Response to the Supplementary Environmental Impact Statement (SEIS).

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November 5, 2026

1) I want to call your attention to an alternative to the Deschutes Estuary Restoration Project (DERP) that has not been evaluated. That is, retention of Capitol Lake while diverting Percival Creek to a direct estuary connection with Budd Inlet. I request that you consider it.

If adopted, that alternative would ...

- eliminate certain specified negative environmental impacts associated with the DERP;
- eliminate certain other unacknowledged DERP negative impacts;
- eliminate most of the most costly and intrusive actions needed to implement DERP;
- retain certain critically important environmental services performed by Capitol Lake;
- retain the community option of restoring swimming and recreation at Capitol Lake, and
- create an ecologically valuable restored estuary in our community.

The Percival Creek Estuary alternative is presented at the end of this Response document. The following are responses pertinent to this SEIS.

1) Eliminate certain specified negative environmental impacts associated with DERP.

SEIS Section 1 (Table 1.2) presents the loss of the bat colony at Woodard Bay as a negative consequence of eliminating Capitol Lake. That loss would be avoided if the Lake is retained.

2) Prevent certain other unacknowledged DERP negative impacts not mentioned in the SEIS.

Capitol Lake has been reported to sustain a population of the imperiled Olympic Mudminnow *Novumbra hubbsi*, a species endemic to Washington state (Entranco, 1997). This highly localized species is losing natural habitat over most of its restricted range in our state. The Lake also supports a healthy population of the freshwater mussel *Anodonta kennerlyi*, whose populations are severely reduced over the rest of its entire natural range. The elimination of these Lake populations would further imperil the continued existence of these species. (see Mongillo & Hallock, 1999.)

3) Eliminate the most costly and intrusive actions needed to implement DERP.

If the Lake were to be retained, these restoration actions would be unnecessary;

- construction of a flood control berm around much of the lakeshore and at the old brewery site;
- armoring of the east margin of the Deschutes Parkway against tidewater erosion;
- excavation of the Bayview Market site to create a 500-foot entrance to the Deschutes Estuary;

• removal of the dam;

• armoring of the I-5 bridge supports against tidewater erosion;

• raising and armoring the pedestrian (and railroad?) bridges at Marathon Park.

• **Retain certain critically important environmental services performed by Capitol Lake.**

By far the most important environmental service performed by the Lake is its interception of the huge nitrogen nutrient load carried seaward by the Deschutes River and its immobilization of that nutrient nitrogen until late October, preventing it from exacerbating natural low oxygen conditions in Budd Inlet in late summer. The rampant growth of large freshwater plants in the Middle and North Basins is the mechanism that maintains this pollution-prevention action. That water-quality cleansing action would be lost if the Lake is removed.

In this regard, the Lake is comparable with the LOTT plant. It is a natural wastewater treatment system that is much bigger and better than that facility. There would be nothing comparable to the Lake's nitrogen nutrient uptake and retention by plants in the restored Deschutes Estuary.

In recent years the Lake has protected Budd Inlet by intercepting three separate raw sewage flows from Percival Creek and a significant release of PCB chemicals from a ruptured containment vessel on the grounds of the now-shuttered Olympia Brewery.[1] Were the whole Lake to be replaced by an estuary, all such safeguard actions would be lost.

Loss of the Lake's critical pollution-prevention role should be identified as a separate item in SEIS Table 1.2 as an unavoidable negative impact of the Deschutes Estuary Restoration Project.

• **Retain the Community's option of restoring swimming and recreation at Capitol Lake.**

Capitol Lake has met all of the state's standards for safe swimming since about year 2000, thanks to a massive cleanup program launched after swimming ended in 1986. This renewed suitability for swimming is documented in publications by the Thurston County Health and Social Services for many years – but has never been publicized. [see data in TCPHSS 2012, for example].

• **Create an ecologically valuable restored estuary in our community.**

(detailed below at the end of these comments.)

