cause violations? Could violations be caused by additional sediment loading?*

A: There are no WQS for sediments in marine waters. An estuary has some natural sediment transport capacity so the fine sediments would not accumulate. Some sediment accumulation could improve conditions. The situation is complicated.

General Discussion

Q: East Bay seems to have a problem. *Why does the model indicate there are still hot spots if sources are removed? Is Moxlie Creek an influence?* If it was day lighted perhaps it would increase flow in East Bay.

A: While the model shows the impact of the dam violating the WQS for dissolved oxygen (DO), the dam is not the only cause of the violation. The Deschutes Technical Report goes into more detail about this

situation. The big driver in East Bay is the Deschutes River. It pulses in water that may reduce circulation. The low flow in Moxlie/Indian Creeks is too small to flush out East Bay.

Q: *Are there any other parameters in Budd Inlet, besides DO, that violate water quality standards?*

A: No. We do not have WQS for nitrogen or phosphorus. There are different standards for marine waters and fresh waters. As a reminder, some tributaries flowing into Budd Inlet will need to address other parameters such as fecal coliform bacteria or temperature.

DERT Comment: Cooperation and value added need to be considered in this TMDL effort. There is room to discuss and agree on different alternatives to increase the dissolved oxygen levels. DERT is open to having discussions about how this can happen without causing adverse impacts to the marinas or LOTT. They believe there is room for an estuary and a marina.

Q: The presentation today clearly indicates there is a problem in southern Budd Inlet but there are listings for the outer part as well. *Why is Ecology focusing only on inner Budd Inlet?*

A: Because we are concentrating on the Category 5 listings and on the worst cells noted in the graphics. The model simulates all of Budd Inlet but the violations occur in the southern areas.

Supplemental Information:

- The Water Quality Assessment list divides waterbody impairments into the following categories:
 - Category 1: Meets tested standards for clean waters.
 - Category 2: Waters of concern.
 - Category 3: Insufficient data.
 - Category 4: Polluted waters that do not require a TMDL:
 - Category 4a: Has an approved TMDL in place that is actively being implemented.
 - Category 4b: Has a pollution control program.
 - Category 4c: Is impaired by a non-pollutant and the waterbody cannot be addressed through a TMDL.
 - Category 5: Polluted waters requiring a TMDL.
- Complete information on all these categories is available online at <http://www.ecy.wa.gov/programs/wq/303d/WQAssessmentCats.html#polluted>.
- The current EPA approved 2008 Water Quality Assessment is available online at <http://www.ecy.wa.gov/programs/wq/303d/2008/index.html>.

Q: *Is there a way to consider historical water flows, perhaps by different conveyance methods? Can Ecology identify ways to get more water into the system and would it even make a difference? For example, reclaimed water; acknowledging that if used, it would not be nutrient free. Can Ecology identify a better way to add water and increase circulation? It would be interesting to know the historic flows of this system.*

A:

DAG Comment: Sometimes engineered solutions end up causing more or different problems. Eutrophic systems will always grow back and problems arise when we change the natural system. *How can we get back to the most natural system that is possible?* For example, if we take out the dam in Capitol Lake, it won't return to the historical system but will return to a more natural system. Commenter believes we can address such impediments to meet WQS and still meet the needs of the economy. Examples include: examine the flow of Moxlie and Indian Creeks; take out the causeway to allow sediments to flow; or create park-like conditions along the whole basin.

DAG Comment: Differing opinion. Whether the dam remains in place or not, we still need to recognize the reality that this is an urban environment. We cannot go back to pristine conditions because this is unrealistic with the current population. We need to look at all issues and recognize there is some capability to enhance the environment by modifying certain things. Turning Capitol Lake area into something else is another engineered change and is not the only solution.

EPA: *Has the WQP asked the EAP to do any more modeling?*

A: Yes. We asked them to look at incremental loading to ultimately meet the WQS. We do not know the workload or timing involved in this request. If it requires running more models they will definitely need more time. Their analysis is helpful for us to identify where reductions are needed and where there may be tradeoffs in load reductions.

EPA: *Does the WQP have to wait for the SPSDO Study to be completed, concentrating on the northern boundary condition?* The model used for that study shows 80% of the input is coming from direct discharge. While the study is not completed yet, there is information posted on Ecology's website.

A: No. We believe we have enough information at this time to move forward with this TMDL effort. We wanted to make sure we were appropriately looking at the right pollutant sources into Budd Inlet.

Supplemental information: More information on this study is available online at http://www.ecy.wa.gov/puget_sound/dissolved_oxygen_study.html.

