



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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June 8, 2012

Mr. Michael Bussell, Director
Office of Water and Watersheds
U.S. EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101

Subject: Final submittal of 2010 Marine Water Quality Assessment Documentation

Dear Mr. Bussell:

The Department of Ecology (Ecology) submitted the 2010 Marine Water Quality Assessment and Candidate 303(d) List to EPA via a letter dated December 28, 2011. We subsequently received a letter from EPA on January 12, 2012 that requested additional information before the formal review of the 2010 Assessment could begin. With this letter we are submitting the remainder of additional documentation that was requested by EPA. This final submittal fulfills Washington State's 2010 Water Quality Assessment to EPA as an "integrated report" to meet the Clean Water Act requirements of sections 305(b) and 303(d). Information on the 2010 Assessment, including the responsiveness summary and accompanying documentation, can be found at www.ecy.wa.gov/programs/wq/303d/2010/index.html.

Throughout this process, we worked closely with your staff to make sure we adequately responded to the questions and clarifications that EPA needs in order to approve the candidate 303(d) list. We especially want to note the work of Jill Gable and Dave Croxton to ensure our Assessment meets EPA requirements and policy needs.

Copies of the solicitations for the 2010 Assessment were previously delivered, including the call for data, public workshops, targeted solicitations for data, public review, and tribal review.

The following enclosures complete Ecology's submittal package for the 2010 Water Quality Assessment.

1. An updated Compact Disk (CD) of spreadsheets with listing information:
 - a. Accounting of all listings with category changes
 - b. Accounting of all inactivations
 - c. Summary of delistings/changes from previous Category 5 listings
 - d. Other related spreadsheets requested by EPA staff

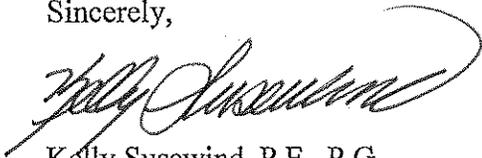


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2. A list of TMDLs under development for the coming cycle.
3. The final response to public comments on the draft 2010 Water Quality Assessment.
4. Documentation that we considered all existing and readily available data and information for marine pH and protection of aquatic life uses (this resulted in a Category 2 listing for Puget Sound for potential impacts to aquatic life).

We look forward to your approval of the 2010 Water Quality Assessment. Please contact Ken Koch at 360-407-6782 if you have any questions or need further clarification on any of the information submitted.

Sincerely,



Kelly Susewind, P.E., P.G.
Water Quality Program Manager

Enclosures

cc: Dave Croxton, EPA
Jill Gable, EPA

Enclosure 1: Bussell Letter, 6/8/12

An updated Compact Disk (CD) of spreadsheets with listing information:

- a. Accounting of all listings with category changes
- b. Accounting of all inactivations
- c. Summary of delistings/changes from previous Category 5 listings
- d. Other related spreadsheets requested by EPA staff

TMDLs in progress that may be submitted within the next assessment cycle (2012-July, 2014) to EPA

Office	Watershed	Parameters
CRO	Mid Yakima River Watershed	Fecal Coliform Bacteria
	Upper Yakima River	Temperature
ERO	Little Spokane River Watershed	Dissolved Oxygen, pH
	Colville River	Dissolved Oxygen, Temperature
	Palouse River	Temperature
	Palouse River, South Fork	Dissolved Oxygen, Temperature, pH
NWRO	Soos Creek Temp & DO	Dissolved Oxygen, Temperature
	Soos Creek FC	Fecal Coliform
	Sinclair and Dyes Inlets*	Fecal Coliform
	Liberty Bay Tributaries*	Fecal Coliform
	French-Pilchuck Creeks	Temperature
	Skykomish River	Temperature
	Lower Stillaguamish River DO	Dissolved Oxygen, pH
BFO	Drayton Harbor*	Fecal Coliform
	Nooksack River, South Fork	Temperature
	Whatcom Creek	Fecal Coliform
	Squalicum-Padden Creek	(storm water)
	Whatcom Lake	Dissolved Oxygen, Fecal Coliform, Phosphorus
SWRO	Deschutes River, Capital Lake, and Budd Inlet	Dissolved Oxygen, Fecal Coliform, pH, Temperature, fine sediment
	Lewis River, East Fork	Fecal Coliform, Temperature
	Burnt Bridge Creek	Dissolved Oxygen, Fecal Coliform, Temperature
	Clarks Creek	Dissolved Oxygen
	Cranberry, Johns, and Mill Creeks	Temperature

5/3/2012

*Marine Waters are included in this project

Enclosure 2: Bussell Letter, 6/8/12

<p>Commenter Representing Commenter #</p>	<p align="center">The Department of Ecology's Response to Public Comments for the Candidate 2010 Marine Water Quality Assessment Updated June 2012</p>
<p>Kimberlie Stark King Co Commenter 1</p>	<p>Original comments</p> <p>Listing ID: 7034 Proposed Category: 3 Parameter: Temperature Water Body: Duwamish West Waterway</p> <p>Comment: Listing is based on station 305 temp values above criterion from 1998-2001. Have data from 2002-2004 so should not be placed in insufficient data category.</p> <p>Response: No new data was found for location ID "station 305, Duwamish West Waterway", nor for grid cell ID 47122F3H5. Additional data may be supplied at any time and new data may be used in the next marine assessment.</p> <p>Listing ID: 7035 Proposed Category: 3 Parameter: Temperature Water Body: Duwamish West Waterway</p> <p>Comment: Listing is based on station 307 temp values above criterion from 1998-2001. Have data from 2002-2004 so should not be placed in insufficient data category.</p> <p>Response: No new data was found for location ID "station 307 (Duwamish River RM 4.1)", however, for grid cell ID 47122F3C1, location ID 303D_LTUM03, newer data does exist, was assessed and included in roll-up data for WATS upload.</p> <p>Listing ID: 8183 Proposed Category: 2 Parameter: Ammonia Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE</p> <p>Comment: Listing is based on 2 very old data points from 1988. Limited spatial and temporal data this old is not useful particularly when there is ammonia data at other locations throughout the Sound. There are ammonia data from stations LSVV01 and LSVW01 located in the same area as these 2 data points so suggest using those data rather than 2 points >20 yrs old.</p>

Response: This listing was moved from Category 5 to Category 2 in 2004 due a change in the Policy 1-11 listing requirements. Policy 1-11 does not allow a change of Category based on the age of data. More recent data are necessary to move a waterbody from one Category to another. Policy 1-11 requires 10 samples in a 3 year period to be placed on Category 1. Additionally, ammonia data must be accompanied by concurrent ambient temperature, pH, and salinity data to be assessed. (Criteria concentrations for total ammonia based on temperature, salinity, and pH for marine water can be found in USEPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989, EPA440/5-88-004, April 1989.) Ecology reviewed the King County data submittal and for LSVV01 and LSVW01 and the necessary supplemental data to perform this assessment are not available. Ecology requests that these data be submitted to Ecology for future assessments.

Listing ID: 8190, 8195, 8650
Proposed Category: 2
Parameter: Bis (2-ethylhexyl)Phthalate
Water Body: DUWAMISH WATERWAY

Comment: Listings are based on very old 1982 data. There are more recent data to base listings.

Response: This is old data, but we can not move to Category 1 unless we have new data that meets standards and Policy 1-11. The only recent (1989 - 2009) King County data for Bis(2-Ethylhexyl) Phthalate that we could find in EIM was for sediments. If you have more recent data for Bis(2-Ethylhexyl) Phthalate in water, please provide, and we will re-assess these Category 2 listings.

Listing ID: 10160, 10164, 12647
Proposed Category: 3
Parameter: pH
Water Body: PUGET SOUND CENTRAL, DUWAMISH WATERWAY

Comment: Besides the question around the accuracy of the data point below the standard, this is a core DOE monitoring station so there should be more recent data beyond 2005. Listings for any category should not be based on questionable data, as is the case with any pH value in open waters below the WQ standard, particularly given the issues with any pH sensor except for a SAMI.

Response: Agreed. No new data was submitted, however, so Category 3 is acceptable for this historical listing.

Listing ID: 15395
Proposed Category: 5
Parameter: Bacteria
Water Body: DALCO PASSAGE AND EAST PASSAGE

Comment: Listing is based on 2004 exceedence of peak criterion from NTA01 but 2005 data met both standards. Say

more recent data from DOH is insufficient to show if meeting WQ standards. This is because DOH collects 6 samples/yr and DOE listing policy says need 10 bacteria samples, although the DOH data from 2007-2009 shows no exceedences.

Response: You are correct that the Category 5 listing is based on 2004 data from KCM-NTAK01. However, 2005 data at KCM-NTAK01 has 1 exceedance, which keeps this listing as a Category 5 according to Policy 1-11. Once a segment is in Category 5, it cannot have any exceedances in order to change categories.

Listing ID: 15801
Proposed Category: 2
Parameter: Endosulfan
Water Body: ELLIOTT BAY

Comment: Listing is based upon a single data point from 1977. This is stretching the use of old data!

Response: This is old data, but we can't move to Category 1 unless we have new data that meets standards and Policy 1-11. Additional data may be supplied at any time and new data may be used in the next marine assessment.

Listing ID: 15802
Proposed Category: 5
Parameter: Bacteria
Water Body: ELLIOTT BAY

Comment: Listing is based on 2003 FC data from LTAB01. The 2004 & 2005 data meet standards.

Response: We did not receive 2004 or 2005 data to change this listing.

Listing ID: 15803
Proposed Category: 5
Parameter: Bacteria
Water Body: ELLIOTT BAY

Comment: Listing based on 1987-1991 FC data from LTEH02. Have newer data from 2004-2008 that would still result in a Cat 5 but listing should be based on most recent data. Listing 42496 is based on the newer data so these 2 listings should be combined and/or listing 15803 removed as Section 6 of the listing policy states that "Data older than ten years will be used only if no more recent data exists to conduct the assessment".

Response: We combined these basis statements into listing ID 42496 and removed listing ID 15803. We assumed stations LTEH02 and 303d_LTEH02 are the same station. Listing ID 42496 remains a Category 5.

Listing ID: 15804
Proposed Category: 5

Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: Listing based on 1989-1990 data from MTEC01. Have data through 2008. The 2007 data exceeded the peak criterion but the 2008 data met both standards. Listing 60141 is for the 2007-2008 data.

Response: We combined these basis statements into listing ID 60141 and removed listing ID 15804. This assumes stations MTEC01 and 303d_ MTEC01 are the same station. Listing ID 60141 remains a Category 5. Once a segment is in Category 5, it cannot have any exceedances in order to change categories according to Policy 1-11.

Listing ID: 15807
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: Listing is based on LSRV01 data from 1987-1990. Have data to 1996. Data exceeded the peak criterion in 1995 but met both standards in 1996.

Response: We did not receive data past 1990 to remove this listing.

Listing ID: 15808
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: Listing is based on LSTU01 data from 1991. Have newer data though 2004 and the more recent data meets standards.

Response: We did not receive data past 1991 to remove this listing.

Listing ID: 15809
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: Listing is based on 1987-1991 FC data from LSVW01 and LSVW03 data from 1987-1990. Have newer data for LSVW01 through 2008 and the 2007 & 2008 data exceeded the peak criterion so listing should be based on newer data.

Response: We did not receive data past 1991.

Listing ID: 40162
Proposed Category: 2
Parameter: Bacteria
Water Body: QUARTEMASTER HARBOR

Comment: This listing should be a category 1 listing as there was not an exceedence of the peak criterion in 2001 and the more recent data are sufficient for a category 1 listing. As an example, bacteria listings are worded "In 2008, 1 out of 12 (8.3%) samples exceeded the % criterion (43 cfu/100ml)." Although a specific sample exceeded 43 cfu/100ml, if the overall percentage of samples did not exceed 10%, then the peak criterion was not exceeded. Suggest rewording to say, "In 2008, 1 out of 12(8.3%) samples exceeded the 43 cfu/100ml threshold, but the peak criterion was met."

Response: When you refer to "peak criterion," I assume you are referring to the "percent criterion"? We are not going to make changes to the basis statement language for this assessment.

According to Policy 1-11, this listing falls under Category 2 because at least one sample exceeded the 43 cfu/100ml threshold. Because only six samples were collected each year, we do not have enough data to move this listing to Category 1. We realize the current Policy for moving samples from Category 2 to Category 1 is extremely restrictive and we are making changes which will take effect in the next assessment. The Surface Water Quality Standards state "when averaging bacteria sample data for comparison to the geometric mean criteria, it is preferable to average by season and include five or more data collection events within each period. Averaging of data collected beyond a thirty-day period, or beyond a specific discharge event under investigation, is not permitted when such averaging would skew the data set so as to mask noncompliance periods. The period of averaging should not exceed twelve months, and should have sample collection dates well distributed throughout the reporting period." The intent is that the water must meet standards throughout the year.

Listing ID: 40171
Proposed Category: 2
Parameter: Bacteria
Water Body: QUARTEMASTER HARBOR

Comment: This listing should be a category 1 listing as there was not an exceedence of the peak criterion in 2001 and the more recent data are sufficient for a category 1 listing

Response: This is listed as a Category 2 because at least one sample exceeded the 43 cfu/100ml threshold. Because only 6 samples were collected each year, we do not have enough data to move this listing to Category 1. The Surface Water Quality Standards state "when averaging bacteria sample data for comparison to the geometric mean criteria, it is preferable to average by season and include five or more data collection events within each period. Averaging of data collected beyond a thirty-day period, or beyond a specific discharge event under investigation, is not permitted when such averaging would skew the data set so as to mask noncompliance periods. The period of averaging should not exceed twelve months, and should have sample collection dates well distributed throughout the reporting period." The intent is that the water must meet standards throughout the year.

Listing ID: 42475
Proposed Category: 3
Parameter: Ammonia
Water Body: PUGET SOUND (CENTRAL)

Comment: The 2 samples listed were calculated incorrectly and they did meet the WQ standard. There is sufficient recent data beyond 2002 (through 2008) to warrant a Category 1 listing.

Response: Ammonia data must be accompanied by concurrent ambient temperature, pH, and salinity data to be assessed. (Criteria concentrations for total ammonia based on temperature, salinity, and pH for marine water can be found in USEPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989, EPA440/5-88-004, April 1989.) Ecology reviewed the King County data submittal from 2004 and the necessary supplemental data to perform this assessment are not available. Ecology requests that these data be submitted to Ecology for future assessments. Listing ID 42475 was inactivated.

Listing ID: 42478
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: PUGET SOUND (CENTRAL)

Comment: Listing is based on 2002 and 2003 CK200P data. There are more recent data to base listing upon and other stations with DO excursions in the fall which may or may not be due to natural conditions have been placed in Category 3 rather than category 2.

Response: Listing ID 49000 was rolled in to Listing ID 42478. Listing ID 49000 was inactivated. Listing ID 42478 remains a Category 2. Grid Cell identifier for Listing ID 42478 was changed from 47122H3B9 to 47122H3B8.

Listing ID: 4 2485
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: DALCO PASSAGE AND EAST PASSAGE

Comment: Listing is based on NSEX01 data from 2004-2006. Have 2007-2008 data which listing should be based upon.

Response: Listing ID 66481 was rolled in to Listing ID 42485. Listing ID 66481 was inactivated. Listing ID 42485 remains a Category 2.

Listing ID: 42492
Proposed Category: 5

Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: Two different locations have been combined for this listing: NSEX01 and KSYV02. NSEX01 results should be in the South Central/East Passage area and 2007-2008 results from this station did not exceed standards. Listing should be based solely on KSYV02.

Response: Moved the data from station 303D_NSEX01 from listing 42492 to listing 45437 with the rest of the KCM_NSEX01 stations. This listing is now based solely on KSYV02. This listing remains a Category 5.

