

MEMORANDUM

DATE: December 12, 2011
TO: Phil Bourquin, Community Development Director
Sarah Fox, Planner
FROM: David Sherrard, Parametrix
SUBJECT: Camas Shoreline Master Program
No Net Loss Summary Reevaluation

At your request, we have prepared a more detailed Cumulative Effects Analysis of the likely result of implementation of the proposed City of Camas Shoreline Master Program (SMP), based on information provided in various documents prepared as elements of the County Coalition SMP Update. Our conclusion is that there would likely be no net loss of ecological functions as a result of implementing the proposed City of Camas SMP in light of the existing conditions, likely future development, and general and specific requirements applied to all development.

This memorandum examines the conclusions in the following documents prepared as part of the Clark County Coalition SMP Update. Specific documents reviewed include:

- Memorandum from Reema Shakra, Teresa Vanderburg, Ikuno Masterson, ESA dated June 30, 2011 entitled Shoreline Master Program Update, Draft No Net Loss Summary – City of Camas
- Draft City of Camas Draft Cumulative Impacts Analysis, June 2011
- Draft, Clark County SMP Draft Cumulative Impacts Analysis, June 2011
- Appendix A, Assessment of Shoreline Functions along Clark County Shorelines, Table A-1: WRIA 28, Clark County Coalition Draft Cumulative Impacts Analysis, June 2011
- Appendix B, Vacant Buildable Lands Model, Clark County Coalition Draft Cumulative Impacts Analysis, June 2011
- Appendix C, Zoning Assumptions for Residential Vacant Lands, Clark County Coalition Draft Cumulative Impacts Analysis, June 2011
- Appendix E, Reach-Scale Analysis Matrices, Shoreline Inventory and Characterization, June 2010

In particular, this memorandum examines the conclusions in the June 30, 2011 No Net Loss Summary; specifically, the following Draft Conclusions found on page 4:

Anticipated industrial and high intensity development along the Columbia and Washougal Rivers have the potential for loss of ecological function. Both rivers are

considered Shorelines of Statewide Significance and may need additional protections. There also appears to be a potential for a high volume of residential development around Lacamas Creek and Lacamas Lake which could contribute to continued degradation of water quality. These demands on shoreline resources could lead to a net loss in shoreline function over the next twenty years.

In general, we find that the methodology used to describe existing conditions, reasonably foreseeable future development, potential impacts of foreseen development, and beneficial effects of existing programs is generally consistent with methodologies used for other county-wide Shoreline Master Programs.

The application of this methodology to the city of Camas, however, has limitations stemming largely from the county-wide scale, which does not consider the specific conditions found in Camas. The conclusions were also based on an overly generalized methodology used in measurement. For example:

- Appendix A, Assessment of Shoreline Functions along Clark County Shorelines, Table A-1 lumps together all development in High Intensity Designations on all Columbia River reaches on pages A-2 and A-3. This broad approach does not consider the distinctive and differing characteristics of individual reaches in terms of existing ecological functions, character of existing development, and the likely character of future development given SMP requirements (particularly buffers) and the application of those requirements to conditions on specific sites.
- The generalized application of these conclusions to Camas is summarized in Table 6-1 on page 10 of the Draft City of Camas Draft Cumulative Impacts Analysis, June 2011, which indicates that development may be expected on:
 - 19 acres of Commercial land constituting 2% of the shoreline
 - 51 acres of Industrial land constituting 5% of the shoreline
 - 66 acres of Residential land constituting 7% of the shoreline

These areas, however do not consider buffers required both for shorelines and for other on-site features such as wetlands.

- The amount of vacant land, and the presumed density of future development and generalized projection of impacts from this development, does not, however, take into consideration the specific conditions of specific parcels in the City of Camas, the specific character of likely development, or the effects of provisions in the Camas proposed SMP.

Cumulative impacts can be assessed more accurately by a more detailed analysis that takes into consideration the following factors:

- Existing ecological functions on specific reaches, which provides more accurate information than the broad reach analysis provided in Appendix E, Reach-Scale Analysis Matrices, Shoreline Inventory and Characterization, June 2010.
- The specific character of existing development, which affects ecological conditions and likely future development opportunities.
- The likely character of future development given SMP requirements (particularly buffers) and the application of those requirements to conditions on specific sites.