[1] Six hundred gallons of transformer oil containing PCB's escaped from the old brewery and entered the Lake on March 25, 2019. Sewage line breaks occurred in Tumwater in February and March (2020) and December (2021), allowing 30,000, 233,000, and 700 gallons respectively of sewage to enter the Lake. In all cases, none of the spills entered Budd Inlet. (See Olympian Reports for those dates). All would have entered Budd Inlet directly if an estuary had received those contaminants.

2) Elements relevant to the SEIS.

The SEIS cites "elimination of invasive species" as a (minor) "benefit" of removing Capitol Lake. There is no real benefit here. Capitol Lake's invasive species inventory is not markedly different from those of typical freshwater lakes everywhere else. "Eliminating" them by draining the Lake would accomplish nothing of special ecological importance and simply open the basin to invasion by the many invasive species now residing in Budd Inlet. These include the barnacle *Balanus improvisus*, mussels *Mytilus galloprovincialis* and (probably) *M. edulis*, the lined sea anemone *Haliplanella lineata*, many obscure benthic crustaceans and fouling tunicates, and others. (About as many species, in total, as live in Capitol Lake.)

The New Zealand MudSnail (NZMS) has dominated public attention as a potentially menacing invasive species whose presence in the Lake has (I believe) influenced decisions about dredging the basin during the DERP activities. In fact, the NZMS's are not the ecological menace that was anticipated at the time of their first appearance in the Lake. Probably thanks to ducks, crayfish, and certain Lake fishes that all eat and digest snails, their numbers appear to very low.



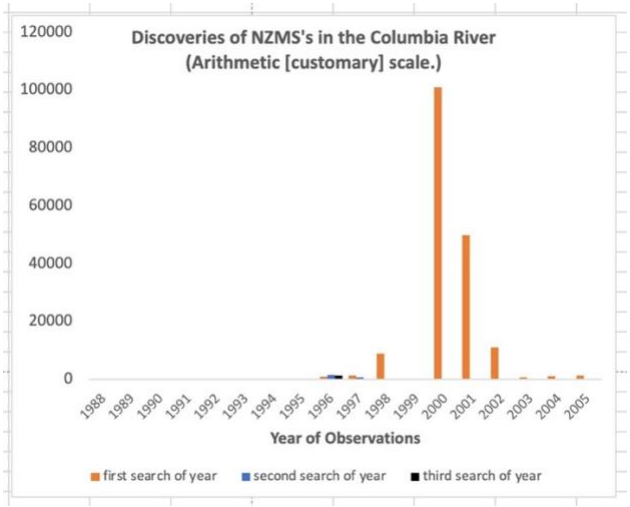


Figure 2. Population sizes of the newly discovered NZMS's in the Columbia estuary, 1990 [first one identified] – 2006. Converted by DHM from a log-scale population graph in Bersine and others, 2007.

Figure 1. Exposed Lake bottom, NE shore of North Basin, showing all of the sparse, recognizable NZMS's occurring there in July, 2026 (red arrows). Larger globular snails (white arrows) are probably "Chinese mystery snails," introduced to the Lake in 2019. DHM photo July 27, 2026.

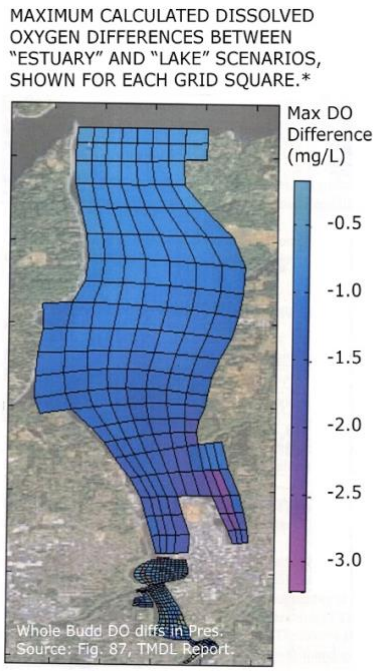
Figure 1 is a 2026 photograph of the exposed Lake bottom at the location where the snails were once at their maximum known population density (about 17,000 individuals per square meter). [2]