Listing ID: 45090
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: Listing is based on 2006 data from KSSN04. Say more recent data is not sufficient to determine if site meeting WQ standards, however, there are 24 data points from 2007-2008 which are sufficient data according to Policy 1-11. The 2007-2008 meets WQ standards so this should be a Category 1 listing.

Response: You are correct that the Category 5 listing is based on 2006 data from 303D_KSSN04. However, 2007-2008 data show exceedances, which keep this listing as a Category 5. Once a segment is in Category 5, in order to change categories it cannot have any exceedances.

Listing ID: 45435
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: Listing is based on 2007 FC data from MTL03. The 2008 data met standards. There are >10 data points in 2008 that met standards, yet listing is based on the 2007 data.

Response: You are correct that the Category 5 listing is based on 2007 data from 303D_MTL03. However, 2008 data has 1 exceedance, which keeps this listing as a Category 5. Once a segment is in Category 5, in order to change categories it cannot have any exceedances. We are clarifying this in Policy 1-11, which is currently in revision.

Listing ID: 45438
Proposed Category: 2
Parameter: Bacteria
Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE

Comment: This listing should be a Category 1 listing as there was not an exceedance of the peak criterion in 2008 and

the more recent data are sufficient for a Category 1 listing

Response: We understand how you are reading this in the policy and are going to make revisions in the next assessment to make it easier to move listings from Category 2 to Category 1. Currently, once a segment is in Category 2, it cannot have any exceedances in order to change categories, according to Policy 1-11.

Listing ID: 45582
Proposed Category: 2
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: This listing should be a Category 1 listing as there was not an exceedance of the peak criterion in 2008. One sample exceeded the threshold value but not more than 10% of the samples collected for the year exceeded the criterion.

Response: This segment was placed in Category 2 based on 2008 data because according to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5".

Listing ID: 5583
Proposed Category: 2
Parameter: Bacteria
Water Body: ELLIOTT BAY

Comment: Listing is based on LTAB01 data. Older data from this site is already used for Category 5 listing 15802 and the 2004 and 2005 data referred to in this listing meet both standards & there are sufficient data. Listing should be removed.

Response: We combined these basis statements into listing ID 15802 and removed listing ID 45583. This assumes stations LTAB01 and 303d_LTAB01 are the same station. Listing ID 15802 will remain a Category 5. However, the exceedances in 2004 and 2005 will keep this listing as a Category 5. Once a segment is in Category 5, in order to change categories it cannot have any exceedances.

Listing ID: 48944
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: DUWAMISH WATERWAY

Comment: There are more recent data than 2006 on which to base listing.

Response: Data used for the assessment included Jan. - Dec., 2005, Feb. - June, 2006. Of these data, only 1 excursion of the criterion (6 mg/L) occurred in Oct. 2005. Additional data may be supplied at any time and new data may be used in

the next marine assessment.

Listing ID: 48978
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: QUARtermaster HARBOR

Comment: Station MSWH01 in Quartermaster Harbor should receive a Category 5 listing due to 2 values way below the WQ standard for 2008.

Response: Data used for the assessment included Mar. - Jun., 2006; Dec., 2007; Jan. - Nov., 2008. Of these data, only 2 excursions of the criterion (7 mg/L) occurred in Oct. & Nov., 2008. Additional data may be supplied at any time and new data may be used in the next marine assessment.

Listing ID: 48995
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: PUGET SOUND (CENTRAL)

Comment: There are more recent data than 2005 on which to base listing.

Response: Listing ID 48995 inactivated as being a duplicate of Listing ID 42481. The data contained in 48995 was already included in 42481. Grid Cell location is determined to be 47122G4A2. WRIA is 9.

Listing ID: 60090
Proposed Category: 2
Parameter: Bacteria
Water Body: DALCO PASSAGE AND EAST PASSAGE

Comment: This listing should be a Category 1 listing. The listing is based on one exceedance of the peak criterion in 2008, however, the peak criterion (10% of the samples used to calculate the geomean) was not exceeded.

Response: This segment was placed in Category 2 based on 2007-2008 data because of the one exceedance. Had there been an exceedance of the percent criterion, the segment would be placed in Category 5. According to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5". Nine samples are not sufficient to move this segment to Category 1.

Listing ID: 60091
Proposed Category: 2
Parameter: Bacteria
Water Body: DALCO PASSAGE AND EAST PASSAGE

Comment: This listing should be a Category 1 listing. The listing is based on one exceedance of the peak criterion in 2009, however, the peak criterion (10% of the samples used to calculate the geomean) was not exceeded.

Response: This segment was placed in Category 2 based on 2007-2009 data because of the one exceedance. Had there been an exceedance of the percent criterion, the segment would be placed in Category 5. According to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5".

Listing ID: 60093
Proposed Category: 2
Parameter: Bacteria
Water Body: DALCO PASSAGE AND EAST PASSAGE

Comment: This listing should be a Category 1 listing. The listing is based on one exceedance of the peak criterion in 2008, however, the peak criterion (10% of the samples used to calculate the geomean) was not exceeded.

Response: This segment was placed in Category 2 based on 2008 data because according to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5". Six samples are not sufficient to move this segment to Category 1.

Listing ID: 60109
Proposed Category: 2
Parameter: Bacteria
Water Body: QUARtermaster Harbor

Comment: This listing should be a category 1 listing as there was not an exceedance of the peak criterion in 2008. One sample exceeded the threshold value but not more than 10% of the samples collected for the year exceeded the criterion.

Response: This segment was placed in Category 2 based on 2008 data because according to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5".

Listing ID: 60140
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (SOUTH-CENTRAL)

Comment: Listing is based on 2007 FC data from MTUJ01. The 2008 data met standards.

Response: You are correct that the Category 5 listing is based on 2007 data from 303D_MTUJ01. However, 2008 data

has 1 exceedance, which keeps this listing as a Category 5. Once a segment is in Category 5, in order to change categories it cannot have any exceedances.

Listing ID: 60141
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (SOUTH-CENTRAL)

Comment: Listing 15804 is for older data from MTEC01. The 2007 data exceeded the peak criterion but met both standards in 2008.

Response: You are correct that the Category 5 listing is based on 2007 data from 303D_MTEC01. However, 2008 data has 1 exceedance, which keeps this listing as a Category 5. Once a segment is in Category 5, in order to change categories it cannot have any exceedances.

Listing ID: 60156
Proposed Category: 2
Parameter: Bacteria
Water Body: COLVOS PASSAGE

Comment: This listing should be a category 1 listing as there was not an exceedance of the peak criterion in 2008 . One sample exceeded the threshold value but not more than 10% of the samples collected for the year exceeded the criterion.

Response: This segment was placed in Category 2 based on 2007-2008 data because according to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5".

Listing ID: 60182
Proposed Category: 2
Parameter: Bacteria
Water Body: ELLIOTT BAY

Comment: Listing is based on one exceedance in 2008 at LTBD27 but there are no exceedances for 2007 or 2008 of either standard and they are sufficient data for a Category 1 listing.

Response: This segment was placed in Category 2 because according to Policy 1-11, "a segment will be placed in Category 2 when at least one sample value exceeds the percent criterion and the segment is not otherwise placed in Category 5".

Listing ID: 65219, 65267, 65268, 65271
Proposed Category: 3

Parameter: Temperature
Water Body: ELLIOTT BAY

Comment: There is sufficient monthly data for these listings to warrant a Category 1 listing.

Response: According to WQP 1-11, continuous monitoring data, from a 2-year period, is necessary to generate a Category 1 listing. There were no excursions of the criterion (16° C) so these should remain in Category 3.

Listing ID: 66090
Proposed Category: 5
Parameter: Dissolved Oxygen
Water Body: COLVOS PASSAGE

Comment: Listing is for DO in Colvos Passage and says will wait for modeling results. Please reword this listing, as well as others for DO, to reflect that DO is under further evaluation and remove the language regarding modeling results.

Response: Colvos Passage is a location where low DO water from interior Puget Sound flows from the Tacoma Narrows during ebb tide. Colvos Passage receives water from Quartermaster Harbor and Commencement Bay, which are low in oxygen partially due to human influences.

The South Puget Sound Dissolved Oxygen Study and Puget Sound Dissolved Oxygen Model are the region's best tools to help resolve the relative influence of human activities. We will evaluate the needed model scenarios prior to the next marine water quality assessment.

Listing ID: 66128
Proposed Category: 3
Parameter: Dissolved Oxygen
Water Body: ELLIOTT BAY

Comment: Listing is based on 0 of 5 samples meeting DO standard but say insufficient data. There is data for this site through 2008 with 2 fall months in 2008 having DO values below 6.0 mg/L.

Response: Data used for the assessment (from EIM) include results from July, Aug., Sept., Nov., and Dec. 2006 with values of 7.5, 7.6, 6.3, 6.8, 6.9 mg/L, respectively. There was no additional data for this grid in EIM. Additional data may be supplied at any time and new data may be used in the next marine assessment.

Listing ID: 66483
Proposed Category: 3
Parameter: Dissolved Oxygen
Water Body: QUARTERMASTER HARBOR

Comment: Listing in based on 6 samples from NSAJ02 in 2006 but there is more recent data that shows this should be a category 5 listing.

Response: Data used for the assessment (from EIM) included results from Jan. - June 2006 only, with no results that generated excursions of the criterion of 7 mg/L. Additional data may be supplied at any time and new data may be used in the next marine assessment.

Listing ID: many, general comments

Proposed Category: 3

Parameter: Bacteria

Water Body:

General comment: Several category 3 listings with no bacteria exceedences of either criterion are based upon DOH data as they collect 6 samples/yr to classify shellfish beds per the NSSP guidelines. However section 8a of the listing policy states that "Fecal coliform samples will be assessed by Ecology staff in the manner described below unless the assessment is conducted by the state Department of Health (DOH) as part of its requirements under the National Shellfish Sanitation Program for approving shellfish beds." These category 3 listings conflict with DOH's classification. An example is listing 60158.

Response: The intention of the consideration of DOH advisories is to list water bodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only six samples as Category 1. Although it may meet its use for shellfishing, other water contact activities need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than 10 samples. We are working on revisions to the Policy that will clarify this.

Listing ID: 21695, 21696, 21697, 21699, 21722, 21723, and 21724

Proposed Category: 4C

Parameter: Fish Habitat

Water Body: PUGET SOUND (S-CENTRAL) AND EAST PASSAGE and QUARTERMASTER HARBOR

Comment: The seven listings are all based on a 2000 'Ulvoid Blooms in Puget Sound' report. The information presented is very generic and no study was done at any of the sites to determine the cause of ulvoid accumulations, if seen at all. At several of the sites listed, such as Alki South, and Quartermaster Harbor, no blooms were observed. It is not appropriate to categorize these sites as 4C, based on general observations and no causal factors, other than the presence of a freshwater input, stormwater or outfall pipe in the vicinity of the site. If necessary to use the basic information in this report, than a category 3 would be the most appropriate.

Response: Some of these listings may have been established in error. A link between the concentrations of ulvoids found at Puget Sound sites and fish habitat degradation was not established or acknowledged. Waters will be removed from Category 4c when information is submitted that demonstrates the impairment has been corrected, or that the listing

was made in error. The original report was examined for possible listing errors.

Listing 21695: This listing was for a beach south of Alki Point. The report indicated presence of ulvoids, less than 50% coverage, and no blooms observed. This listing will be moved to Category 3 since this is insufficient information to place in another category.

Listing 21696: This listing was for a beach south of Des Moines pier. The report indicated presence of ulvoids; at times the beach was completely covered.

Listing 21697: This listing was for a beach at Fauntleroy Cove. The report indicated greater than 50% coverage by ulvoids. Band of ulvoids was present at the tideline. In summer, ulvoid blooms and odor problems are extreme.

Listing 21699: This listing was for a beach at Seahurst Park. The report indicated greater than 50% coverage by ulvoids. Large amount of drift ulvoids in water at tideline (green tide). "Floes" of ulvoids at shoreline noted on prior visit. Mats of dried ulvoids present on rocks in high intertidal. Odor becomes quite strong in summer, according to local residents.

Listing 21722: This listing was for Quartermaster Harbor. The report indicated presence of ulvoids, but no blooms observed. Ulvoids were present all along shoreline, but no accumulations evident in inner and mid harbor. This listing will be moved to Category 3 since this is insufficient information to place in another category.

Listing 21723: This listing was for Tramp Harbor. The report indicated less than 50% coverage by ulvoids and no blooms observed.

Listing 21724: This listing was for a beach on northern Vashon Island. The report indicated presence of ulvoids, but no blooms observed. Ulvoids were lightly covering cobble beach. In summer, ulvoid windrows occur which are several feet wide and up to one foot deep. No odors are associated with the windrows, and they are rapidly carried off the beach at high tide. This listing will be moved to Category 3 since this is insufficient information to place in another category.

Listing ID: 36188
Proposed Category: 4C
Parameter: FISH HABITAT
Water Body: PUGET SOUND(S-CENTRAL) AND EAST PASSAGE

Comment: This listing is based upon a 1998 report saying that eelgrass at the Vashon Ferry dock is impaired due to nitrogen loading. WDNR conducts Sound-wide eelgrass surveys and their data should be used for eelgrass listings where data are available.

Response: This listing will be moved to Category 3 since this is insufficient information to place in another category.

Listing ID: 505989
Proposed Category: 5

Parameter: SEDIMENT BIOASSAY
Water Body: PUGET SOUND(S-CENTRAL) AND EAST PASSAGE

Comment: This listing is based on bioassay data collected in 1992, prior to a sediment remediation that was performed at the Pier 53/55 site. The site was capped in 1992 by the Army Corps of Engineers and monitoring was performed by King County for 10 years. Data from the monitoring program suggest that the remediation was successful and significant recontamination of the cap material does not appear to be occurring. The final report may be found at http://your.kingcounty.gov/dnrp/library/wastewater/sedman/Pier53/Pier53-55_201006_SedCapRemediation2002DataFinalRpt.pdf
Recommend that the listing be changed to a Category 1.

Response: If data are not in EIM it was not evaluated. Please identify and provide study results to EIM that represent the Pier 53/55 site in grid 47122G3A3_SW.

Listing ID: 500016, 500009, and 500010
Proposed Category: 5
Parameter: SEDIMENT BIOASSAY
Water Body: Lake Union or Lake Washington

Comment: These listings are for sites located in Lake Union or Lake Washington and, as such, should not be included on the proposed Marine Listings.

Response: These are freshwater listings that were not evaluated for the 2010 cycle and the basis for listing remains the same as in the 2008 cycle. If one does not distinguish between waterbody types, a search of proposed Category 5 listings will contain marine and freshwater listings. A search by waterbody type = marine and proposed 2010 Category = 5 will result in the desired listings.

Listing ID: 512102
Proposed Category: 5
Parameter: SILVER
Water Body: PUGET SOUND(S-CENTRAL) AND EAST PASS

Comment: This listing is based on three King County samples, none of which are sediment. Samples L9012-11 and L6416-11 are butter clam tissue and sample L6416-12 is green algae (*Ulva* sp.). Please delete this listing.

Response: All samples are identified as sediment per King County data submittal (WPNT9497).

***Sample_Matrix = Solid/Sediment
***Sample_Source = Salt/Marine Sediment
***Sample_Type = Sediment

As stated in a TCP response to a 2008 KC comment, in order for a re-evaluation to be performed, KC must electronically provide corrections to applicable EIM studies. Any changes should be readily identified in a corrected EIM Results

template sent to Sharon R. Brown (sbro461@ecy.wa.gov).

In addition to the study [WPNT9497] evaluated for this listing, KC is to provide corrections to EIM study ALK19497 as previously requested by TCP. Once received TCP will re-evaluate this grid.