This more detailed assessment of potential impacts is provided in the attached Revised Cumulative Effects Analysis, Matrix of Potential Impacts by Reach 2011-11-07. This matrix also corrects minor errors in the previous Inventory and Cumulative Impacts Analysis.

In addition, we have addressed several potential changes developed since the October 6, 2011 Draft. These include:

- Minor text amendments responding to Washington State Department of Ecology (Ecology) comments, which were largely designed to bring specific provisions into compliance with Washington Administrative Code (WAC) 173-26.
- Applying a Medium Intensity shoreline designation in the northeast portion of Lacamas Lake. This would provide a center for mixed use development together with mitigation including relocation of Leadbetter Road and establishment of a continuous buffer of native vegetation.
- Change to a Medium Intensity shoreline designation for existing commercially zoned property including:
 - The Camas/Washougal Wildlife property on Lacamas Lake (Gun Club). This would involve a parallel designation with Medium Intensity upland of Leadbetter Road, and the Urban Conservancy waterward of the road
 - Property fronting Round Lake, including
 - 3016 and 2940 NE Everett involving about 250 feet of shoreline frontage, and
 - the mobile home park with about 600 feet of shoreline.

Our evaluation of additional elements related to specific properties is included in the attached matrix.

Our evaluation of the minor text amendments proposed is that they do not affect the standards that would be applied to future development; in most cases, these amendments either provide clarification or are slightly more stringent.

One important element of our review involves the application of critical area codes included in Appendix D. Our review includes the following assumptions about implementation:

- Frequently Flooded Areas (Section 16.55). These provisions do not allow new residential lots within floodplains (16.57.070.D.) but this prohibition does not, however, apply to other uses.
- Geologically Hazardous Areas (Section 16.59). These provisions provide for a management zone that does not allow an increased risk of landslide occurrences, but does allow engineered solutions that may permit appropriately designed development. There are no areas or buffers where development is prohibited.
- Wetlands (Section 16.53). These provisions provide for buffers consistent with current Ecology guidelines within Shoreline Management Act jurisdiction.

- Fish and Wildlife Habitat Conservation Areas (FWHCA) (Section 16.61). These provisions provide for a general buffer of 150 feet for shorelines (16.61.040.D.). These buffers however may be varied
 - Buffers may be reduced in(16.61.030.D.) to reflect the conditions on the site.
 - Buffers for specific areas have been established in the SMP that recognize existing conditions for:
 - The area of Georgia Pacific on the Columbia River;
 - The residential areas in Goot Park on the Washougal River; and
 - Along the Columbia River near the east city limits.
 - Building setbacks indicated in Table 6-1, Shoreline Use, Modification and Development Standards, are less than the 150-foot buffer in many cases. Implementation is subject to footnote 2 which provides: “Uses may be set back less than the 150-foot Critical Areas Type S buffer of 150-feet only in cases where existing vegetation is an ineffectual buffer given existing land use activity and development as documented in the Inventory and Characteristics report (2010). If the site has evidence of shoreline modification (e.g. clearing) without permits, then this exception is not applicable.”

In applying these provisions to the cumulative effects analysis, the following general presumptions have been made

- Shoreline buffers will equal existing vegetation or 150 feet, whichever is less.
- Wetland buffers will be provided in accordance with applicable codes.
- Geologic hazard provisions will not result in protection of buffers adjacent to streams in excess of FWHCA buffers.
- Floodplain provisions will prohibit new residential lots but not other types of development, and will not control clearing on new residential lots if the dwelling is outside of the floodplain.

These assumptions are reflected in the attached Matrix of Potential Impacts by Reach without specific additional reference.

Based on this more detailed analysis, we conclude that No Net Loss of Ecological Function is likely from implementing the proposed City of Camas Shoreline Master Program, in light of the following general requirements applied to all development:

- General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions and that the area preserved will maintain hydrologic, water quality, and habitat functions.
- Much of the new development that will take place on the shoreline will not be water dependent uses. Those uses are required to provide restoration of ecological functions (SMP 6.3.4.4.c.i. and 6.3.6.3.c.i)
- Fish and Wildlife Conservation Area buffers in (Camas Municipal Code [CMC] 16.61.040) will be applied to non-water dependent uses, which will generally

provide buffers in the range of 150 feet, or equivalent to existing buffers on sites where narrower buffers are currently present.