[2] Northeastern-most curve of the North Basin Heritage Park retaining wall. Population density was calculated and reported by DHM based on data supplied by DEIXIS Consultant Ed Johannes from a survey conducted by him in

There are very few ZNMS's evident on the exposed bottom here or in other photos taken by me at the same time and place. Why so few? It seems at least possible that the snails underwent an episode of unconstrained population growth here, then experienced a crash in numbers possibly due to shifts in the diets of native predators, similar to their history at the site of their first discovery in the Columbia River Estuary (Figure 2).

The snails are known to survive in brackish water of salinity 15 ppt (LeClair and Cheng, 2011). They would probably be present in sediment dredged from the Lake basin, a fact that (with the anticipated damage that they seemed capable of in early views) has prompted expensive land-based dredge spoil disposal strategies. In fact, the deep water of Puget Sound is far more saline than the 15 ppt level, as are the surface waters in Budd Inlet at almost all times, and the most likely place where the snails could survive is the Deschutes Estuary basin itself. The presence of the snails in the Basin may not require drastic and expensive dredge-spoil disposal measures as seemed necessary in earlier assessments.

A few words on WDOE's computer model "demonstrations" that Capitol Lake lowers dissolved oxygen levels in Budd Inlet. [WDOE claim cited in this SEIS.]



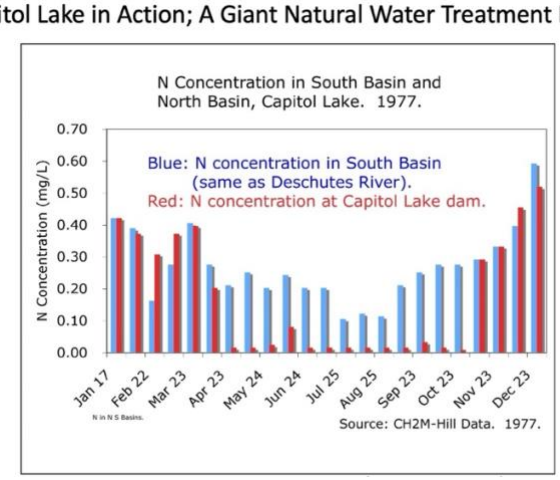


Figure 3 (left). Computer output showing every sector of Budd Inlet with "more oxygen" if the Lake were to be removed. Figure 4 (above). Blue bars show measured nitrogen nutrients entering Capitol Lake, red bars show nitrogen leaving the Lake at the dam, 1977.

In fact, the GEMSS model simulations showed no such thing. In reality, weeds growing in the Lake in plain view and actual measurements of the nutrient nitrogen levels that ultimately drive deep-water low DO levels prove beyond reasonable doubt that the Lake traps and holds incoming nutrient nitrogen until late October, then releases them too late to imperil Budd Inlet's

2011. DHM estimated that this population density occurred in 2003. (It is likely that this is the location where the snails were first introduced to the Lake.) Photo is by DHM during an interval when the Lake level was lowered for studies related to DERP.

deep water oxygen (CH2M-Hill, 1978). Figures 3 and 4 compare one of WDOE's computer pronouncements with observed data reported by CH2M-Hill consultants (1978). [Figure 3 from TMDL Report, see References.]

Figure 3 shows WDOE's claim that removing the dam would result in "higher dissolved oxygen levels" in every sector of Budd Inlet (TMDL Report, 2013). In a PowerPoint presentation to the creators of this graph in 2014, I pointed out that this is an artifact of the model's method of reporting, which displays only the biggest change in DO in each sector regardless of its depth while leaving smaller changes at all other depths unreported. In fact, it shows that the flood of nitrogen nutrients released by removing the dam would indeed create (via phytoplankton growth) huge amounts of new dissolved oxygen at the surface – where it is irrelevant to the health of the ecosystem and quickly diffuses off into the air – while masking an almost certain small decline in the critical bottom water oxygen (due to sinking and decay of the phytoplankton cells from the surface). Figure 4 was constructed by me from nitrogen nutrient measurements in the South and North Lake basins by the CH2M-Hill consulting firm in 1977 (CH2M Hill, 1978). The virtual disappearance of the "red bars" in spring, then their reappearance in November, shows the huge extent to which the Lake removed and held the incoming nutrient nitrogen (blue bars). In 2007, WDOE briefly posted, then removed, nutrient nitrogen data *that mirror this Figure precisely*.