Listing ID: 511841
Proposed Category: 5
Parameter: Benzo(a) anthracene
Water Body: PUGET SOUND CENTRAL

Listing ID: 511842
Proposed Category: 5
Parameter: Benzo(a) pyrene
Water Body: PUGET SOUND CENTRAL

Listing ID: 511845
Proposed Category: 5
Parameter: Benzo(g,h,i) perylene
Water Body: PUGET SOUND CENTRAL

Listing ID: 511849
Proposed Category: 5
Parameter: Chrysene
Water Body: PUGET SOUND CENTRAL

Listing ID: 511858
Proposed Category: 5
Parameter: Indeno (1,2,3-cd) pyrene
Water Body: PUGET SOUND CENTRAL

Comment: These 5 listings were all previously a Category 2, Rank 2, based on a single sample collected in the vicinity of the West Point Emergency Bypass Outfall in 1996. The proposed Category 5 listing for all 5 parameters appears to be the result of the inclusion of 2 "samples" collected in 1982. However, the data from EIM cannot be verified on King County's database. The sample numbers shown on EIM match King County sample numbers, however, organic parameters were not analyzed on these two samples. Recommend that these 5 listings remain Category 2, Rank 2 unless Ecology can provide verification that these data are legitimate. Also recommend that the sudden inclusion of 29-year-old data not be a basis for changing something to a Category 5.

Response: Ecology agrees with KC's comments. Ecology believes that TPPS3AB was excluded from the 2008 cycle due to age of data (1981-82). And, should have been excluded for the 2010 cycle. These listings will be returned to Category 2 Rank 2.

	<p>General Comments on Bacteria Listings</p> <p>General comment: As an example, bacteria listings are worded "In 2008, 1 out of 12 (8.3%) samples exceeded the % criterion (43 cfu/100ml)." Although a specific sample exceeded 43 cfu/100ml, if the overall percentage of samples did not exceed 10%, then the peak criterion was not exceeded. Suggest rewording to say "In 2008, 1 out of 12(8.3%) samples exceeded the 43 cfu/100ml threshold, but the peak criterion was met."</p> <p>Response: When you refer to "peak criterion," I assume you are referring to the "percent criterion". The percent criterion is defined as "Not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 42 colonies / 100mL." We are not going to make changes to the basis statement language for this assessment.</p> <p>General Comment: Several Category 3 listings with no bacteria exceedences of either criterion are based upon DOH data as they collect 6 samples/yr to classify shellfish beds per the NSSP guidelines. However section 8a of the listing policy states that "Fecal coliform samples will be assessed by Ecology staff in the manner described below unless the assessment is conducted by the state Department of Health (DOH) as part of its requirements under the National Shellfish Sanitation Program for approving shellfish beds." These Category 3 listings conflict with DOH's classification. An example is listing 60158.</p> <p>Response: The intention of the consideration of DOH advisories is to list waterbodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only six samples as Category 1. Although it may meet its use for shellfishing, other water contact activities need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than 10 samples. We are working on revisions to the Policy which will clarify this.</p>
<p>Cami A. Apfelbeck City of Bainbridge Island Commenter 2</p>	<p>Original comments</p> <p>Listing ID: 10254 (multiple comments) Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: EAGLE HARBOR</p> <p>Comment: WAC 173-201A-210.1.d.iii states that "samples should not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the water's edge." Listing 10256 for temperature in this same sampling location (EAG001) states "This listing was reviewed by Department of Ecology Coastal and Estuarine Assessment Unit staff [see Grantham memo 4/2005, attachment (d)], who concluded that these exceedances are a</p>

natural condition and there are insufficient human influences in this area to produce significant temperature increases. This listing is from a small and/or shallow enclosed or semi-enclosed waterbody which is subject to substantial increases in natural thermal warming." Further, according to the location reported and mapped in EIM, sample appears to be taken from shallow water (<0.5 m) and at the water's edge. Therefore, there should be no listing for dissolved oxygen for this sampling location.

Response: The reference cited in the comment applied to the temperature listing. Nutrients that affect the dissolved oxygen levels can be transported far afield.

Comment: Data used for listing basis is from User Study ID LTMWWY98 - Long Term Marine Water Monitoring from WY1998. These data do not meet the data credibility requirements for the following reasons: 1. The QA/QC level listed for this data in EIM is Level 1 - Data neither verified nor assessed for usability, 2. Data is older than 10 years old.

Response: The EIM QA level for the LTMWWY studies has been updated to 3 from 1990 onward, reflecting increased quality assurance efforts undertaken at that time. Older data that has not been superseded by new data may continue to be used.

Comment: Regarding Location ID [LTMW36] 1998 dissolved oxygen assessment: EIM data listed for LTMW36 (minimum measurements shown for each day) are 7.3, 7, 9.1, 11, 10, 11, 8.4, 9.1, and 6.3. WAC 173-201A-210(1)(d)(ii) states that concentrations are not to "fall below" the criteria..." It does NOT state that it has to "exceed" the criteria, in this case 7.0 mg/L. Therefore, there is only one excursion of the criteria for this waterbody.

Response: The commenter is correct in so far as the EIM data entry of "7.0" is considered to be recording a condition that meets the water quality criterion. The number of data points that represent values below the criterion of 7.0 is now two (one in 1997 and one in 1998) in total, therefore the listing should be in Category 2, according to the WQA policy. The listing has been changed to Category 2 for dissolved oxygen.

Comment: Basis citation references Newton et al. (1998) Dept. of Ecology Ambient Monitoring Station EAG001 (Eagle Harbor -Inner), stating that this data set shows 4 excursions beyond the criterion out of 11 samples collected between 1993 - 2000. How can this referenced data set report data for 1999 and 2000 when its publication date is 1998?

Response: Changes made to 326 listings to reflect the 2002 publication date, not a 1998 publication date.

Comment: Regarding Newton et al. (1998): If Ecology has data from 1993 to 2000, why is this data not entered into EIM? When we searched by the location name, EAG001, we only found the 1997 and 1998 data. Further, this citation does not give enough information for us to locate the referenced data. Without reviewing the Newton et al. data, we cannot comment on whether we agree with the statement "shows 4 excursions beyond the criterion out of 11 samples collected...". As a category 5 listing requires a minimum of 3 excursions and the 1997 and 1998 data only show 2 excursions, it is important to review the Newton et al. data.

Response: The data are available via Ecology's web page for Marine Monitoring.

Listing ID: 10256
Proposed Category: 2
Parameter: Temperature
Water Body: EAGLE HARBOR

Comment: Regarding Newton et al. (1998): If Ecology has data from 1993 to 2000, why is this data not entered into EIM? When we searched by the location name, EAG001, we only found the 1997 and 1998 data. Further, this citation does not give enough information for us to locate the referenced data. Without reviewing the Newton et al. data, we cannot comment on whether we agree with the statement "shows 4 excursions beyond the criterion out of 11 samples collected...". As a category 5 listing requires a minimum of 3 excursions and the 1997 and 1998 data only show 2 excursions, it is important to review the Newton et al. data.

Response: The requirement to load accessible data into EIM came with the 2008 Water Quality Assessment. Previous data were received in numerous formats including paper printouts, 5-1/4" floppy disks, 3-1/4 floppy disks, zip disks, and CDROMs. One of the main reasons for requiring EIM data submittal is to achieve a format that is capable of being publicly shared. A public request can be made for a copy of specific data used in a specific listing. Ecology maintains an FTP site for transmitting large files. By agency policy, files remain on the FTP site for a maximum of two weeks before they are automatically deleted. It is not financially feasible to convert all old documentation into numerous files for sake of availability. As mentioned above, the emphasis here is on old files. Since the 2008 Water Quality Assessment files used for the assessment are available for public review on the EIM web site. Ecology cannot be expected to provide all old data for review. We would like to eventually be able to house all recent numeric data for the assessment in EIM or compatible databases.

Listing ID: 38396
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: Have no access to data to review.

Response: The requirement to load assessable data into EIM came with the 2008 Water Quality Assessment. Previous data were received in numerous formats including paper printouts; 5-1/4" floppy disks; 3-1/4 floppy disks; zip disks; and CDROMs. One of the main reasons for requiring EIM data submittal is to achieve a format that is capable of being publicly shared. A public request can be made for a copy of specific data used in a specific listing. Ecology maintains an FTP site for transmitting large files. By agency policy, files remain on the FTP site for a maximum of two weeks before they are automatically deleted. It is not financially feasible to convert all old documentation into numerous files for sake of availability. As already mentioned, the emphasis here is on old files since the 2008 Water Quality Assessment files used for the assessment are available for public review on the EIM web site.

Listing ID: 38855

Proposed Category: 2
Parameter: Bacteria
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: The mapped location for KITSAPWQ location KCHD-PS22 appears to be inside the mixing zone for the Kitsap Sewer District 7 WWTP. Further, the area surrounding the mixing zone lies within the Bainbridge South Shellfish Growing Area. The 2010 DOH Annual Shellfish Growing Area assessment determined that this area is well within the classification standards. Therefore, this should be a Category 1 listing in keeping with WQP Policy 1-11.

Response: The proximity of ambient water to an allowed mixing zone does not exempt the water from listing in the assessment because other pollution sources may exist. The intention of the consideration of DOH advisories is to list waterbodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only 6 samples as Category 1. Although it may meet its use for shellfishing, other water contact activities (e.g. swimming) need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than ten samples. We are working on revisions to the Policy which will clarify this.

Listing ID: 38856
Proposed Category: 2
Parameter: pH
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: WQP Policy 1-11 states that Ecology will review the last five years in which pH data exist for the waterbody segment. The data referenced in this listing are from 1996-2001. However, we do not have access to the data to verify that the excursion was in the last five years of the data.

Response: The policy is not categorically excluding data that is older than five years from use in the assessment. WQA listings may not be removed from the assessment or change category due to the age of data. Only newer data that meets the requirements for listing in another category can result in a change of previous assessments. The last five years of data referenced in the policy refers to the latest five years that Ecology has available that meets our credible data requirements policy. There may be other data, but Ecology is not aware of any additional data for that location.

Listing ID: 40106, 40107, 40109, 40131, 40135
Proposed Category: 2
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: Various WA DOH marine stations referenced in this listing basis lie within a portion of the Port Blakely Shellfish Growing Area that is currently approved for shellfish harvest. The 2010 DOH Shellfish Growing Area assessment determined this area is well within the classification standards. Therefore, this should be a Category 1 listing in keeping with WQP Policy 1-11.

Response: The intention of the consideration of DOH advisories is to list waterbodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only 6 samples as Category 1. Although it may meet its use for shellfishing, other water contact activities (e.g. swimming) need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than 10 samples. We are working on revisions to the Policy which will clarify this. Additionally, some of these listings are not based solely on DOH Shellfish data.

Listing ID: 40141, 40143, 40144, 40152, 40153
Proposed Category: 2
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: Various WA DOH marine stations referenced in this listing basis lie within a portion of the Port Orchard Passage Shellfish Growing Area that is currently approved for shellfish harvest. The 2010 DOH Shellfish Growing Area assessment determined this whole area is well within the classification standards. Therefore, this should be a Category 1 listing in keeping with WQP Policy 1-11.

Response: The intention of the consideration of DOH advisories is to list waterbodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only 6 samples as Category 1. Although it may meet its use for shellfishing, other water contact activities (e.g. swimming) need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than 10 samples. We are working on revisions to the Policy which will clarify this.

Listing ID: 45271
Proposed Category: 5
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: KIT031A, KIT031B, AND KIT031C are multiple samples taken within the same area (BEACH ID: WA381199) in agreement with WAC 173-201A-210.3.b.ii when assessing sensitive areas such as swimming beaches. Therefore, in accordance with WAC 173-201A-210.3.b.ii, the 2006 fecal coliform data for these three locations should be arithmetically averaged together as was done with the enterococcus data.

Response: This data was reassessed and stations KIT031A, KIT031B, and KIT031C were averaged. This listing remains a Category 5.

Comment: Regarding Location IDs [BI-NS6],[BI-NS1] 2008 fecal coliform assessment: Through reviewing lab reports for the Bainbridge Island Water Quality and Flow Monitoring Program (User Study ID G0500151), it was discovered that the 4/7/08 sample for BI-NS1 exceeded the holding time. Please remove this sample from your assessment and from

EIM. Lab report and COC is provided.

Response: Fecal coliform data that exceed holding times are routinely use for analysis. These values are considered valid for use in the assessment. Data which are not reflective of a positive detection of the pollutant or is otherwise not valid for use in an analysis is noted by other qualifiers (e.g. K, REJ, L) and are removed from the assessment.

Comment: Regarding BEACH ID [WA381199] 2006 enterococcus assessment: geometric mean is 43.1, not 42.1.



Post Comment Kitsap
Data.xlsx

Response: This data was recalculated and 42.1 value was confirmed. See attached spreadsheet:

Listing ID: various
Proposed Category: 5
Parameter: Bacteria
Water Body: various

Comment: Please note that all fecal coliform samples collected on 4/7/08 as part of User Study ID: G0500151 exceeded the holding time. Please remove these data from EIM. Documentation attached.

Upon reviewing the lab reports, COC's and bench sheets for the Project ENVVEST data, we believe that some of the samples exceeded the holding times. Specifically, we are concerned about the following: ENV-BI-FWNS (11/7/02); ENV-BI-FWSW (11/7/02 & 12/16/02); and ENV-BI-LCSW (11/7/02). Please review the attached documentation. On the EPA benchsheet, or Laboratory Data Record, the analyst annotated a "J" next to the count in the final column. This is particularly important, since the ENV-BI-FWNS data resulted in a 303(d) listing for that location (Listing 45321-see our comments below). Upon removal of that data value, the rest of the data meet the criteria and do not result in either category 2 or 5 listing. PLEASE NOTE: City of Bainbridge Island staff wrote the "J"s on the COC's for reference only.

Response: Fecal coliform data that exceed holding times are routinely use for analysis. These values are considered valid for use in the assessment. Data which is not reflective of a positive detection of the pollutant or is otherwise not valid for use in an analysis is noted by other qualifiers (e.g. K, REJ, L) and are removed from the assessment.

Listing ID: 45321
Proposed Category: 5
Parameter: Bacteria
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: ENV-BI-CSNS is mapped in the wrong location. CSNS = Crystal Springs Nearshore is located along the southwestern shoreline of Bainbridge Island adjacent to Port Orchard Passage, a completely different waterbody. The

correct location, as reported by Melva Hill, Water Resources Engineer for City of Bainbridge Island and the person who actually collected the samples, is Lat: 47.59844349 and Long: 122.5756721. Map showing correct location is provided.

ENV-BI-FWNS is mapped in the wrong location. FWNS = Fort Ward Nearshore which is located at the southernmost tip of Bainbridge Island adjacent to Rich Passage. The correct location, as reported by Melva Hill, Water Resources Engineer for City of Bainbridge Island and the person who actually collected the samples, is Lat: 47.57622749 and Long: 122.5237422. Map showing correct location is provided.

Response: The coordinates provided in the EIM data submittal do not match the coordinates provided in the review comment. The results for bacteria should be compared to Listing ID 40151 (Category 1 for bacteria), which is in the grid cell identified by the commenter as correct. Listing 45321 inactivated after being split to two separate existing listings. Data from station CSNS went to Listing ID 40151. Data from station FWNS went to Listing ID 38855. Listing 40151 was placed in Category 5. Listing 38855 remains in Category 5.

Listing ID: 45857

Proposed Category: 5

Parameter: Bacteria

Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: The data for BI-NS5 are only targeted storm event data as reported by Cami Apfelbeck, Water Resources Specialist and manager for study G0500151 with City of Bainbridge Island. It is our understanding that the assessment policy stipulates that storm event data can only be used IF part of a larger, ambient data set for that location.