- Much of the shoreline also has extensive wetlands, which are subject to buffers specified in CMC 16.53.040 that substantially reduced the development potential of many vacant parcels while maintaining ecological functions.
- There is very little potential for new residential development at the land/water interface and very little potential for residential docks in any water bodies.

Please refer to the more detailed assessment of potential impacts in the attached Matrix of Potential Impacts by Reach for the detailed analysis that supports these conclusions.

City of Camas, Shoreline Master Program

Revised Cumulative Effects Analysis, Matrix of Potential Impacts by Reach December 12, 2011

Note to readers: The white colored rows describe existing conditions.

The green colored rows describe potential development of properties and potential effects.

Reaches in the Clark County Shoreline Inventory are designated as "Reach." Further division of those reaches for this analysis are designated "Sub-Reach"

Redline and strikeout text is used only to correct information in the June 2010 Shoreline Inventory.

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Function Indicators	<p>Hydrologic function</p> <p>High IWA Hydrology Score = functional 2009 Ecology Watershed Characterization = Protection or Restoration Tidal Influence Lacks levees, significant Existing Modifications or confinement High to moderate Channel Migration Zone (CMZ) Stream Health Report, SNAP reports indicate healthy waterbody</p> <p>Moderate IWA Hydrology Score = Moderate 2009 Ecology Watershed Characterization = Restoration or Develop Some levees, modification or confinement Moderate to low CMZ Stream Health Report, SNAP: moderate function</p> <p>Low IWA Hydrology Score = Impaired 2009 Ecology Watershed Characterization = Develop Has levees, confinement, significant Existing Modifications Low or no CMZ Stream Health Report, SNAP: low function</p>	<p>Riparian function</p> <p>High IWA Score Riparian = F or M Land Cover in Reach = 50% or more Forested or Floodplain /Riparian Aerial photographs from 2009 show 150 feet or more forested Existing Riparian Zone Quality in majority (75%) of shoreline planning area Developed areas in the reach = less than 5% (USGS 2010 Land Cover data)</p> <p>Moderate IWA Score Riparian = M or I Land Cover in Reach = between 15 and 50% Forested or Floodplain/Riparian Aerial photographs from 2009 show 100 feet or more forested Existing Riparian Zone Quality in 50 percent or more of the shoreline planning area Developed areas in the reach = 5 to 10%</p> <p>Low IWA Score Riparian = I Land Cover in Reach = 15% or less Forested, Floodplain or Riparian Aerial photographs from 2009 show less than 100 feet or more forested Existing Riparian Zone</p>	<p>Hyporheic (or Water Quality Improvement) function</p> <p>High IWA Sediment Score = F or M Watershed Characterization = denitrification high Contains Category 1 CARA Good water quality (not on 303d list) or potential for good water quality Significant area of wetlands in reach = high potential to improve water quality Significant area of floodplain in reach=% undeveloped floodplain in reach</p> <p>Moderate IWA Sediment Score = M or I Watershed Characterization = denitrification moderate No Category 1 CARA Moderate water quality (303dlist for few parameters) Moderate area of wetlands in reach = medium potential to improve water quality Moderate to minor area of floodplains in reach = % undeveloped floodplain in reach</p> <p>Low IWA Sediment Score = I Watershed Characterization =</p>	<p>Habitat function</p> <p>High Salmon Recovery Priority = Tier 1 or 2 Tidal Influence at mouth of river Multiple Priority Habitats and Species present WDNR plant species present High quality wetlands; High %wetlands in shoreline planning area Stream Health Report show healthy fish populations</p> <p>Moderate Salmon Recovery Priority = Tier 2 or 3 Non tidal or moderate habitat quality Few PHS Species Present or none Few WDNR plant species present or none Moderate quality wetlands; Moderate % wetlands Stream Health Report shows moderate fish populations</p> <p>Low Salmon Recovery Priority = Tier 4 or not rated Non tidal or low habitat quality No PHS Species Present No WDNR plant species present Low quality wetlands; Low % wetlands Stream Health Report shows few fish species</p> <p>Key:</p>	