EPA: *Is Ecology considering assigning allocations to sources outside of the current northern boundary for the Budd Inlet model?*

A: Yes.

Dissolved Oxygen

Q: *Do the new baseline background conditions affect Capitol Lake?*

A: No. It affects the Budd Inlet model. The new condition can have a significant impact on the reductions needed in Budd Inlet.

Q: *Rather than considering DO problems as absolute, are there ways to change the DO levels in Capitol Lake? (For example, using aerators to stir up the water.) Also, did the model consider what would happen if the DO is coming in from below the falls?*

A: We have done this already. There is so much sediment demand for oxygen that even if we aerated the water, it would be chemically consumed and would not remain in the system long enough to stay in the water column. It would not change the availability of oxygen for the future. We looked at the option of dredging the lake. There are differing perspectives on the best approach and we will consider them before making our final recommendation for Capitol Lake. We will provide the science and the recommendations it indicates is needed. For example, we already know that riparian restoration and revegetation is needed to address temperature issues throughout the watershed.

Stormwater

Q: *Are stormwater outfalls considered a point source?*

A: Technically yes, but they are generally included as a nonpoint source. The WQIR needs to distinguish the permitted sources from the nonpoint sources.

Q: Asked for clarification from an EPA comment about two sources of stormwater (unmanaged and Phase 2 municipal permit outfalls). Will NPDES permits (for example to Thurston County, City of Olympia, or WSDOT) incorporate wasteload allocations (WLA)?

EPA response: It is rare to apply an allocation to a specific outfall. The WLA has to be a numeric target. Each entity with stormwater outfalls would have targets. This could be per outfall, areas of outfalls, or another situation. The WLAs need to be set up in a meaningful way to guide the stakeholders (for example cities or counties) to make land use or other decisions. The correct kind of monitoring is important (for example, monitoring the effectiveness of BMPs.) EPA would like to see the WQIR also address future growth and its potential impacts.

Ecology response: There are four WWTP outfall types in this watershed. Ecology does differential samples and suggests reductions needed.

Load and Wasteload Allocations

EAP staff looks at geographic areas and those covered under permits. This information is provided to the WQP who will then assign the LA or WLA as part of the WQIR. For example, a specific area could have 80% of the area assigned a LA with the remaining 20% assigned a WLA.

Once the WQP knows where we need to target load reduction strategies, we examine what types of mechanisms are needed to get implementation actions to occur so the waterbodies can meet the WQS. General NPDES permits are one way. For areas not under permit coverage areas, we will look at the influences to the waterbody and consider the appropriate tool to address the influence. It is Ecology's hope and expectation that the affected stakeholders will work together on targeted areas to identify the best approach. Some of this work will occur during the development of the Implementation Strategy for inclusion in the WQIR. Additional details will go into the WQIP, again developed with the help of this Advisory Group.

Monitoring

NPDES Permits require monitoring for a different purpose. It is possible that certain permits may have WLA assigned to them based on this TMDL effort.

Effectiveness monitoring will be identified in the WQIP. The information will help determine if the best management practices (BMPs) being implemented are effective. If they are not, the next step is to identify why and consider other options. If the monitoring data indicates the water quality has improved, this will help in the process to have it reclassified to Category 1 (meets WQS). Ecology has the obligation to develop this work but needs help from affected stakeholders and other interested parties.

Acronyms used throughout these notes:

BMPs: Best management practices
DAG: Deschutes TMDL Advisory Group
DO: Dissolved oxygen
EAP: Environmental Assessment Program (Ecology)
EPA: U.S. Environmental Protection Agency
FERC: Federal Energy Regulatory Commission
LA: Load allocation
LOTT: Lacey, Olympia, Tumwater, and Thurston County
NP and NPS: Nonpoint sources
NPDES: National Pollutant Discharge and Elimination System
OB: Open boundary
SPSDO: South Puget Sound Dissolved Oxygen
TMDL: Total Maximum Daily Load
WLA: Wasteload allocation
WQIP: Water Quality Implementation Plan
WQIR: Water Quality Improvement Report
WQP: Water Quality Program (Ecology)
WQS: Water quality standards
WSDOT: WA State Department of Transportation
WWTP: Wastewater treatment plant

Open Comments: None

Next meeting

Date: Thursday, December 13, 2012
Time: 9:00 a.m. – 12:00 noon
Place: LOTT Clean Water Alliance, 500 Adams St. NE, Olympia

Draft agenda: Begin discussing the Implementation Strategy and allocations for bacteria and temperature.