Response: Although it is preferable to use data that are collected randomly, targeted datasets are used to determine compliance with the standards. Language in the Surface Water Quality Standards and in the Water Quality Assessment policy only prohibit targeted data collection that would act to mask periods of noncompliance.

Listing ID: 45704

Proposed Category: 5 (multiple comments on this freshwater listing)

Parameter: Bacteria

Water Body: SPRINGBROOK CREEK

Comment: Regarding Location ID [ENV-BI-SBC] 2004 fecal coliform assessment: It appears that your geomean and percent calculations used the highest result for each sampling event. According to WAC173-201A-200(2)(b)(ii) and DOE's WQP Policy 1-11 results for duplicates for a given sampling event should be arithmetically averaged for one result value. Using averages, the results for BI-SBC should be 4/19/04 (83.5 CFU), 5/25/04 (250 CFU), 5/26/04 (1057.5 CFU), 10/18/04 (225 CFU), and 10/19/04 (422.5 CFU). Therefore, the citation should read, "Location ID [ENV-BI-SBC] -- 4 of 5 (80.0%) of samples collected in 2004 exceed the percent criterion (100 col/100 mL). The geometric mean of 291.3 col/100 mL exceeds the geometric mean criterion (50 col/100 mL)."

Response: Policy 1-11, Section 6- Par.4 states, "Only one parameter value per day per segment will be used in the assessment. Replicate samples taken at the same time and location will be averaged. Otherwise, the highest measurement per day will be used, except for dissolved oxygen for which the lowest measurement will be used, and except for pH for which the highest or lowest measurement will be used as applicable." In most cases these data of the same date were collected at different times. Data collected at the same time (QC samples) were averaged and the overall highest sample value per day (5 event/days) was used for the assessment calculation.

Comment: Why does this listing not include 2008 data reported for this location by the Bainbridge Island Water Quality and Flow Monitoring Program (Location ID: BI-SW3; Study ID: G0500151)? Those data are 10/13/08 (13 MPN), 11/10/08 (13 MPN), 11/12/08 (300 MPN), and 12/2/08 (30 MPN). These data are currently in EIM.

Response: This data was probably not included because this is freshwater data and we only assessed marine water. These data have been pulled from EIM for the next assessment cycle for 2012. This was already listed as a Category 5 in the 2008 assessment, so the category would not change.

Listing ID: 40132
Proposed Category: 2
Parameter: Bacteria
Water Body: PORT MADISON

Comment: According to WQP Policy 1-11, waterbody segments that are well within the classification standards for bacteria as described in the DOH Annual Shellfish Growing Area Review will be placed in Category 1. The listing references one exceedance in 2007 as the basis for listing. However, the 2008, 2009, and 2010 DOH Annual Shellfish Growing Areas assessments determined that this area is well within the classification standards. Therefore, this should be a Category 1 listing.

Response: The intention of the consideration of DOH advisories is to list water bodies closed for shellfishing because they are not meeting their designated use for shellfishing. However, we do not categorize approved shellfish beds as Category 1 or categorize segments with only 6 samples as Category 1. Although it may meet its use for shellfishing, other water contact activities (e.g. swimming) need to be considered. We do not automatically list segments as Category 1 based on a DOH classification or sample collection of less than 10 samples. We are working on revisions to the Policy which will clarify this.

Listing ID: 48990
Proposed Category: 2
Parameter: Dissolved Oxygen
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: Values reported for the study referenced in this listing are given in mL/L. The WAC173-201A criteria is set in mg/L. Please review this assessment.

Response: Measurement result is 4.716 ml/L. This is converted to mg/L by multiplying by 1.42903. Result is 6.739 mg/L which still is an excursion from the criterion of 7 mg/L.

Listing ID: 60190
Proposed Category :5
Parameter: Bacteria
Water Body: PUGET SOUND (CENTRAL)

Comment: Regarding Location ID [BI-NS2] 2008 fecal coliform assessment: Through reviewing lab reports for the Bainbridge Island Water Quality and Flow Monitoring Program (User Study ID G0500151), it was discovered that the 4/7/08 sample for BI-NS2 exceeded the holding time. Please remove this sample from your assessment and from EIM. Lab report and COC is provided.

Response: Ecology has reassessed this data. Removal of the data from EIM should be requested through the Ecology regional grant coordinator responsible for Grant #0500151. Proper use of data qualifiers should be used in the future when submitting data to EIM. We reassessed and made the numeric change to basis statement. However, no changes are needed to the Category or remarks.

Listing ID: 64700
Proposed Category: 2
Parameter: Copper
Water Body: EAGLE HARBOR

Comment: Recommend clarifying if the value exceeded the acute or chronic toxicity criteria.

Response: The acute and chronic criteria were exceeded in the sample.

Listing ID: 65355
Proposed Category: 2
Parameter: Temperature
Water Body: PORT MADISON

Comment: Listing states that 2 out of 10 samples for 2008 exceeded 13 degrees C. We could only find 8 values listed for 2008 of which, none exceeded 13 degrees C.

Response: For 2008, 8 out of 10 samples in grid cell 47122H5C4 were collected by Kitsap County Health District and showed no excursions. Two out of 10 samples were collected via the Tribal Journey, on 2 consecutive days, and showed temperatures above 13deg C.

Listing ID: general
Proposed Category: all

	<p>Parameter: all Water Body:</p> <p>Comment: Place all data used for assessments that are not uploaded to EIM in an FTP site or give complete references in order to allow reviewers ready access to all assessment data. It is difficult to give comments on data to which we have little to no access.</p> <p>Response: The requirement to load accessible data into EIM came with the 2008 Water Quality Assessment. Previous data were received in numerous formats including paper printouts, 5-1/4" floppy disks, 3-1/2" floppy disks, zip disks, and CDROMs. One of the main reasons for requiring EIM data submittal is to achieve a format that is capable of being publicly shared. A public request can be made for a copy of specific data used in a specific listing. Ecology maintains an FTP site for transmitting large files. By agency policy, files remain on the FTP site for a maximum of two weeks before they are automatically deleted. It is not financially feasible to convert all old documentation into numerous files for sake of availability. As mentioned previously, the emphasis here is on old files. Since the 2008 Water Quality Assessment files used for the assessment are available for public review on the EIM web site.</p>
<p>Allison Geiselbrecht Floyd Snider Environmental Consultants Commenter 3</p>	<p>Listing ID: 64216 Proposed Category: 5 Parameter: Benzo[a]pyrene Water Body: DUWAMISH RIVER</p> <p>Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon(from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.</p> <p>Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: http://www.ecy.wa.gov/programs/wq/swqs/toxics.html.</p> <p>Listing ID: 64217 Proposed Category: 5 Parameter: Benzo[b]fluoranthene Water Body: DUWAMISH RIVER</p> <p>Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod</p>

data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.

Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [64218](#)
Proposed Category: 5
Parameter: Benzo[k]fluoranthene
Water Body: DUWAMISH RIVER

Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.

Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [64222](#)
Proposed Category: 5
Parameter: Chrysene
Water Body: DUWAMISH RIVER

Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that

methodology and parameters could be verified.

Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [64225](#)
Proposed Category: 5
Parameter: Dieldrin
Water Body: DUWAMISH RIVER

Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.

Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [64233](#)
Proposed Category: 5
Parameter: Heptachlor Epoxide
Water Body: DUWAMISH RIVER

Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.

Response: The listing has been inactivated due to data quality problems. The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [64238](#)
Proposed Category: 5
Parameter: Indeno(1,2,3-cd)pyrene
Water Body: DUWAMISH RIVER

Comment: Clam tissue data was not collected from within this polygon. The only data available within the polygon is a benthic invertebrate (amphipod) tissue sample originally collected by LDW to assist in food web modeling. Amphipod data is not appropriate to use. However, clam tissue data is available upriver and downriver of this polygon (from LDW sample numbers C99410 and C61006). These two data points are derived from composite clam tissue. Tissue concentrations from both of these data points appear to result in a back-calculated surface water concentration greater than the NTR human health criteria. However, these clam tissues were collected from upstream and downstream, not from within the polygon. Furthermore, for transparency, Ecology should provide the back-calculated values as a spreadsheet so that methodology and parameters could be verified.

Response: The location is correct per EIM. Data is from clam tissue, not amphipod. NTR human health criteria for water and equivalent fish tissue concentrations used to assess tissue data can be found at Ecology's website at: <http://www.ecy.wa.gov/programs/wq/swqs/toxics.html>.

Listing ID: [605677](#)
Proposed Category: 5
Parameter: SEDIMENT BIOASSAY
Water Body: DUWAMISH RIVER

Comment: The chemical criterion for a Category 5 listing requires that the mean concentration of each SMS chemical measured at three spatially distinct and chemically similar stations must exceed the CSL within a given grid and meet the assessment criteria in WAC 173-204-510 through 520. If this criteria is not met, then the assessment defaults to biological data if available. This criteria is not met based on the information posted for the listing ID 605677. Within the polygon 605677, the mapping tool indicates that there are three samples (originally collected by the Lower Duwamish Waterway Group) associated with this polygon: LDW-SS88, LDW-SS89, and LDW-SS92. However, a review of LDW sediment data indicates that, while one chemical (Total PCBs) exceeded SMS SQS in all three samples, only one of those samples (LDW-SS89) had Total PCB results exceeding CSL. Therefore, as stated above, the assessment should default to biological data. Only one of the three bioassay sample locations (LDW-SS88, LDW-SS89, and LDW-SS92) cited in the mapping feature had exceedances of bioassay criteria. For sample LDW-SS88, two of the three bioassays (amphipod and bivalve larvae) conducted indicated CSL bioassay criteria exceedances. The remaining samples did not have any SQS or CSL exceedances for any of the three bioassays conducted (amphipod, polychaete, bivalve larvae). According to Ecology's Water Quality Program Policy document, the station with exceedances would therefore be designated 2 points, while the other stations have 0 points. Based on their biological flowchart in the Water Quality Program Policy document, this would result in a sediment classification of Category 2.

Response: The referenced data was submitted to Ecology's EIM database months to years after the official Call for Data

	<p>which concluded October 31, 2009. If sediment data was not provided as an EIM data submittal or in the EIM database by October 31, 2009, it was not evaluated for the draft 2010 303(d) list.</p> <p>In order to reevaluate the draft 2010 listings, TCP found the referenced EIM studies, analyzed the data using MyEIM Chemistry and Bioassay Analytical Tools, created GIS plots of the chemistry and bioassay results, and manually evaluated each grid. All basis statements were revised due to new data except for Listing ID 619429.</p> <p>Because all grids are in areas being investigated for sediment contamination, they are assessed as Category 5. A grid will be moved to Category 4B once a Cleanup Action Plan has been signed.</p> <p>Using EIM and MyEIM, Ecology analyzed chemical and bioassay data within the grid. The sediment listing policy was followed (Listing 605677). Bioassay results override chemistry results. In addition, the grid is within the Lower Duwamish Waterway Superfund area so it is placed in Category 5 until a record of decision is in place for any cleanup.</p>
<p>Curtis DeGasperi self Commenter 4</p>	<p>Listing ID: 10178 Proposed Category: 5 Parameter: dissolved oxygen Water Body: QUARTERMASTER HARBOR</p> <p>Comment: The WRIA is incorrect for this record. Should be WRIA 15.</p> <p>Response: Corrected WRIA indicator to WRIA 15</p>
<p>DeWitt Jensen Spencer's Landing Marina (Lopez Island) and Jensen Motorboat Company Commenter 5</p>	<p>Listing ID: 52843 Proposed Category: 1 Parameter: Total Phosphorus Water Body: UNION LAKE / LAKE WASHINGTON SHIP CANAL</p> <p>Comment: From the Locks to the Fremont Bridge the Lake Washington Ship Canal is shown as a Category 1 (green) whereas Lake Union and portage Bay are shown as Category 5 (red). This does not make sense from a rational point of view as the portion shown in green is in a more industrialized traditionally more polluted area as opposed to Portage Bay through the Montlake cut.</p> <p>Response: Freshwater Lake Union is Category 5 only for the parameter in that listing, total phosphorous. Previously, there had been four listings for total phosphorus. These were consolidated as a single Category 5 listing. It is true that from the locks to the Fremont Bridge have no Category 5 listings at this time, perhaps due in part to the lack of readily available and appropriate data for all parameters. There are data from Salmon Bay to satisfy a Category 1 listing for phosphorus.</p> <p>Listing ID: 39721 Proposed Category: 2</p>

Parameter: Bacteria
Water Body: West Sound, Harney Channel, and Lopez Sound

Comment: Why is the majority of Shoal Bay on the north end of Lopez Island shown as a Category 2 with the western shoreline shown as a Category 1 on your mapping? In the SE corner of the bay is Spencer's Landing Marina which has the best water quality in the entire bay according to WADOH quarterly testing. We are a Leadership Clean Marina Award winner and have letters from Mak Kaufman (DOE marina, etc. specialist) and Brian Rader (SJC pollution specialist) thanking us for operating Spencer's Landing Marina in an environmentally responsible way. Mak Kaufman has said that he would use our marina as a statewide example of how to do things right from an environmental standpoint.

Response: Thank you for operating in an environmentally responsible way. Listings are determined one parameter at a time, so exceedance of one parameter may cause a listing. An environmental parameter that is not affected by a particular operation would not correlate directly with the outcome of that operation.

One of the sets of sampling data was completed by an event called the Tribal Journeys. Data was collected during these canoe trips and recorded. Due to the nature of the data (being a reflection primarily of the surface condition and not the entire water column) they were of limited value. However, the data did present enough information to make a Category 2 determination. If you zoom out to a greater area on the Assessment map, you can pretty much see the trail taken on that leg of the tribal journeys. These Category 2 listings comprise the bulk of what you are observing. It is not a reflection on conditions of the waters inside Shoal Bay as the Tribal Journey did not pull into port at Shoal Bay.

There are two listings within Shoal Bay. Both are for bacteria. One is Category 1. Category 1 is for those waters that meet the tested standard. In this case, the standard was for bacteria and results were good. A second listing, also for bacteria, exists and it is rated as Category 2 (Waters of Concern). Although recent sampling has shown no exceedances, there have not been the required number of samples (10 as opposed to 6) to move this listing from Category 2 to Category 1. The Category 2 listing resulted from a single exceedance in 2001.

There are no clean-up requirements that come from Category 2 or for Category 1. Clean up requirements are mandated when a water receives a Category 5 determination. The waters in Shoal Bay are in pretty good condition. Hopefully, a full-season sampling regime will be undertaken and the results will allow us to move from Category 2 to Category 1.

Here is a quote from the Listing Policy regarding the classification of bacteria listings.

“Category 1 Determination

A waterbody segment is placed in Category 1 when (1) at least ten samples meeting the criteria are available from a critical period or other reporting period as defined above, and (2) the waterbody segment is not otherwise included in an impaired category. A waterbody segment will be placed in Category 1 when these data show no exceedances beyond the criteria. Data collection and reporting must meet the specific data requirements described above.

Waterbody segments that are well within the classification standards as described in the DOH Annual Shellfish Growing Area Review will be placed in Category 1.”