WDOE did not respond to my many reports of flawed interpretations and/or unrealistic simulation scenarios. But they always stopped using the critiqued claims and tried other ways of "proving" that the Lake lowers DO levels in Budd Inlet. None of their simulation results were credible.[3] Meanwhile, data like those in Figure 4 as well as aquatic ecologists' knowledge-based common sense support the idea that the Lake protects Budd Inlet by way of its weed-uptake and retention of nitrogen nutrients. There is no comparable ecological process in any estuary that would replace the Lake.

3) An Alternative Estuary Restoration that Preserves Capitol Lake.

The following is taken verbatim from the forthcoming new book, *A New Percival Creek Estuary and Capitol Lake* (see Milne and others, 2026, References). It is intended to present our community with a path forward in the event that the larger ongoing Deschutes Estuary Restoration Project becomes too expensive or unworkable for other reasons.

An Estuary Alternative That Doesn't Require Removal of the 5th Avenue Dam.

"Our experiences as former participants in the lake/estuary discussion suggest that there is a path forward that can save Capitol Lake and install a natural estuary right beside it, all at a lower cost than that of removing the dam. That is, divert the outlet of Percival Creek directly northward to connect with Budd Inlet while leaving the dam and Lake intact. That would retain the benefits

[3] An overview of this prolonged model-critique episode is presented in Chapter 9 of the forthcoming book, "A New Percival Creek Estuary and Capitol Lake." My detailed assessments of WDOE's model pronouncements can be found in my report to WDOE; see Milne 2018 in References.

provided by Capitol Lake and add an estuary supporting a variety of wild salmon runs and cultural, environmental, and educational benefits right in downtown Olympia. Here, we describe that alternative in detail.

A New Percival Creek Estuary.

Percival Creek is a natural stream that once flowed into the Deschutes River as a tributary and (during high tides) directly into Budd Inlet. The Creek originates in Trosper Lake, from which it starts as a very small stream. It acquires more water the farther it goes. Percival Creek was connected with Black Lake by a ditch constructed in 1922 and now has about one tenth as large a flow as the Deschutes River itself, downstream from its confluence with the ditch.



Figure 1-6. Percival Creek approaching Percival Cove. December, 2025. View is upstream from the Deschutes Parkway.

Percival Creek (Figure 1-6) is much larger than the small McLane Creek that enters Eld Inlet to the west and is about half as large as Kennedy Creek entering Totten Inlet still farther west. It is about the same size as Goldsborough Creek entering Hammersley Inlet at Shelton. During the long community conversation about converting Capitol Lake to an estuary, the suggestion was made by CLIPA members that the Lake be saved and Percival Creek be directly connected with Budd Inlet (Figure 1-7). With the recent realization that responsible, environmentally friendly removal of the Lake would require much more than half a billion dollars, maybe as much as a billion, the much less expensive conversion of Percival Creek back to estuary status is both economically and ecologically attractive.

What might be the benefits of reconnecting Percival Creek to Budd Inlet? Enhancing natural salmon runs and bringing popular viewing of salmon right to downtown Olympia are two that come to mind.

All of the creeks mentioned above have natural salmon runs big enough to attract fisher folks and spectators. (And eagles and gulls and raccoons and maybe even bears.) McLane Creek, tiny as it is, has observation decks and trails for people who want to see migrating salmon out at the DNR natural area on Delphi Road. Kennedy Creek supports the biggest non-hatchery run of chum salmon in the entire Salish Sea. There in November, area residents bringing visitors and kids and relatives, school groups, professional fisheries workers and others all gather for guaranteed views of huge fish swimming in the main creek and choking a few small rivulets with spawning fish, bank to bank.