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
		Quality in majority of shoreline planning area Developed areas in the reach = over 10%	denitrification low No Category I CARA Low water quality (303d list for multiple parameters) Small area of wetlands in reach = low potential to improve water quality Minor area of floodplain in reach = % undeveloped floodplain in reach	IWA : Integrated Watershed Assessment by Lower Columbia Fish Recovery Board (2010) (I=Impaired, M=Moderately)	
Reach COLU_RV_03c (UGA) Western UGA boundary to western city limits Length miles = 0.9 Existing Land Use Single-family residential – 49% Vacant - 51% Existing Modifications 4 mapped docks/piers Conversion to residential development Existing Riparian Zone Quality Poor quality. Sparsely vegetated. Trees lacking Existing Shoreline Designation Urban Medium/Low	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Rating clarification: Moderate The vacant portion of the shoreline does not have heavy native tree cover for unknown reasons. It is possible that this is because it has a bedrock substrate or contains a scrub-shrub wetland	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Moderate area of wetlands in reach = medium potential to improve water quality	Low to Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions - Habitat	Reach 3: Tier 1; tidal influence; wetlands; impaired water quality for temperature and dissolved oxygen; riparian zone characterized by residential backyards with some trees; multiple docks and piers, hard armoring, conversion to residential and park lands, and roadway crossing
Reach COLU_RV_03c (UGA) Western UGA boundary to western city limits. Within the UGA. Length miles = 0.9 Development Potential Zoning R-10 (county) Proposed Shoreline Designation - Medium Intensity (no change) The area between the railroad and the river is about 300 feet wide. Vacant Parcel - The western half of the reach (about 2,000 feet) is an undeveloped 16 acre parcel zoned R-10. A small stream flows across the BNSF With continuation of existing	High function will likely remain. Little likely change or degradation Vacant Parcel - Undeveloped areas will preserve hydrologic functions under SMP 5.3 Critical Areas Protection; CMC 16.53.040 wetland Standards Small developable vacant areas will observe CA buffers and meet current stormwater standards in CMC 14.02 Stormwater Control Infill lots will have little effect on the already degraded/channelized water conveyance	Moderate function will likely remain. Little likely change or degradation Vacant Parcel - Undeveloped wetland areas will preserve riparian functions under SMP 5.3 Critical Areas Protection; CMC 16.61.040 Performance standards—Fish and Wildlife Habitat Conservation Areas (FWHCA). Small developable vacant areas will observe CA buffers Infill lots will have little effect on the already degraded/channelized water conveyance	Moderate function will likely remain. Little likely change or degradation Vacant Parcel - Undeveloped areas will preserve water quality functions under SMP 5.3 Critical Areas Protection; CMC 16.53.040 wetland Standards Small developable vacant areas will observe CA buffers and meet current stormwater standards in CMC 14.02 Stormwater Control Infill lots will have little effect on the already degraded functions	Low to Moderate function will likely remain. Little likely change or degradation Vacant Parcel - Buffer areas will preserve habitat functions under SMP 5.3 Critical Areas Protection CMC 16.53.040 wetland Standards; CMC 16.61.040 Performance standards FWHCA Small developable vacant areas will observe CA buffers and largely preserve habitat values Infill lots will have little effect on the already degraded habitat SMP 6.4.5 Shoreline Stabilization	Meets No Net Loss Criteria because little change in ecological conditions will occur from infill development because of limited development potential and preservation of wetland, FWHCA riparian buffers and restrictions on shoreline armoring.