<p>Ed Chadd Streamkeepers of Clallam County Commenter 6</p>	<p>Listing ID: 45701 Proposed Category: 5 Parameter: Bacteria Water Body: PORT ANGELES HARBOR</p> <p>Comment: Note the misspelling of Elwha in your database: "WRIA: 18 - Elwah-Dungeness"</p> <p>Response: Corrected the spelling in WATS.</p>
<p>Heather Kibbey Everett Public Works Commenter 7</p>	<p>Original comment</p> <p>Listing ID: 10123, 66370 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: Port Susan</p> <p>Listing ID: 10135, 66537, 66701 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: Saratoga Passage</p> <p>Listing ID: 10139 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: Skagit Bay and Similk Bay</p> <p>Listing ID: 10155, 66373 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: Possession Sound North</p> <p>Listing ID: 49025, 49027, 49028 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body: Puget Sound (North-Central)</p> <p>Comment: The City does not believe that the waters of the Whidbey Basin, including Possession Sound and Saratoga Passage should be listed as impaired (Category 5) for dissolved oxygen (DO)... The City asserts that it is premature to assign a Category 5 to these waters and that a Category 2 is appropriate while such studies and modeling is underway.</p>

In 2008, Ecology listed station PSS019 (listing ID 10155) as category 5 (impaired) for dissolved oxygen. The original basis provided for category 5, which is still shown on Ecology's 2008 list, was a Grantham 2005 memo which in fact said it should be category 2 and was in fact used on the 2004 list as the basis for category 2. (see 2008 and 2004 listing information for station 10155) The City notes that for listing ID 10155, Ecology has changed the history of past listings and shows that it was listed as Category 5, not 2 in 2004. That needs to be corrected.

Response: This response addresses the comment as it relates to the 2010 draft assessment. The 2004 flag indicator was incorrect in the public notice draft. This flag and others from the 2004 listing cycle have been restored to the correct category indicator.

Comment: Following the presentation of the proposed 2008 list, the City commented on the incorrectness of using the Grantham 2005 memo as supporting a Category 5. In subsequent discussions with Ecology prior to finalizing the 2008 list, other reasons were offered by Ecology for a Category 5, all of which "demonstrated" that there was a trend of decreasing dissolved oxygen. One was an Albertson 2007 memo looking at the last 20 or so years of data. Lincoln Loehr identified that the Albertson 2007 analysis was affected by the different depth ranges sampled over that time (initially only sampled shallow, in later years sampled whole water column, and in the in between time, sampled to various depths). The "demonstrated trend" was an artifact of the data set. Ecology agreed.

As discussions continued regarding the 2008 listing for PSS019, other analyses were presented by Ecology that homed in on 2003 to 2007 and purported to identify worsening trends for dissolved oxygen. Those analyses were based on combining all the data for each year. The mix of months that were sampled in the different years affected the analyses. Dissolved oxygen varies seasonally. A year that sampled all the months when high dissolved oxygen occurs, and rarely sampled the months with low dissolved oxygen will of course look better than a year that sampled all the months when low DO occurs and rarely sampled the months with high DO. That is what happened in the 2003-2007 data set. The identified trends were artifacts of the data set. Indeed, had there been a different mix of months sampled for the different years, it could have shown a trend of increasing DO and would have also just been an artifact of the data set.

The current draft 303(d) list is listing PSS019 and other stations in the Whidbey Basin as Category 5 for DO, and offers no analysis supporting the listing other than a staff decision that the levels observed are unlikely to be entirely natural. The exact wording from the listing follows:

"This listing was reviewed by Department of Ecology Environmental Assessment Program staff, who concluded that these excursions cannot be attributed solely to natural conditions. Further study and model evaluation will resolve the relative influence of human activity."

No other analysis is offered. It is a judgment call, and a judgment call of Category 2 could also be supported since it acknowledges that further study is needed to resolve the relative influence of human activity (and the water quality criteria for dissolved oxygen allow for some influence of human activity). While it may seem reasonable to allow for Ecology to make a judgment call here, the City has some concern with factors that may have influenced that judgment. Ecology, from the prior 2008 listing decision, has exhibited a belief (influenced by how they evaluated historic data) that the dissolved oxygen concentrations are trending downward, even though the actual basis given for the prior listing did not say that.

The attached spreadsheet is provided to show that there is no indication of a worsening trend in dissolved oxygen at PSS019. The spreadsheet uses Ecology's raw data (uncorrected) for 2003 through 2009, and presents dissolved oxygen profiles by month, for whatever years happened to sample during that month. The raw data are used instead of the corrected data, as that is what Ecology did in the earlier analyses. (Note that Ecology's corrected dissolved oxygen data for this station invariably show higher dissolved oxygen concentrations.) The raw data show some times when the probe obviously malfunctioned (such as July 2005 and October 2008). By presenting the data as monthly dissolved oxygen profiles it becomes apparent when some months were missed in some, or even many years. The 2003 to 2007 raw data set is the data set used by Ecology in their evaluation of the 2008 list that was discussed with Lincoln Loehr and was used to show a decreasing trend in dissolved oxygen over those five years based on lumping all the data points for an entire year and looking at the distribution. That analysis did appear to show a decreasing trend, but significantly, the earlier year(s) sampled more of the months that have high dissolved oxygen and fewer of the months that have low dissolved oxygen, and the later years did the opposite. A visual inspection of the monthly dissolved oxygen plots shows that there is no trend of decreasing dissolved oxygen over the years. In these plots we have added in data for 2008 and 2009 from Ecology's web site. (Data for 2010 are not yet posted on the web site).

The City believes that there is no evidence of a worsening dissolved oxygen condition in Possession Sound or other marine waters of Snohomish County. The City believes there is no basis for listing PSS019 as Category 5 and that Ecology's concerns warrant a Category 2. Ecology's ongoing dissolved oxygen modeling effort may help to answer questions and support a Category 1, 2 or 5. When that information is available it can inform the next list. The justification used by Ecology for Category 2 for other dissolved oxygen stations, such as in the Strait of Juan de Fuca can be used, and actually is very similar to the justification statement used for Category 5 in that both statements rely on further study and model evaluation to resolve the concerns. The statement follows:

"This listing was reviewed by Department of Ecology Environmental Assessment Program staff, who concluded that these excursions could be attributed to natural conditions (i.e., this location is subject to intrusions of upwelled, low DO water) but may also be exacerbated by human activity. Further study

and model evaluation currently in progress will resolve relative contributing factors to the excursions."

Although we have not gone to the effort to construct and review dissolved oxygen profiles for other stations near PSS019, the City believes that the following stations should also be Category 2 and that changes in the listing in the future may also be supported when the results of Ecology's DO modeling is complete.

10123 – Port Susan
66370- Port Susan
10135- Saratoga Passage
66537- Saratoga Passage
66701- Saratoga Passage
10139 – Skagit Bay & Similk Bay
10155- Possession Sound North (this is the PSS019 station)
66373 – Possession Sound North (this is adjacent to the PSS019 station)
49025 – Puget Sound (North-Central)
49027 – Puget Sound (North-Central)
49028 – Puget Sound (North Central)

The City notes that the last three stations are actually by Admiralty Inlet and a nearby station is Category 2 for DO (listing ID 66421).

Response: Ecology bases the Category 5 calls on the location of the sampling stations within the restricted Whidbey Basin.

Ecology bases the decision to place the Whidbey basin locations that exhibit dissolved oxygen values below the criterion on the amount of deep ocean water influence relative to the human-caused influences in the basin. Dissolved oxygen concentrations in Whidbey /Possession Sound are lower than can be accounted for due to low dissolved oxygen being advected from the main Central Puget Sound basin. In the judgment of technical staff assigned to determine the category placement of the locations monitored for DO, the Whidbey Basin locations are likely to be found, through future modeling efforts, to be strongly influenced by human-caused activities that deplete DO. Other low DO locations in Puget Sound that are deemed to be in Category 2 for now share the uncertainty of the influence of naturally occurring low DO from deep ocean water.

Ecology assesses each listing anew when new data are available for a listing. This is why some listings may change listing categories between listing cycles. The likelihood of natural background creating the excursion from the numeric criterion is examined, where appropriate, at the time of listing or deferred to a later action, depending on the information available at the time.
Many comments from the 2008 cycle requested that we edit old basis and remarks statements. So we did edit many old

	<p>statements to reduce confusion.</p>
<p>Ingrid Wertz Seattle Public Utilities Commenter 8</p>	<p>Listing ID: 48943 Proposed Category: (missing from the list) Parameter: Dissolved Oxygen Water Body: Puget Sound (North-Central)</p> <p>Comment: Should the public review tool show all category 5 listings for a waterbody (even if it's listed from a previous cycle?). I ask as listing #48943 & 48945 for DO for Duwamish Waterway are Cat 5 based on 2008 interactive tool. However, these listings don't show up in the public review tool.</p> <p>Response: The previous listing 48943 was incorporated into another listing when the location of sampling was determined to be within the same grid. Listing ID 48943 was inactivated 1/14/10 and rolled into Listing ID 12703 which remained a Category 5.</p>
<p>Jeff Stern King County Commenter 9</p>	<p>Listing ID: several Proposed Category: 5 Parameter: Various Organics Water Body: Puget Sound (North-Central)</p> <p>Comment: LWDRTHIC and Fishion studies: some of the organochlorine pesticide data has data quality issues of high bias. This effects 75 new category listings, 11 of which are Cat 5 and the rest are Cat 1. The Cat 5 listings are therefore inappropriate and should be inactivated. I will have to dig some more to see where the best write-up is but the issue can be seen in section 4.3.4.6 in the 2005 tissue data report at http://www.ldwg.org/assets/fish_crab_tissue/final_fish%2bcrab_tissue_dr.pdf. It is also mentioned in the RI section 4.2.10.3. at http://www.ldwg.org/assets/phase2_ri/final%20ri/Final_LDW_RI.pdf. For this reason there were no RBTCs set for pesticides in the Ri or PRGs set in the FS as there was not enough information present to be convinced that the tissue levels certain enough to take any action.</p> <p>Response: Ecology concurs with this observation and all listings based solely on the records from these studies that documented analytical interference resulting in biased values have been deactivated. The accuracy of this data is highly uncertain and likely biased high due to analytical interferences with PCB congeners. The data should therefore not be used for the water quality assessment.</p>
<p>David Croxton Environmental Protection Agency Commenter 10</p>	<p>Comment: The EPA has concerns that a significant amount of time has passed between Ecology's call for data that ended on October 15, 2009 and the publishing of a draft 2010 Integrated Report. The EPA encourages Ecology to review any new data and information, including biological, received pertaining to the marine assessment. The EPA feels this is especially important given that Ecology is now doing a rotating Integrated Report and will not be reviewing new marine data until the 2014 cycle.</p> <p>Response: In order to create a fair and equitable public process, and to provide Ecology with a formal timeframe by</p>

	<p>which to assess data, it was necessary to set an end date for accepting data. For the 2008 Assessment, the deadline was set at October 2009. Data submitted after this date has been set aside to be reviewed for the next Assessment.</p> <p>New information on water quality is being generated continuously in the state of Washington. As pertinent, significant, peer-reviewed or otherwise qualified data is generated and made available, Ecology staff review and incorporate the information as needed. Data that is gathered in EIM and analyses that are underway are not routinely incorporated into the assessment once the call for data is concluded and data are organized for analyses by location and parameter. Each assessment is based on the body of information available as the analysis of data begins. Exceptions can be made when significant findings emerge. Nothing significant has emerged, since the conclusion of the call for data, that would warrant reopening the assessment cycle.</p> <p>Assessments would have a difficult time being completed and then approved by EPA if every new piece of information restarted the assessment process. Since the purpose of the 303(d) list is to generate a list of waters needing TMDLs, a completed list that includes many waters needing TMDLs serves the purpose. New lists are generated periodically in the assessment cycle, and delaying approval because of emerging information would be counterproductive to the TMDL cycle of restoring water quality.</p> <p>Ecology has in the past, and will continue in the future, to set a formal deadline for new data to be submitted for the current listing cycle. Ecology made a few minor exceptions to this rule in circumstances where waterbody improvements were made that led to data trends clearly showing that cleaner water was being achieved. If additional data from monitoring after the deadline allowed enough data points to be included in a previous listing, and that additional data allowed the segment to become a Category 1, Ecology accepted that data and allow them to be used.</p> <p>Ecology will also consider information that demonstrates a local loss of beneficial uses. Ecology has considered the information and studies submitted by the Center for Biological Diversity (CBD), as well as more recent studies relevant to Washington, to determine if it is appropriate to list some or all of its marine waters as impaired for shellfish rearing.</p> <p>Comment: The EPA would like to clarify our position on listing waters for declining pH. As outlined in the EPA's November 15, 2010 memorandum, States should list waters not meeting water quality standards and should also solicit existing and readily available information on ocean acidification. The November 15, 2010 memorandum does not elevate in priority the assessment and listing of waters for ocean acidification, but simply recognizes that waters should be listed when data are available. The EPA also recognizes that in many cases information is absent or limited for ocean acidification parameters and impacts, therefore listing for ocean acidification may be absent or limited at this time.</p> <p>Response: Ecology is aware of EPA's memorandum on ocean acidification, and has considered the principles stated in the memorandum as the water quality assessment was developed.</p>
<p>John Johnson Pierce County Public Works and Utilities Commenter 11</p>	<p>Listing ID: several Proposed Category: 4A Parameter: 4,4'-DDE Water Body: Puget Sound (North-Central)</p>

	<p>Comment: How is listing 8806 a 4A in 2004 when the TMDL wasn't approved until 2006?</p> <p>Response: The 2004 flag indicator was incorrect in the public notice draft. This flag and others from the 2004 listing cycle have been restored to the correct category indicator.</p>
<p>Lincoln Loehr Commenter 12</p>	<p>Listing ID: 9839 Proposed Category: 5 Parameter: Bacteria Water Body: Puget Sound (North-Central)</p> <p>Comment: This listing is based on data from 18 years ago. The data are old, and no effort was made to see if birds might be accounting for some of this. When did the Tulalip landfill get covered? That would have also attracted lots of seagulls which are bacterial sources. The data from 18 years ago are not representative for today. Wildlife could still be a source, but we simply don't know. When listings are based on old data, more than 15 years old as in this case, I think the listing should be moved to category 2.</p> <p>Response: Source identification is the task of a TMDL study, not the WQA. And it wouldn't be appropriate to make a natural condition call for fecal coliform, especially if we are just guessing. This is an old listing that at the time of listing, met the policy for listing on the 303d list. Old listings are changed based on new data only, not just because the latest information is over fifteen years old.</p> <p>Listing ID: 10155 Proposed Category: 5 Parameter: Dissolved Oxygen Water Body:</p> <p>Comment: In 2004 this station was not listed as category 5. It was category 2. Now the 2010 proposed listing says it was category 5 in 2004. Why change its history? Who changed its history? See http://apps.ecy.wa.gov/wats08/ViewListing.aspx?LISTING_ID=10155 Also note that the 2008 category 5 listing cites to a Grantham (2005) memo as the basis for category 5, but the Grantham memo actually was the basis for category 2 in 2004, and in 2008 ecology just conveniently sliced off the last sentence of the Grantham memo's reason for category 2 presented in the 2004 list so as to sound like it supported a category 5. There were subsequent efforts in the 2008 listing by Ecology to assert a trend of worsening dissolved oxygen, none of which were valid and which did not get reflected in the 2008 basis, so the only stated 2008 basis for 5 is a falsification of the basis used for 2 in 2004. Interesting history. The new listing basis is at least cleaner, in that it is just a judgment call by EAP, which they can make, but which also does not provide anything that a reviewer can examine. The history of the past justifications concerns me.</p> <p>Response: This response addresses the comment as it relates to the 2010 draft assessment. The 2004 flag indicator was incorrect in the 2010 public notice draft. This flag and others from the 2004 listing cycle have been restored to the correct category indicator. See also response to Commenter 7 for this listing.</p>

Listing ID: [48964](#)
Proposed Category: 5
Parameter: Dissolved Oxygen
Water Body: POSSESSION SOUND (NORTH)

Comment: I think I looked into this one after the last list was developed and it looked like the data did not meet the QA/QC requirements to be used. Please check on that and maybe delete the entry if I am right.

Response: You are right that the EIM QA indicator showed a level of QA that was inadequate for this use. However, the EIM QA indicator was incorrect. As a result of this comment, the project QA history was reviewed. The sample results are part of a project that was incorrectly coded in EIM - data were collected under a program with an approved QAPP. The QA/QC designation in EIM should be updated.