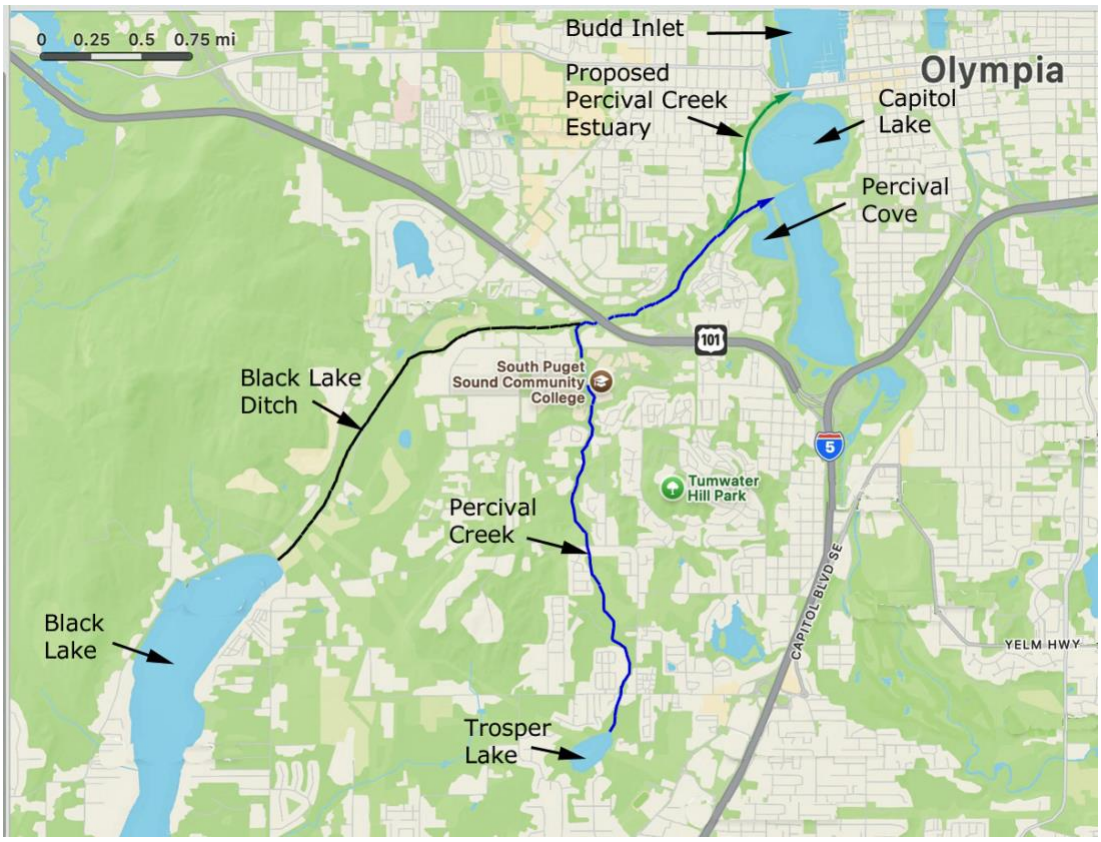


Figure 1-7. Route of a suggested new Percival Creek Estuary alongside Capitol Lake. Source: Google Maps with enhancement of water features. [based on maps in a Thurston County Water Resources Monitoring Report. TCPHSS 2012.]

Goldsborough Creek at Shelton has few opportunities for viewing the migrating salmon, but has its own promising story to tell. An upstream dam, formerly used by a timber company but damaged and long obsolete by the 1990's was an obstacle to migrating salmon. Shortly after it was removed (in 2001) and years before salmon were expected to resume big runs in that creek, chum salmon returned in abundance. Salmon run restoration happened faster than expected – as it might well do in Percival Creek.