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
trends, 10 to 20 lots could be developed in this area. With the Critical Areas (CA) Fish and Wildlife Conservation Area (FWHCA) buffer, flood plain as well as protected wetlands and buffers, little of the site could be developed. Single Family Infill – The eastern half of the reach has 6 existing lots and the potential for 3-4 infill lots				would avoid hard armoring.	
Reach COLU_RV_03d NOTE ORIGINAL REACH BOUNDARIES Western city limits to Washougal River Length miles = 3.1 Existing Land Use Industrial – 91% SR-14 crosses the river in two locations Existing Modifications 9 mapped docks/piers Existing Shoreline Designation Urban Medium/Low and Urban High	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Poor to moderate quality. Forested vegetation on portions of Lady Island. Narrow buffer zones with little vegetation along river bank. Trees lacking.	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Moderate area of wetlands in reach = medium potential to improve water quality	Low to Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions - Habitat	Unique Features 407 acres of wetland Confluence with Washougal River Georgia-Pacific Paper Mill long-term, existing development on Lady Island and north bank of river
Sub-Reach COLU_RV_03d-1 City Limits to 1,500 feet west of SW Zillah Street Length = 2,500 feet Width between railroad and river is about 250 feet. Northerly 1,000 feet includes 4 single family lots, southerly 1,500 feet is undeveloped. Potential for 10 to 20 lots, depending on size and buffers Existing Shoreline Designation: Urban Medium/Low	Rating clarification: West – Low, –East – Moderate The IWA Hydrology Score relates to long a section of river and is not able to take local conditions into consideration Developed portions have continuous shoreline armoring. Little natural function along river.	Low	Rating clarification: Low Absence of features contributing to denitrification or other hyporheic functions; Short distance between BNSF Rw and shoreline and bedrock substrate provides little opportunity	Low Habitat function limited by limited area between BNSF Rw and shoreline, fragmentation by BNSF Rw, SW 6 th Ave and SR 14 as well as limited vegetation cover	Narrow strip of land between railroad and river
Sub-Reach COLU_RV_03d-1 Development Potential Zoned R-10 Proposed Shoreline Designation- Medium Intensity Southerly 1,500 feet would accommodate between 10 and 15	North – Low; South – Moderate function will likely remain. Little likely change or degradation 1,500 linear feet of developable vacant areas will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers,	Low function will likely remain. Little likely change or degradation with SMP 5.3 Critical Areas, CMC 16.61.040 FWHCA riparian buffers	Low function will likely remain. Little likely change or degradation Infill lots will have little effect on the largely absent functions	Low function will likely remain. Little likely change or degradation Infill lots will have little effect on the already limited habitat Limited buffer areas will preserve some aquatic habitat functions under SMP 5.3 Critical Areas CMC 16.61.040	Meets No Net Loss Criteria because little change in ecological conditions will occur from infill development because of limited function with, FWHCA riparian buffers and restrictions on shoreline armoring.

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
waterfront lots. Lot depth is limited by distance between BNSF R/W and shoreline	although limited lot depth may lead to less buffer. Future development will meet current stormwater standards in CMC 14.02 Stormwater Control			FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	
Sub-Reach COLU_RV_03d-2 1,500 feet east west of SW Zillah Street to SR 14 Bridge Length miles = 1.2 Zoning – HI, Heavy Industry Depth between railroad and river varies from 300' to 650' 37 acre parcel owned by Georgia Pacific Existing Shoreline Designation: Urban High	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic Large area with variety of wetland and stream resources and complex vegetation community No levees	High Very dense complex riparian vegetation, LWD, no disturbance	High Large area with variety of wetland and stream resources and complex provides high potential for denitrification and other water quality functions	High 50 acre parcel with complex habitat including sloughs and wetlands is large and complex enough to provide substantial habitat value despite isolation by urban development to the north	
Sub-Reach COLU_RV_03d-2 Development Potential Zoned HI – Heavy Industrial Proposed Shoreline Designation- Medium Intensity 37 acre parcel may accommodate approximately 10 to 15 developable acres outside of riparian and wetland buffers. The HI district has few bulk limitations, the entire developable site could be covered by impervious surface and buildings	High function would remain. Potential for change or degradation depend on the extent to which riparian and wetland buffers preserve hydrologic features relatively intact. Non-water dependent development will preserve FWHCA riparian buffers which are currently heavily vegetated. Water dependent uses will not provide riparian buffers for water dependent facilities. All development will meet current stormwater standards in CMC 14.02 Stormwater Control - All development must meet current codes.	High function would remain. Potential for change or degradation will depend largely on site design. Non-water dependent development will preserve 150' FWHCA riparian buffers, but may not be sufficient to preserve all functions. Water dependent uses will not provide riparian buffers for water dependent facilities.	High function would remain. Potential for change or degradation will depend largely on site design and the extent to which riparian and wetland buffers preserve features in a system that continues to provide denitrification and other water quality functions. Extensive wetland areas and buffers will retain many functions.	High function would remain. Potential for change or degradation will depend largely on site design and the extent to which riparian and wetland buffers preserve habitat in a system that is not fragmented and continues to provide the complexity of vegetation and other habitat features. Water dependent uses will not provide riparian buffers for water dependent facilities and would have the greatest potential to change habitat functions. General Shoreline Use and Development Regulation 5.1.10 requires that all development achieve no net loss of ecological functions	Meets No Net Loss Criteria with the presumption that General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions and that area preserved will maintain hydrologic, water quality, and habitat functions. In addition, development is likely to be limited to the portions of the site furthest from the river. Future use is likely to be non-water-dependent and would be required to incorporate restoration which would improve conditions.
Sub-Reach COLU_RV_03d-3 SR 14 Bridge to Washougal River – (Alignment of SE Adams Street) Length = 7,600 ft Zoning – HI, Heavy Industry Existing Shoreline Designation: Urban High	Rating clarification: Low The IWA Hydrology Score relates to a long section of river to take and is not able to take local conditions into consideration Developed portions are almost entirely impervious surface, materials	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian This rating is appropriate for this sub-reach Little or no riparian vegetation,	Rating clarification: Low Absence of features that contributing to denitrification or other hyporheic functions; Reach is almost entirely impervious.	Low Habitat function eliminated by impervious area and building except for easterly mixed vegetation in final 1,600 ft	