Listing ID: [63292](#)
Proposed Category: 5
Parameter: Benz[a]anthracene
Water Body: POSSESSION SOUND

Comment: Station is located incorrectly. It actually is from mussels on a boat dock inside a marina in Cultus Bay, which borders Admiralty Inlet. See numbered page 23 in, <http://wdfw.wa.gov/publications/01127/wdfw01127.pdf>

Response: The location indicator was corrected in WATS. The location is within the grid where it was originally assigned, so no change to the listing decision or category.

Listing ID: [63293](#)
Proposed Category: 5
Parameter: Benzo[a]pyrene
Water Body: POSSESSION SOUND

Comment: Station is located incorrectly. It actually is from mussels on a boat dock inside a marina in Cultus Bay, which borders Admiralty Inlet. See numbered page 23 in, <http://wdfw.wa.gov/publications/01127/wdfw01127.pdf>

Response: The location indicators were corrected in WATS. The location is within the grid that where it was originally assigned, so no change to the listing decision or category.

Listing ID: [63295](#)
Proposed Category: 5
Parameter: Benzo[k]fluoranthene
Water Body: POSSESSION SOUND

Comment: Station is located incorrectly. It actually is from mussels on a boat dock inside a mariana in Cultus Bay, which borders Admiralty Inlet. See numbered page 23 in, <http://wdfw.wa.gov/publications/01127/wdfw01127.pdf>

Response: The location indicators were corrected in WATS. The location is within the grid that where it was originally assigned, so no change to the listing decision or category.

Listing ID: [63296](#)
Proposed Category: 5
Parameter: Chrysene
Water Body: POSSESSION SOUND

Comment: Station is located incorrectly. It actually is from mussels on a boat dock inside a mariana in Cultus Bay, which borders Admiralty Inlet. See numbered page 23 in, <http://wdfw.wa.gov/publications/01127/wdfw01127.pdf>

Response: The location indicators were corrected in WATS. The location is within the grid that where it was originally assigned, so no change to the listing decision or category.

Listing ID: [63321](#)
Proposed Category: 5
Parameter: Chrysene
Water Body: POSSESSION SOUND (NORTH)

Comment: Samples were taken from mussels growing on creosote treated pilings. Not an appropriate site for evaluating water quality for PAHs. Snohomish County Marine Resource Committee has relocated the station to a nearby concrete structure for sampling in 2010 and 2011 (and I think also in the winter of 2009). We have not yet received the data for these three sampling events from the NOAA contract lab. I think we also had a sample of creosote from the piling analyzed and it was high in chrysene. I'd say put this in category 2 and re-evaluate when the newer data become available. Lincoln (member Snohomish County Marine Resource Committee, and personally involved in the sampling effort in recent years)

Response: We agree that mussels sampled from a creosoted piling are not suitable for representing the water grid in the WQA. Creosoted pilings are an artificial substrate that creates a toxic microenvironment that should be addressed.

Listing ID: [64441](#), [64445](#), [64447](#), [64460](#), [64461](#), [64708](#)
Proposed Category: 5
Parameter: Various Toxics
Water Body: Puget Sound (North-Central)

Comment: I do not think it is appropriate to list for hepatopancreas data. Hepatopancreas consumption is not representative of the fish consumption considered in the derivation of the human health water quality criteria in 40 CFR 131.36. The Department of Health essentially recommends against eating the hepatopancreas anywhere in our marine

waters. I also note that there is not a water quality criterion for 2,3,7,8-TCDD TEQ, so it was appropriate to not use that for listing, but only for information.

I think that listing based on hepatopancreas tissue data are not appropriate. Several reasons. 1) the consumption rate of hepatopancreas is unlikely to equal 6.5 grams a day for 70 years for any individual, 2) the Department of Health essentially recommends against eating the hepatopancreas (or "crab butter") from anywhere in Puget Sound, Specifically, the DOH says: Advice on Eating Crab from Puget Sound Eat Dungeness or red rock crab from non-urban areas. Don't eat the crab butter or viscera. Viscera are the internal organs under the shell. see, <http://www.doh.wa.gov/ehp/oehas/fish/crab.htm> Perhaps this is an issue for revision to the WQP 1-11, in which case, please accept this as a comment for the listing policy revisions. If you cook crab in boiled water, don't use the water for soup stock, broth, or gravy. Data has shown that crabs from industrial urban areas may contain more contaminants than those from non-urban areas, and that crab viscera has more contaminants than crab muscle.

This comment pertains both to this listing and to other listings based on hepatopancreas concentrations. In reviewing revisions to the department's listing policy WQP 1-11 I note that the current wording in the section discussing listing criteria for toxic substances in tissue says that, "fin fish fillet tissue samples, whole shellfish tissue samples, and edible shellfish muscle samples must have at least three single-fish samples or a single composite sample made up of at least five separate fish of the same species. Fin fish fillet tissue samples may be analyzed with skin on or skin off." It does not say to use the hepatopancreas from crabs. Only crab muscle should be used. Whole body clams and oysters may be used. Only fish fillet tissue should be used (not the fish organs). All the proposed listings based on hepatopancreas concentrations should not be used.

Response: Hepatopancreas tissue is consumed by individuals harvesting crab, both directly and indirectly through cooking the whole crab prior to consuming the flesh and/or internal organs. Department of Health warnings are further indications that deleterious concentrations of toxics may be present in some tissues of Puget Sound organisms and should be avoided.

Listing ID: [64707](#), 64445
Proposed Category: 5
Parameter: Copper
Water Body: Puget Sound (North-Central)

Comment: This listing is for copper in waters associated with a boat marina. Copper is used in anti-fouling paints. The legislature in 2011 passed Substitute Senate Bill 5436 which was AN ACT Relating to the use of antifouling paints on recreational water vessels. The legislation is the equivalent of an approved pollution control program, applicable statewide, and as such this listing should be a Category 4b. See, <http://apps.leg.wa.gov/documents/billdocs/2011-12/Pdf/Bills/Senate%20Passed%20Legislature/5436-S.PL.pdf>

Response: The mere existence of water quality laws and regulations designed to protect water quality – even of new and improved regulations – is not sufficient alone to qualify a waterbody for Category 4b. Also, the policy does not state that certain kinds of pollution control plans categorically will or will not qualify for this category.

The section describing Category 4b lists several criteria which must be met to qualify in this category, regardless of the type of project. In order for Ecology to determine that a waterbody segment is eligible as a Category 4b listing, the project documentation must be submitted to Ecology during the "call for data", with information provided by the submitter to show that the 4b criteria have been met. It might be helpful to look at 4b listings made in 2004 to get a better understanding of what kind of projects have previously qualified for Category 4b.

Listing ID: [64731](#), [64734](#), [64735](#), [64736](#), [64738](#), [64739](#)

Proposed Category: 5

Parameter: Various Toxics

Water Body: Puget Sound (North-Central)

Comment: Probably shouldn't list for Graceful Crab since WDFW regulations prohibit harvesting them anyway. Also was there a natural conditions evaluation prior to this determination? Background arsenic in the Pacific exceeds our human health criterion by a factor of 10.

Probably shouldn't list for Graceful Crab since WDFW regulations prohibit harvesting them anyway. Also shouldn't list on hepatopancreas tissue, as I suspect all crabs will fail for arsenic here if you look for it, and natural sources alone could cause that. Also was there a natural conditions evaluation prior to this determination? Background arsenic in the Pacific exceeds our human health criterion by a factor of 10.

Response: Ecology is not condoning the harvest and consumption of graceful crab by including the species in the assessment of tissue. The concentration of toxins in graceful crab is an indicator that the concentrations may be similar in other crabs that are consumed.

Without a TMDL it is not possible to attribute the sources of arsenic in the tissues to natural or anthropogenic sources. Given the large amount of arsenic that has entered the Puget Sound watershed from past polluting activities, a TMDL may be needed to determine whether sources can be identified whose controls will result in meeting criteria, and/or to develop approaches that take natural background sources into account.

Listing ID: [504392](#)

Proposed Category: 5

Parameter:

Water Body: POSSESSION SOUND (NORTH)

Comment: Not sure why this changes from a category 2 to a category 5 when it is the same data as used before. Also, the data are now 21 years old, which makes it not very representative. Listing for a sediment bioassay from 1988 seems so distant in the past that it doesn't make sense to use it. The data were obviously available before and it was listed as category 2 in 2004 and 2008, so what has changed to support a 5 now? Stick with category 2.

Response: The most current sediment chemistry and/or bioassay data in EIM are used to evaluate a grid.

	<p>In this case, the 2008 listing is based on one 1988 bioassay sample with 2 bioassay points. The 2010 listing contains an additional 1990 bioassay sample with 1 bioassay point, which brings the 2010 total bioassay points to 3. Per WQP Policy 1-11, the 2008 listing with a bioassay point total of 2 was assessed as Category 2 Rank 4. The 2010 listing with 3 bioassay points is assessed as Category 5. Listing 504392 is correctly assessed as Category 5, based on the EIM data available for the 2010 evaluation.</p> <p>A sediment cleanup determination would not be based on 20+ year old data. The area of interest would be resampled to determine current sediment conditions before proceeding with cleanup actions.</p>
<p>Miyoko Sakashita and 21,000+ emails supporting CBD comments</p> <p>Center for Biological Diversity (CBD) Commenter 13</p>	<p>Summary of Comments: Washington’s failure to include coastal waters that are already experiencing the detrimental impacts of ocean acidification on its draft 2010 assessment of marine waters as threatened or impaired is a violation of the Clean Water Act, which requires the state to identify waters failing to meet <i>any</i> water quality standard. Washington must identify some, if not all, of its coastal waters as threatened or impaired for ocean acidification.</p> <p>Summary Response: Ecology reviewed all of the information submitted by the Center for Biological Diversity (CBD) to determine if Washington coastal waters should be listed on Category 5 as threatened or impaired for ocean acidification (note that EPA recommends that states consider as threatened those waters that are currently attaining standards, but which are not expected to meet standards by the next listing cycle). Specifically, Ecology considered all of the information and studies submitted by CBD via letters sent to Ecology on 8/15/07, 3/20/08, 9/25/09, 8/8/11, 1/12/12 and most recently 4/23/12. We also considered more recent studies relevant to Washington, to determine if there is adequate documentation to list all or some of its coastal waters, including Puget Sound, Grays Harbor, Willapa Bay, and the state waters near Tatoosh Island, as threatened or impaired for ocean acidification. Below are Ecology overall conclusions on whether the data demonstrated nonattainment (or nonattainment by the next listing cycle) of Washington’s pH criteria, general narrative criteria to protect aquatic life, and antidegradation. More detailed information on data presented in the studies, and Ecology’s assessment of that data, are provided in a separate letter to CBD.</p> <p>CBD presented assertions that coastal waters are not meeting Washington’s pH standards for marine waters. Washington standards for pH at WAC 173-210(1)(f) require that pH must be within the range of 7.0 to 8.5, with a human-caused variation within the range of less than 0.2 units (for extraordinary marine quality waters) or less than 0.5 units (for excellent marine quality waters). We reviewed each of the documents referenced by CBD as support for their assertions and determined that none of the articles demonstrated that Washington’s waters are failing to attain (or will not be in attainment by the next listing cycle) Washington’s pH criteria, either because the pH values fell within the acceptable range of 7.0 to 8.5 units or because there was insufficient information to determine whether there were changes greater than 0.2 units due to human actions. Therefore, we concluded that coastal waters will not be placed in Category 5 as threatened or impaired for nonattainment of pH criteria due ocean acidification.</p> <p>CBD presented assertions that Washington’s waters are failing to attain general narrative standards to protect aquatic life uses because of ocean acidification. Washington narrative standards at WAC 173-201A-260(2)(a) require that toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota</p>

dependent upon those waters, or adversely affect public health. Policy 1-11 states that segments will be placed in Category 5 on the basis of violating narrative standards when the information regarding the waterbody segment includes both documentation of environmental alteration related to deleterious chemical or physical alterations, as measured by indices of resource condition or resource characteristic or other appropriate measure, and documentation of impairment of an existing or designated use is related to the environmental alteration on the same waterbody segment or grid. We reviewed each of the documents referenced by CBD as support for their assertions and determined that none of the articles demonstrated that Washington's waters are failing to attain (or will not be in attainment by the next listing cycle) general narrative criteria to protect aquatic life uses because they did not include conclusive evidence that aquatic life uses in the natural environment were being impaired by environmental alterations related to ocean acidification. Therefore, we concluded that coastal waters will not be placed in Category 5 as threatened or impaired for nonattainment of the general narrative standards for aquatic life uses due to ocean acidification.

CBD presented assertions that ocean acidification is causing degradation of ocean water quality in violation of Washington's antidegradation policy. Washington's antidegradation standards at WAC 173-201A-310 require that existing and designated uses must be maintained and protected, and that no degradation may be allowed that would interfere with, or become injurious to, existing or designated uses. As presented above, we reviewed CBD's documentation to determine if pH levels were not meeting applicable pH criteria, and if narrative standards were being impaired. These reviews concluded that there was no evidence that pH criteria were not being met, nor that narrative standards to protect aquatic life uses were being violated. Additionally, CBD has not clearly identified a basis for noncompliance with antidegradation requirements, nor identified which specific Washington waters would need to be listed for not meeting antidegradation requirements, and has not provided a basis to justify such a listing of waters. Therefore, we concluded that coastal waters will not be placed in Category 5 as threatened or impaired for ocean acidification based on a violation of antidegradation rules.

Through this assessment we did determine that Puget Sound waters should be listed in Category 2 (waters of concern) for potential impacts to fish and shellfish habitat from human activities, including conditions that makes the waters more vulnerable, such as climate change, urbanization, and ocean acidification. This listing is based on narrative standards (WAC 173-201A-260(2)) intended to protect existing and designated uses. We were not able to extend this Category 2 listing to other Washington coastal waters outside of Puget Sound because of the lack of information suggesting potential impairment to aquatic habitat (except where 303(d) listings are already identified or TMDLs have been done). Category 2 is the appropriate category because it applies when some credible data create concerns of possible impact to designated uses, but fall short of demonstrating that there is a persistent problem. A Category 5 listing would not be appropriate because there is not enough information and data to indicate that Puget Sound waters are not meeting standards, or will not meet standards by the next listing. Category 2 listings are intended to help Ecology and the public be aware of, track, and investigate these water quality concerns.

Despite the conclusion that there was not enough substantive information to list Washington coastal waters in Category 5 as threatened or impaired for ocean acidification, we want to assure you that Washington takes the issue of ocean acidification very seriously. The State is proactively working to identify science and data gaps in understanding ocean acidification and what steps the State can take to curb effects from ocean acidification at the regional and local level. To demonstrate the State's commitment, a Blue Ribbon Panel on Ocean Acidification was convened by Washington's

	<p>Governor Gregoire in February 2012. The Panel includes scientific experts, relevant agencies and stakeholders, to develop clear, actionable recommendations on understanding, monitoring, adapting, and mitigating ocean acidification in Puget Sound and Washington waters. The Panel results will be delivered in a report to the Governor by October 1, 2012. To follow efforts of the Blue Ribbon Panel and to get more information on what the department is doing to address climate change, go to http://www.ecy.wa.gov/climatechange/index.htm.</p>
<p>Shawn Ultican Kitsap County Health District Commenter 14</p>	<p>Listing ID: 504392 Proposed Category: 5 Parameter: Water Body: POSSESSION SOUND (NORTH)</p> <p>Comment: Recognition for implementation of local pollution control programs and to request 4B Category consideration for Listing IDs 38522, 38576, 38580, 52896, 23708, 52902, 45892, 52892, and 38799</p> <p>The Department of Ecology has acknowledged the effectiveness of local pollution control programs in Kitsap County, and supported the development of similar programs in other areas of Washington State. At the same time, there has been resistance to granting category 4B status under 303(d) assessments to many of the water bodies included in the proposed listings.</p> <p>For example, extensive work has been done by local agencies to find and correct sources of bacterial pollution in the Dyes and Sinclair Inlet watersheds. This has included the Dyes Inlet Restoration Project, Sinclair Inlet Restoration Project, and Kitsap Regional Illicit Discharge Detection and Elimination project for stormwater. However, in this area, only Gorst Creek and Enetai Creek have received a category 4B status.</p> <p>If all the resources put into local pollution control programs for Dyes and Sinclair Inlets are not sufficient to receive a 4B listing, what more must local jurisdictions do to achieve this? If Ecology supports early implementation of local pollution control programs, and wants to encourage them in other areas, more recognition should be given to these efforts by granting 4B status to streams and marine water during future assessment cycles.</p> <p>Once a local pollution control program is in place, a body of water could be listed as 4B for at least one assessment cycle until it can be determined whether the programs have been effective. If the problems are not corrected during that time, the listing can be moved to category 5 during the next assessment.</p> <p>As shown in the Excel table submitted with our comments, we recommend Category 5</p>

listings for bacteria which are located in Dyes Inlet, Sinclair Inlet, and Liberty Bay be changed to 4B. In the case of listings within Dyes and Sinclair Inlets, these should be moved to category 4A once the TMDL has been approved.