And even the artificial Black Lake Ditch is reported to have had Coho Salmon present in it in the past (TCPHSS 2012).

As was formerly the case with the Deschutes River, natural salmon runs are blocked by waterfalls in some of the creeks named. A waterfall in Kennedy Creek one mile upstream from the viewing area marks the landward end of that Creek's salmon migrations. Perry Creek entering Eld Inlet is blocked by a waterfall just a few hundred feet from the saltwater. Percival Creek's own salmon runs were formerly obstructed by a rocky and nearly impassable rapids up near where the creek goes under the Highway 101 bridge. The obstacles in both the Deschutes River and in Percival Creek were bypassed by the construction of fish ladders in 1954, following the creation of Capitol Lake.

Percival Creek enters Capitol Lake today through a weir-like screen just east of the Deschutes Parkway at the location of the railroad tracks (Figure 1-8). Diverting the Creek toward a direct connection with Budd Inlet – that is, restoring its downstream reaches as an estuary without entering Capitol Lake -- would entail closing that weir and creating a channel alongside the west side of the Parkway all the way to the Budd Inlet shore. Percival Cove (to the left, in Figure 1-8), once isolated from Capitol Lake could become a tidal saltmarsh adjacent to the new estuary creek.



Figure 1-8. Screen where Percival Creek enters Capitol Lake. View is toward north from Deschutes Parkway bridge south of Marathon Park. Capitol Lake is to the right. dm photo.

Connecting Percival Creek with Budd Inlet has challenges of its own. It could require purchase of three private residences now located west of the Parkway (or perhaps move a section of the railroad track and road 50 feet to the east to avoid these purchases), building a new railroad bridge across the new Percival Creek estuary, perhaps establishing a public park alongside the new estuary's western shores, creating a viewing area for salmon migrations, some engineering under the Fourth- and Fifth Avenue bridges, and other work.

One of the considerations might be retaining emergency connectivity with Capitol Lake if needed for the Lake's water-quality protection services. For example, three times during years 2020 and 2021, broken sewage lines drained directly into Percival Creek[4]. In all cases, Capitol Lake absorbed and neutralized the threats and prevented sewage from reaching Budd Inlet. And would do so again if contaminated Creek water could be flushed through the Lake. With that in mind, a dam across the Creek with an openable gate at the site of the present-day screen could be built to direct the Creek's waters toward Budd Inlet in ordinary times but also divert them into the Lake if similar cleanup emergencies arise in the future.

Diverting Percival Creek directly to Budd Inlet would mean that the nitrogen nutrients carried by the Creek would escape interception and storage by the plants in Capitol Lake. But that would not be a serious negative consequence of converting the Creek to an estuary. The loads of NN's carried

[4] ... mentioned above (in footnote 1) in this response to the SEIS ....

by the Creek are only about 2% of the loads carried by the Deschutes River.[5] The driving force of the Percival Creek flow (critical in maintaining the turnover of water in Budd Inlet (see Chapter 4) would not be lost. Diverting the Creek directly into Budd Inlet to restore it as an estuary might have the small benefit of increasing the Lake basin's ability to protect Olympia from floods by about 10 percent.

Leaving the Lake and all of its benefits for recreation, flood control, environmental protection and ecological integrity intact – creation of a brand new genuine Percival Creek Estuary right in downtown Olympia ready for salmon and visitors – all at much less cost than that of removing the 5th Avenue Dam – would be a huge positive contribution to our region's social, cultural, economic, and environmental well-being. That is what we call a "win – win" solution to the basin's restoration challenge.

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The following References document the statements made in this response to the SEIS. Thank you for the opportunity to comment on it!

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References.

Bersine K., V. E. Brenneis, R. C. Draheim, A. M. Margo Rub, J. E. Zamon, R. K. Litton, S. A. Hinton, M. D. Sytsma, J. R. Cordell, and J. W. Chapman. 2008. Distribution of the invasive New Zealand mudsnail (*Potamopyrgus antipodarum*) in the Columbia River Estuary and its first recorded occurrence in the diet of juvenile Chinook salmon (*Oncorhynchus tshawytscha*). Biological Invasions 10: 1381-1388.