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Major Land Use: Vacant industrial land that extends approximately 2,000 ft east of bridge is a narrow area between BNSF R/W and the river. Further east about 4,000 linear ft is occupied by Specialty Minerals and the Georgia Pacific Paper Mill, about 1,600 feet is a vegetated shoreline margin behind a shipping warehouse	storage and buildings, continuous shoreline armoring. No shoreline buffers In-water structures for materials transfer Little natural function along river.	upland almost completely altered.			
Sub-Reach COLU_RV_03d-3 Development Potential Zoned HI – Heavy Industrial Proposed Shoreline Designation- High Intensity (no change) Existing parcels are virtually totally developed, any alternative use would have similar impervious area.	Low function will likely remain. Little likely additional degradation would occur from additional or alternative industrial development. Low level of function will likely remain.	Low function will likely remain. Little likely additional degradation would occur from additional or alternative industrial development. Low level of function will likely remain.	Low function will likely remain. Little likely additional degradation would occur from additional or alternative industrial development. Low level of function will likely remain.	Low function will likely remain. Little likely additional degradation would occur from additional or alternative industrial development. Low level of function will likely remain.	Meets No Net Loss Criteria with the presumption that General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions. Low level of function will likely remain. Future use is likely to be non-water-dependent and would be required to incorporate restoration which would improve conditions.
Sub-Reach COLU_RV_03d-4 Lady Island – NE section Right Bank on Camas Slough between two SR 14 bridge crossings Existing Shoreline Designation: Urban High and Urban Medium/Low (at western end) Length =4,700ft Major Use: Water and Waste Treatment for Georgia Pacific	Moderate Upland substantially altered Little marginal vegetation except westerly 1,700 feet with buffer of 180-300' 8 acre vegetated area Easterly 500 feet includes 3 acre vegetated area Little shoreline armoring	Moderate Little riparian vegetation except westerly 1,700 feet with buffer of 180-300' Easterly 500 feet includes 3 acre vegetated area Intervening 3,000 ft mixed small deciduous tree cover	Moderate to Low Little inland vegetation or wetland area to provide water quality function.	Rating clarification: Moderate Low Habitat function limited by extensive clearing, habitat fragmentation, proximity impacts of SR 14	Lady Island contains the Georgia-Pacific wastewater treatment system and solid waste landfill
Sub-Reach COLU_RV_03d-4 Development Potential Zoned HI – Heavy Industrial Proposed Shoreline Designation- High Intensity and Medium Intensity at opposing ends of island. 80 acre parcel may accommodate approximately 65 developable acres outside of 150' riparian buffers. The HI district has few bulk limitations,	Moderate function would remain. Potential for change or degradation will depend largely on site design. Non-water dependent development could preserve and enhance riparian buffers and result in a larger net vegetated area on the site and provide greater function. Water dependent uses will not provide riparian buffers for water	Moderate function would remain. Potential for change or degradation will depend largely on site design. Non-water dependent development could preserve and enhance riparian buffers and result in a larger net vegetated area on the site and provide greater riparian function. Water dependent uses would not provide riparian buffers at water	Moderate to Low function would remain. Little additional degradation would occur from additional or alternative industrial development.	Low function would remain. Potential for change or degradation will depend largely on site design. Non-water dependent development could preserve and enhance riparian buffers and result in a larger, less fragmented vegetated area and provide greater habitat function. Water dependent uses would not provide riparian buffers at water	Meets No Net Loss Criteria with the presumption that General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions. Preservations and enhancement of buffers in tandem with the shoreline designation of Medium Intensity (at both ends of the island) with non-