Response: Ecology generally agrees that when Kitsap starts implementing its PIC program in a watershed, we could probably put the freshwater listings in that watershed into Category 4b. This is because Kitsap's PIC program is known to be effective, and we would expect that this would continue. However, at this point Ecology does not have evidence that the marine listings in the associated bays are caused only by pollution from the streams being addressed by the PIC program, or if there are other sources causing or contributing to those impairments. EPA's requirements for placement into Category 4b include a requirement that all sources of pollution have been or are being identified, and that the program in place will achieve compliance with state water quality standards in a reasonable amount of time. Since we cannot know that this is true for the marine listings, it would not be appropriate to put them into Category 4b at this time.

The segments in the chart that are presently in Category 5 and that are covered by the Dyes and Sinclair Inlets TMDL will be moved to Category 4a as soon as the TMDL is approved by EPA.

Comment: Data calls should match the type of assessment period used.

This assessment uses marine data collected up to September 2009. If the assessment is done on a calendar year basis, this provides only 9 data points for those sites that are sampled once a month. The Health District uses a water year monitoring approach and collects 12 data points during this twelve month period. With this in mind, we request that Ecology apply the assessment to data from October 2009 through September 2009.

In future data calls, it would make more sense to request data through the end of an assessment period to provide a complete set of the most recent data. For example, if the data will be evaluated based on a calendar year, then the data call should go through December of the most recent year. If the data will be evaluated based on a water year, then the data call should go through September of the most recent year.

Response: Assessment periods and monitoring periods rarely match. A yearly (12 month or less) monitoring period may start on Jan 1, but often follows a "water year" which may span any 12 month period. In the effort to use complete monitoring sets, Ecology will use monitoring results from events after the data call, when the submitter notifies Ecology of the availability of the results. If the data call was limited to complete data sets based on water years, the most recent data could be omitted or withheld. If data calls did not have an established boundary line between calls, each assessment would require complete reevaluation of all data in order to avoid omitting and duplicating data points from the EIM database.

Comment: Detailed comments on individual listings

The attached Excel table provides our comments on individual listings, with references to both the Listing ID and GIS Map Link. We recommend that these listings be changed from category 5 to those indicated in the

"Recommended Category" column. A brief rationale for these changes is included in the "Notes" column. assessment to data from October 2008 through September 2009.

Listing ID: 38552
Proposed Category: 5
Parameter: Bacteria
Water Body: DYES INLET AND PORT WASHINGTON NARROWS

Comment: DY05, DY36, BCH. This should be changed to category 4A or 4B because it is covered by Dyes Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.

Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL. The locations in the marine water must be specifically addressed in either the TMDL in order to move to 4A, or in the local project to move to 4B when the actions are completed.

Listing ID: 38576
Proposed Category: 5
Parameter: Bacteria
Water Body: DYES INLET AND PORT WASHINGTON NARROWS

Comment: DY24, DY25, BCH. This should be changed to category 4A or 4B because it is covered by Dyes Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.

Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.

Listing ID: 38580
Proposed Category: 5
Parameter: Bacteria
Water Body: DYES INLET AND PORT WASHINGTON NARROWS

Comment: DY27, DOH 466. This should be changed to category 4A or 4B because it is covered by Dyes Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.

Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.

Listing ID: 52896

Proposed Category: 5
Parameter: Bacteria
Water Body: DYES INLET AND PORT WASHINGTON NARROWS

Comment: DY34. This should be changed to category 4A or 4B because it is covered by Dyes Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.

Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.

Listing ID: 38787
Proposed Category: 5
Parameter: Bacteria
Water Body: HOOD CANAL (SOUTH)

Comment: HC11, BCH. This should be changed to Category 1 because data from last 5 years shows no further problems at this site.

Response: The listing was based on enterococcus data (waters did not meet the secondary criteria and thus, does not meet the primary contact criteria). More recent data collection does not include at least ten samples in a year to cover the critical period. Thus, this listing remains a Category 5. Archer 12/21/2011

Listing ID: 23708
Proposed Category: 5
Parameter: Bacteria
Water Body: LIBERTY BAY

Comment: LB06, LB07, LB08. This should be changed to category 4B because it is covered by current pollution control program "Liberty Bay Restoration Project".

Response: Freshwater locations downstream of pollution control projects in this watershed were placed in the 4B category in 2008. Ecology lacks information on whether the marine listings in the bays those streams drain to are only impacted by the specific freshwater stream or if the listing is also contributed to by other sources.

Listing ID: 23709
Proposed Category: 5
Parameter: Bacteria
Water Body: DYES INLET AND PORT WASHINGTON NARROWS

Comment: LBNS. This should be changed to category 2. Listing statement says "Changed to Category 2."

Measurements taken at or near an outfall do not adequately portray the condition of the receiving waters."

Response: The listing remark referred to an earlier assessment in 2004. Proximity of ambient water to an outfall does not exempt the water from listing in the assessment, because the sample is still representative of the water body. Other pollutant sources may also be present. Re-assessment of EIM data confirmed the validity of the listing as Category 5.

Listing ID: 38687
Proposed Category: 5
Parameter: Bacteria
Water Body: LIBERTY BAY

Comment: LB09. This should be changed to category 1. OSS Failure to surface water found. Has met WQ standard for last 3 years

Response: Ecology does not have the information that would dictate a move to Category 1 for this grid. Correction of a possible source does not alone indicate that the water body is meeting standards. The policy for assigning Category 1 to a water body that is in Category 5 requires that a minimum number of samples demonstrate compliance with criteria in the water body (marine grid) that is the subject of the listing. This data needs to be made available in the EIM data system.

Listing ID: 52902
Proposed Category: 5
Parameter: Bacteria
Water Body: PORT MADISON

Comment: MB03. This should be changed to category 4B because our current pollution control program "EPA Shellfish Restoration & Protection" project includes Miller Bay.

Response: Freshwater locations downstream of pollution control projects in this watershed were placed in the 4b category in 2008. Ecology lacks information on whether the marine listings in the bays those streams drain to are only impacted by the specific freshwater stream or if the listing is also contributed to by other sources.

Listing ID: 45892
Proposed Category: 5
Parameter: Bacteria
Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE

Comment: SN27, SN22, SN13. This should be changed to category 4A or 4B because it is covered by Sinclair Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.

Response: When the Dyes and Sinclair Inlet TMDL is approved by EPA, those listings covered by the TMDL will be

	<p>moved to Category 4a. Dyes and Sinclair Inlet TMDL not yet approved by EPA. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.</p> <p>Listing ID: 52892 Proposed Category: 5 Parameter: Bacteria Water Body: PORT ORCHARD, AGATE PASSAGE, AND RICH PASSAGE</p> <p>Comment: PO13. This should be changed to Category 4A or 4B because it is covered by Sinclair Inlet PIC work, Dyes & Sinclair TMDL.</p> <p>Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL.. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.</p> <p>Listing ID: 38799 Proposed Category: 5 Parameter: Bacteria Water Body: SINCLAIR INLET</p> <p>Comment: SN12. This should be changed to category 4A or 4B because it is covered by Sinclair Inlet PIC work, Kitsap Region IDDE, Dyes & Sinclair TMDL.</p> <p>Response: When EPA approves the Sinclair and Dyes Inlets TMDL, those listings covered by the TMDL will be moved to Category 4a. EPA has not yet approved the Sinclair and Dyes Inlets TMDL.. The locations in the marine water must be specifically addressed in the TMDL or equivalent 4B in order to move to 4A when the actions are completed.</p>
<p>Steve Britsch Commenter 15</p>	<p>Listing ID: 9839 Proposed Category: 5 Parameter: bacteria Water Body: Puget Sound (North-Central)</p> <p>Comment: A search of Cusimano (1997) did not indicate availability of fecal coliform bacteria data at station Snodry33 (Union Slough (UNS33)). Cusimano (1995) http://www.ecy.wa.gov/pubs/95338.pdf did contain fecal coliform data for this station. Results shown in Appendix B for August 16 and 17 of 2003, indicate that only two samples were obtained at this location. The individual results were 100 and 60 cfu/100ml respectively. The basis for listing is upon a calculated geometric mean. The listing policy for bacteria under category 5 indicates that the calculated geometric mean assessment method does not apply to datasets of fewer than 5 samples values. The basis for listing should be changed to use of individual samples which exceeded the primary contract recreation standard for marine waters of 43 colonies/100ml, as allowed by the water quality assessment policy.</p>

	<p>Response: Comment noted. The listing will remain in Category 5. The remarks already clarify that the “Impairment was determined by exceedance of the percent fecal coliform criterion in 1993.”</p>
<p>Victoria Hansen Commenter 16</p>	<p><u>General Comment:</u> Bacteria levels are too high throughout Puget Sound. Please Note: Kilisut Harbor, Mystery Bay, and Scow Bay are receiving massive amounts of toxic polluted water from Marrowstone Island due to Jefferson County PUD 2009 installation of public water delivery system into an ineffecient unfunctioning infrastructure of old, failing and nonexistant cesspools, septic systems and drainfields. The Jefferson County PUD had full knowledge and information that the installed water sytem begat pollution source points and directly caused current high levels of fecal bacteria and increasing environmental indicators and pressures.</p> <p>Response: Thank you for the comment. The presence of a potential pollutant source is not sufficient to create a listing for the water quality assessment. Ecology relies on credible data, as defined in state law and policy, to determine whether a water body should be listed in Category 5.</p>
<p>Larry Beard Landau Associates Commenter 17</p>	<p>Listing ID: 608191 and 621072 Proposed Category: 5 Parameter: Sediment Bioassay Water Body: Snohomish River (freshwater)</p> <p>Comment: On behalf of the parties listed at the end of this comment, we are commenting on proposed listing 621072 and 608191. These proposed listings are located partially (and 608191) or entirely (621072) within what is commonly known at the Port of Everett’s 12th Street Marina. Both proposed listings also are located partially within the North Marina Ameron/Hulbert site (FSID 68853261) and the North Marina West End site (FSID 3306834) that are currently under formal agreement with Ecology for implementation of an RI/FS. These two water body segments were not included in the 2008 listing, yet Ecology proposes to list them now for sediment.</p> <p>The basis for the listing are data from EIM which indicate samples collected on or before February 1992 exceeds the CSL bioassay criterion, and in the case of 621072, because it includes a portion of North Marina West End site. These two water body segments should not be listed based on EIM data that are nearly 20 years old and for a number of reasons outlined below. 1) The 12th Street Marina was dredged to about elevation -16 ft MLLW in 2005 as part of the yacht basin development. The sediment previously characterized in this area prior to 1992 was removed as part of marina development. The 1992 data were collected to characterize sediment for navigation dredging. Extensive chemical testing was done on these samples, including metals, pesticides, PAH, PCBs, dioxin, etc and the only failure was for bioassay, an often imprecise and difficult to interpret test. In other words, the pre-dredging quality of the sediment was actually very good, and the bioassay failures should be considered suspect. This was confirmed by three independent investigations of the sediment quality conducted throughout the marina for PSDDA disposal purposes, which did not indicate any CSL exceedances, however, these data were never entered into EIM. 2) Ecology conducted a study of sediment quality in the entirety of Port Gardner Bay in 2008.</p> <p>Ecology's contractor was SAIC. Many samples were collected, including one sample in proposed listing 621072, that indicated no CSL exceedances of any parameter. In fact, Ecology's stated purpose for this study reads "Port Gardner and the lower Snohomish River Estuary (referred to as Port Gardner) are identified under the Toxics Cleanup Program's</p>

	<p>Puget Sound Initiative (PSI) for focused sediment cleanup and source control. Previous environmental investigations in the area have measured sediment chemical concentrations that have exceeded Sediment Management Standards (SMS), according to Chapter 173-204 Washington Administrative Code (WAC). However, much of the data are outdated and many areas of suspected contamination are not well characterized. This report includes the results of sediment profile imaging (SPI), plan view photography, surface and subsurface sediment chemistry, sediment toxicity testing, and tissue analysis". Therefore, Ecology themselves acknowledged that the existing data were outdated. 3) Currently, Listing 621072 and a portion of 608191 (also known as the North Marina- Ameron/Hulbert Site and the West End Sites) are undergoing an RI/FS under MTCA that includes both upland and sediment quality characterization in the 12th Street Marina. Extensive sediment quality testing was completed in 2009 and 2010.</p> <p>A total of 15 surface sediment samples were collected within the 12th Street Marina between the two sites, and 3 samples were collected near the eastern shoreline in the southern portion of proposed listing 608191. Samples were analyzed for every SMS chemical parameter and none failed CSL criteria. No bioassay testing was necessary. All of the data were collected under Ecology approved sampling and analysis plans and the data are loaded into EIM. We request that Ecology rely on the more recent data in this area for determining 303d listings, not older Pre-1992 data that is outdated and supplanted by newer data. The more recent data overwhelmingly indicate that both of these areas do not exhibit chemical characteristics that warrant a 303d listing. Please refer any questions you may have regarding the newer data that was collected to Mr. Andy Kallus of the Toxics Cleanup Program, who is Ecology's project manager for both the Ameron/Hulbert site and the North Marina West End site. Thank you for your consideration. Sincerely, Larry Beard PE, LHG, Landau Associates, Inc., on behalf of the Port of Everett Lori Herman, Aspect Consulting, LHG on behalf of Ameron International, Inc. Janet Knox, LG, Pacific Groundwater Group, on behalf of the Hulberts Tom Colligan LHG, Floyd Snider, on behalf of Oldcastle Precast, Inc.</p> <p>Response: The referenced data was submitted to Ecology's EIM database months to years after the official Call for Data which concluded October 31, 2009. If sediment data was not provided as an EIM data submittal or in the EIM database by October 31, 2009, it was not evaluated for the 2010 303d list.</p> <p>In order to reevaluate the draft 2010 listings, TCP found the referenced EIM studies, analyzed the data using MyEIM Chemistry and Bioassay Analytical Tools, created GIS plots of the chemistry and bioassay results, and manually evaluated each grid. All basis statements were revised due to new data except for Listing ID 619429.</p> <p>Because all grids are in areas being investigated for sediment contamination, they are assessed as Category 5. A grid will be move to Category 4B once a Cleanup Action Plan has been signed.</p>
<p>Erik Gerking Port of Everett Commenter 18</p>	<p>Original comment</p> <p>Listing ID: 504391, 608191, 614094, 619429, 621072 Proposed Category: 5 Parameter: BIOASSAY Water Body: Port Gardner</p>

Comment: We have some concerns regarding the basis of the draft listings. It appears that in each case the listing is based on a sediment sample exhibiting a bioassay failure. The bioassay samples are relatively old, ranging in date from 1986 to 1992. The Port has knowledge of or has obtained more recent data that are more representative of the current conditions in the proposed listing areas.