CH2M-Hill 1978. Water Quality in Capitol Lake. A report prepared for the State of Washington Departments of Ecology and General Administration. Ecology Publication no. 78-e07. June, 1978.

Entranco, 1997. 1997 Capitol Lake Drawdown Monitoring Results. Prepared for Capitol Lake Adaptive Management Plan {= CLAMP] Steering Committee, Olympia, WA. [reports presence of Olympic MudMinnows in Percival Cove.]

Johannes, E. J. 2011. Distribution Survey for *Potamopyrgus antipodarum* (New Zealand Mudsnail) in the North and Middle Basins of Capitol Lake, Thurston County

[5] The late summer nutrient nitrogen *concentration* in Percival Creek is about 25% of that of the Deschutes River. The Creek's *flow* is only about 10% of the river's flow. TCPHSS, 2011.

Washington. Final Report Contract # FAC 10-026. Prepared [by Deixis Consultants] for General Administration Facilities Division, Olympia, WA.

Johannes, E. J. 2016. Population Density of *Potamopyrgus antipodarum* (New Zealand Mudsnail) in the North and Middle Basins of Capitol Lake, Thurston County, Washington. Final Report Prepared for: Capitol Lake Improvement and Protection Association. Olympia, WA.

LeClair, L. L. and Y. W. Cheng. 2011. A review of salinity tolerances for the New Zealand mudsnail (*Potamopyrgus antipodarum*, Gray 1843) and the effect of a controlled saltwater backflush on their survival in an impounded freshwater lake. Journal of Shellfish Research 30: 905-914. [first reported for WDFW, Olympia.]

Mongillo, P., and M. Hallock. 1999.Washington state status report for the Olympic mudminnow. Washington Department of Fish and Wildlife, Olympia, WA.

Milne, D. H. 2018. The Washington Department of Ecology's Report, "Supplementary Modeling Scenarios. (2015, Publication No. 15-03-02)." A Critical Review.

WDOE should have a copy in its library. If not, Search CLIPA website, "Documents." Look for this paragraph: [This WDOE publication purports to demonstrate that Capitol Lake has a negative effect on Puget Sound. That Report presents outputs of a complex computer simulation, the "Budd Inlet Model," that are said to support the authors' claims. That is not the case. In fact data in that report support the view that Capitol Lake's effects on Puget Sound are actually beneficial.] An overview of the author's findings is presented in Chapter 9 of the forthcoming book "A New Percival Creek Estuary ... see below ...

Milne, David H, Jack Havens, Bob Wubbena and Bob Holman. 2026. A New Percival Creek Estuary and Capitol Lake. A Win-Win Alternative for Olympia (and Washington State.) Currently in Press, probably available in bookstores starting December 2026.

Roberts, Mindy, Anise Ahmed, Greg Pelletier, and David Osterberg. 2013. Deschutes River, Capitol Lake, and Budd Inlet Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment Total Maximum Daily Load Technical Report. Water Quality Study Findings. Publication No. 12-03-008. Wa. Dept. Ecology (DOE). Olympia, Wa. [Available on line at www.ecy.wa.gov/biblio/1203008.html] (*The TMDL Report mentioned in this book.* There are two volumes; this report and the massive TMDL Appendix with data and description of the GEMSS Model)

TCPHSS 2012. [= Thurston County Public Health and Social Services Department.] Thurston County Water Resources Monitoring Report. 2009-2010 and 2010-2011 Water Years. Capitol Lake pp 66-82, Olympia WA. Available on line at <http://www.co.thurston.wa.us/health/ehrp/pdf/AR10-11/AR09-10_10-11.pdf>

"TMDL Report." Deschutes River, Capitol Lake, and Budd Inlet Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment Total Maximum Daily

Load Technical Report. Water Quality Study Findings. WDOE Publication No. 12-03-008. Full Citation is Roberts and others 2013 (see above).

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