Response: The referenced data was submitted to Ecology's EIM database months to years after the official Call for Data which concluded October 31, 2009. If sediment data was not provided as an EIM data submittal or in the EIM database by October 31, 2009, it was not evaluated for the 2010 303d list.

In order to reevaluate the draft 2010 listings, TCP found the referenced EIM studies, analyzed the data using MyEIM Chemistry and Bioassay Analytical Tools, created GIS plots of the chemistry and bioassay results, and manually evaluated each grid. All basis statements were revised due to new data except for Listing ID 619429.

Because all grids are in areas being investigated for sediment contamination, they are assessed as Category 5. A grid will be moved to Category 4B once a Cleanup Action Plan has been signed.

Leslie Higginson
British Petroleum
Commenter 19

[Original comment](#)

Listing ID:502708
Proposed Category: 5
Parameter: Sediment Bioassay
Water Body: STRAIT OF GEORGIA

Comment:

We believe that the proposed 2010 303(d) listing for Grid Cell 48122I7G5_SW to be incorrect and that the listing should be Category 1 (meets standards) for three reasons:

1. This grid cell was identified as Category 1 (sediment that meets tested standards) in 2004 and 2008 (Attachment 1), and no new data has been collected since 2006. The 2010 listing should be based on new data, but instead is using 10-year old data (2001 toxicity data).
2. The 2001 results (CSL toxicity exceedances at three locations) were affected by an abundance of shell fragments and by elevated sulfide and ammonia in test sediments. The 2006 field study was conducted to confirm these effects (RETEC 2007).
3. Re-characterization of this area in 2006 included chemistry and toxicity testing at six locations (re-occupied three locations from 2001). Five of these locations passed for all endpoints evaluated. One sample exceeded the SQS for the amphipod endpoint, and passed for the other two endpoints. This re-characterization effort, in support of the NPDES permit, was conducted in close coordination with Ecology (Liem Nguyen) and is documented in the 2006 sediment characterization report (RETEC 2007).

Response: TCP agrees with BP's findings and the listing 502708 will remain the same as in 2008. That is, Strait of Georgia listing 502708 (Grid 48122I7G5_SW) is a Category 1 listing based on 2006 bioassay data (EIM Study BPCP06).

Tim Wootton & Cathy Pfister
University of Chicago
Commenter 20

General Comment: This letter is provided for further explanation and information about the methods and findings in our study: Wootton, J. T., Pfister, C. A., & Forester, J. D. 2008. Dynamic patterns and ecological impacts of declining ocean pH in a high-resolution multi-year dataset. *Proceedings of the National Academy of Sciences*, 105(48): 18848. This information is to inform the Department of Ecology about the quality of the data used in our paper and to clarify the findings.

Response: Ecology is committed to evaluating high quality data of long-term pH changes to assess the large-scale extent, significance, ubiquity, and anthropogenic impacts on inshore areas for Washington marine water bodies. Currently, the Wootton et al, 2008 paper is the best available long-term study on ocean pH for Washington's coastal waters. The study carefully follows conventional calibration and statistical methods for long-term trend analysis of ocean pH and provides an informative and valuable long-term perspective of pH values for the waters near Tatoosh Island, an island located on the Washington Shelf. The location of the Island makes the site sensitive to large-scale oceanic and coastal processes. The validity of the pH trend found in the study is supported by a high number of independent calibration and sensor measurements and the notion that random error can be corrected by high sample numbers. Systematic bias is corrected for by frequent calibration samples and sensor maintenance.

Through Ecology's long term monitoring program, we evaluate the high spatial and temporal complexity and dynamics of Washington's inshore water bodies. Our long-term data sets allow us to assess the response of Washington marine water bodies to large-scale oceanic and climatic patterns, which illustrate the significance of oceanic patterns on regional water quality. We have found that separating anthropogenic and natural effects on water quality is very difficult and can lead to an over interpretation of spatially limited data sets. In our opinion, the spatial extrapolations made from Wootton's study to Washington water bodies by the Center for Biological Diversity in their August 8 2011 letter are too simplistic.

Tatoosh Island is located on the Washington continental shelf and water masses are subjected to local and large-scale water mass transport, upwelling and patterns of productivity. The connectivity of shelf to Salish Sea water is variable and driven by multiple oceanographic, estuarine, weather and climatic processes that affect water pH in different ways.

The cause of pH change discussed in the Wootton study is speculative because the change could be caused by several other competing processes related to the source waters, long-shore shelf transport, and planktonic species composition. Therefore, despite the validity of the Wootton study for Tatoosh Island and immediate vicinity, a spatial extrapolation of long-term trends from the study area to a larger regional change remains speculative. We would require further follow up studies before we could support using the data for documenting changes in pH for Washington's marine water bodies.

The State's Consideration of All Existing and Readily Available Data for Marine Waters, Including pH

Ecology received correspondence from EPA Region 10 (Bussell to Susewind, 12/1/09) emphasizing the importance of the state's consideration of all existing and readily available data and information for marine waters, including pH, in developing the 2010 303(d) list per 40 CFR 130.7.

Review of Data and References

Ecology used all data, including pH, which met credible data requirements for the Water Quality Assessment. The Ecology marine monitoring unit conducted an assessment of pH data collected via electrode probe, performing comparative analyses during the same 2008 research voyage where NOAA scientists (Drs. Feely & Alin) collected measurements of DIC and total alkalinity to calculate pH changes in Puget Sound waters. Based on the results of these comparative surveys and communicated by Dr. Feely to Ecology's marine monitoring unit, the data generated by electrode pH probe could be subject to large (± 0.5 pH units), non-quantifiable errors and are inadequate to assess changes in pH due to anthropogenic contribution. Based on this, a decision was made that the data does not represent credible data in accordance with Water Quality Policy 1-12 and should not be used for the Water Quality Assessment purposes.

The Center for Biological Diversity (CBD) submitted numerous studies that they believe document ocean acidification and the decline in acceptable pH in Washington's waters, and requested that they be used as a basis to list all coastal waters in Washington as threatened or impaired due to ocean acidification. Ecology reviewed the information and studies submitted by CBD via letters dated 8/15/07, 3/20/08, 9/25/09, 8/8/11, 1/12/12, and 4/23/12. Collectively, we received 128 references from CBD for consideration of their request. We also considered more recent studies relevant to Washington, to determine if there is adequate documentation to list some or all of our coastal waters as impaired for ocean acidification.

CBD presented assertions that coastal waters are not meeting Washington's pH standards for marine waters. Washington standards for pH at WAC 173-210(1)(f) require that pH must be within the range of 7.0 to 8.5, with a human-caused variation within the range of less than 0.2 units (for extraordinary marine quality waters) or less than 0.5 units (for excellent marine quality waters). We reviewed each of the documents referenced by CBD as support for their assertions and determined that none of the articles demonstrated that Washington's waters are failing to attain (or will not be in attainment by the next listing cycle) Washington's pH criteria, either because the pH values fell within the acceptable range of 7.0 to 8.5 units or because there was insufficient information to determine whether there were changes greater than 0.2 units due to human actions. Therefore, we concluded that coastal waters will not be placed in Category 5 as threatened or impaired for nonattainment of pH criteria due to ocean acidification.

CBD presented assertions that Washington's waters are failing to attain general narrative standards to protect aquatic life uses because of ocean acidification. Washington narrative standards at WAC 173-201A-260(2)(a) require that toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health. Policy 1-11 states that segments will be placed in Category 5 on the basis of violating narrative standards when the information regarding the waterbody segment includes both documentation of environmental alteration related to deleterious chemical or physical alterations, as measured by indices of resource condition or resource characteristic or other appropriate measure, and documentation of impairment of an existing or designated use is related to the environmental alteration on the same waterbody segment or grid. We reviewed each of the documents referenced by CBD as support for their assertions and determined that none of the articles demonstrated that Washington's waters are failing to attain (or will not be in attainment by the next listing

cycle) general narrative criteria to protect aquatic life uses because they did not include conclusive evidence that aquatic life uses in the natural environment were being impaired by environmental alterations related to ocean acidification. Therefore, we concluded that coastal waters will not be placed in Category 5 as threatened or impaired for nonattainment of the general narrative standards for aquatic life uses due to ocean acidification.

In addition, Ecology also reviewed more recent water quality studies specific to Washington waters, and in particular found relevant studies of Puget Sound. As you are aware, Puget Sound is a large estuary complex that is home to a diverse ecosystem. It is susceptible to anthropogenic impacts associated with human activities, such as climate change, urbanization, and ocean acidification. Upwelled waters along the western North American continental margin can enter Puget Sound through the Strait of Juan de Fuca. These waters from the deep ocean are naturally rich in CO₂, and rise up from lower depths seasonally along the Pacific coast. If you add to this the increase in the acidification levels resulting from rising CO₂ levels in the atmosphere, the potential impacts to Puget Sound waters in the future could be significant. We also know that human input of nutrients to marine waters can lead to excessive production of algae, a process known as eutrophication. Microbial consumption of this organic matter lowers oxygen levels in the water. This microbial respiratory process also releases carbon dioxide, potentially lowering the pH (that is, increasing the acidity) in marine waters. Thus, nutrient pollution and low-oxygen conditions can exacerbate potential impacts of ocean acidity.

Determination of Category 2 for Puget Sound

Through assessment of these studies, as well as the studies identified as relevant from CBD references, we determined that Puget Sound waters should be listed in Category 2 (waters of concern) for potential impacts to fish and shellfish habitat from human activities, including conditions that make the waters more vulnerable, such as climate change, urbanization, and ocean acidification. This listing is based on narrative criteria (WAC 173-201A-260(2)) intended to protect existing and designated uses. We were not able to extend this Category 2 listing to other Washington coastal waters outside of Puget Sound because of a lack of information suggesting potential impairment to aquatic habitat (except where 303(d) listings are already identified or TMDLs have been done).

The Puget Sound Category 2 listing for potential impacts to aquatic habitat is the appropriate category because it applies when some credible data create concerns of possible impact to designated uses, but fall short of demonstrating that there is a persistent problem. A Category 5 listing would not be appropriate because there is not enough information and data to indicate that Puget Sound waters are not meeting standards, or will not meet standards by the next listing cycle. Category 2 listings are intended to help Ecology and the public be aware of, track, and investigate these water quality concerns.

Puget Sound is listed in Category 2 (waters of concern) for potential impacts to fish and shellfish habitat from human activities, including conditions that make the waters more vulnerable, such as climate change, urbanization, and ocean acidification. The following studies are cited as a basis for listing (in alphabetical order):

Feely, R.A., S.R. Alin, J. Newton, C. L. Sabine, M. Warner, A. Devol, C. Krembs, and C. Maloy, 2010. *The combined effects of ocean acidification, mixing, and respiration on pH and carbonate saturation in an urbanized estuary*. Estuarine, Coastal and Shelf Science, Volume 88, Issue 4, 10 August 2010, Pages 442-449. <http://www.sciencedirect.com/science/article/pii/S027277141000185X>

Kolosseus, A. *Focus on Dissolved Oxygen Study*. Department of Ecology, Publication 08-10-030, January 2011. <http://www.ecy.wa.gov/biblio/0810030.html>

Mohamedali, T., M. Roberts, B. Sackmann, and A. Kolosseus. 2011. *Puget Sound Dissolved Oxygen Model Nutrient Load Summary for 1999-2008*. Department of Ecology, Publication 11-03-057, November 2011. <http://www.ecy.wa.gov/biblio/1103057.html>.

Specific Information Assessed for Puget Sound Category 2 Listing

The above-stated references suggest that fish and shellfish habitat in Puget Sound may be at risk, but more information and data are needed to delineate the natural variability in the marine environment from impairment due to anthropogenic sources. Highlights from the studies that are included as a basis for Category 2 listing of Puget Sound are:

- **Feely et al (2010):** *The combined effects of ocean acidification, mixing, and respiration on pH and carbonate saturation in an urbanized estuary* (peer-reviewed scientific paper)

This study researched the combined effects of ocean acidification and other natural and anthropogenic processes on Puget Sound waters using inorganic carbon measurements and observing pH and aragonite saturation state values. It estimated that the relative impact of ocean acidification could increase significantly in the future, causing decreases in pH as the atmospheric CO₂ increases. This study is a significant and instructive study, with important implications for Puget Sound estuaries. However, as stated in this paper: “Since there are no high-quality, long-term, carbon times-series measurements in Puget Sound, it is not possible to directly determine the increase of anthropogenic CO₂ in the region. However, coastal waters, which are the source for the marine waters in the Puget Sound system, carry an anthropogenic CO₂ burden, and a corresponding pH decrease associated with ocean acidification, that can be estimated by extrapolating the open-ocean CO₂ results for the North Pacific to the coastal region” (Feely et al., 2008). Given the calculations of anthropogenic CO₂ contribution effects to be based on estimates and extrapolation from results calculated for Pacific Ocean waters, this study supports the recommendation of listing Puget Sound waters as Category 2.

- **Kolosseus (2011):** *Focus on Dissolved Oxygen Study*. Department of Ecology, Publication 08-10-030, January 2011.

This Ecology study will help determine how nitrogen inputs from human activities, along with natural factors, affect low dissolved oxygen levels in South Puget Sound. Ecology is using the data it collects to develop computer models to determine the effects of the nitrogen discharges on dissolved oxygen levels in South Puget Sound. If the study shows that nitrogen reductions are necessary, Ecology may convene local jurisdictions and interest groups in either a TMDL study or some other plan of action to achieve clean water. This on-going study supports the recommendation of listing Puget Sound as a Category 2.

- **Mohamedali et al (2011):** *Puget Sound Dissolved Oxygen Model Nutrient Load Summary for 1999-2008*. Department of Ecology, Publication 11-03-057, November 2011.

This Ecology report presents estimates of nutrient loading into Puget Sound and the Straits Georgia and Juan de Fuca from rivers and wastewater treatment plants. These estimates will be used as inputs into the Puget Sound Dissolved Oxygen model. The report also presents estimates of natural nutrient loads and compares results with those of previous studies. The main goals of this project are to (1) understand the behavior of Puget Sound under current and future conditions based on hydrodynamic and water quality modeling of Puget Sound and (2) determine the influence of human nutrient inputs on low DO levels relative to natural contributors. If humans are contributing significantly to low levels of DO in Puget Sound, then subsequent phases would evaluate the level of nutrient reductions necessary to improve DO concentrations in Puget Sound. This on-going work supports the recommendation of listing Puget Sound as a Category 2.

Next Steps

We want to note that Ecology continues to work on studies and research in Washington - specifically, Puget Sound - to understand the natural variability in these coastal waters and to determine if anthropogenic sources are impacting aquatic life. These efforts could lead to findings of impairment and a resulting TMDL that would provide allocations to bring coastal waters back into compliance with standards, where anthropogenic sources are identified.

The state is also proactively working to identify science and data gaps in understanding ocean acidification and what steps the state can take to curb effects from ocean acidification at the regional and local level. To demonstrate the state's commitment, Washington's Governor Gregoire convened a Blue Ribbon Panel (Panel) on Ocean Acidification in February 2012. The Panel, which includes scientific experts, relevant agencies, and stakeholders, is to develop clear, actionable recommendations on understanding, monitoring, adapting, and mitigating ocean acidification in Puget Sound and Washington waters. The Panel results will be delivered in a report to the Governor by October 1, 2012. To get more information on what the department is doing to address climate change, including ocean acidification, go to <http://www.ecy.wa.gov/climatechange/index.htm>.