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
the entire developable site could be covered by impervious surface and buildings	dependent facilities. New development would meet current stormwater standards in CMC 14.02 Stormwater Control.	dependent facilities.		dependent facilities and would further fragment habitat.	water-dependent use would result in generally improved functions.
Sub-Reach COLU_RV_03d-5 Lady Island –SW of SR 14 Right Bank on Camas Slough, Left Bank on Columbia river Length miles =3.7 Major Use: Water and Waste Treatment for Georgia Pacific Existing Shoreline Designation: Urban High	Moderate to High Upland substantially altered Buffer vegetation along water 150 to 300 feet wide, 50 acre vegetated area at west point, 48 acre vegetated area at east point, total vegetated area about No shoreline armoring	High Buffer vegetation along water 150 to 300 feet wide, about 90 acres of riparian vegetation No shoreline armoring	Moderate Limited inland vegetation and wetland area to provide water quality function	Moderate to High Buffer vegetation along water and blocks of vegetation total about 150 acres, island limits to species that swim	
Sub-Reach COLU_RV_03d-5 Development Potential Zoned: HI – Heavy Industrial Proposed Shoreline Designation- High and Medium Intensity) 80 acre parcel may accommodate approximately 65 developable acres outside of 150' riparian buffers. The HI district has few bulk limitations, the entire developable site could be covered by impervious surface and buildings	Moderate function will likely remain. Little likely potential for change or degradation. Would depend largely on site design. Non-water dependent development would preserve riparian buffers. Total vegetated area reduced. Water dependent uses would not provide riparian buffers at water dependent facilities. New development would meet current stormwater standards in CMC 14.02 Stormwater Control	Moderate function will likely remain. Little likely potential for change or degradation. Would depend largely on site design. Non-water dependent development would preserve a somewhat smaller riparian buffer. Total vegetated area reduced. Water dependent uses would not provide riparian buffers at water dependent facilities.	Moderate function would remain. Reduction in total upland vegetated area could reduce water quality function slightly.	Moderate function will likely remain. Potential for change or degradation will depend largely on site design. Non-water dependent development could preserve and riparian buffers but result in less habitat function due to less area.	Meets No Net Loss Criteria with the presumption that General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions and most likely would involve no increase in footprint or off-site mitigation. New non-water-dependent use would be required to incorporate restoration which would improve conditions.
Reach COLU_RV_04a Columbia River from the mouth of the Washougal River to eastern city limits River Miles 0.6 Existing Land Use Vacant – 37% Single-family residential – 26% Public Facility – 18% Undetermined – 10% Existing Shoreline Designation:	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian	Low IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	Low to Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions - Habitat	Existing Modifications 4 mapped docks/piers Conversion to residential Unique Features: Camas wastewater treatment facility

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Urban Medium/Low					
Reach COLU_RV_04a Development Potential Zoning: RC, R-15 and R-10 Proposed Shoreline Designation: Medium Intensity (no change) Vacant vegetated land is City owned No potential for additional development. Single family may remodel	Moderate function will likely remain. Little likely change or degradation is likely due to lack of future development.	Low function will likely remain. Little change or degradation is likely due to lack of future development. Low level of function will likely remain with SMP 5.3 Critical Areas, CMC 16.61.040 FWHCA riparian buffers	Low function will likely remain. Little likely change or degradation is likely due to lack of future development.	Low function will likely remain. Little likely change or degradation is likely due to lack of future development.	Meets No Net Loss Criteria because little change in ecological conditions will occur due to lack of future development. No additional docks are allowed per the subdivision approval and active shoreline permit.
Reach WASH_RV_01 Mouth of Washougal River, from Lacamas confluence to Columbia River River Miles + 0.7 Existing Land Use Industrial – 57% Vacant – 33% Modification One road crossing and one railroad crossing 43% impervious Levees on 50% or more of shoreline Unique Features: Georgia-Pacific Paper Mill. Existing Shoreline Design.: Urban High (west bank) Urban Medium /Low (east bank) and Conservancy (islands)	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low to Moderate Rating clarification: Moderate to High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Varies. Some areas well vegetated, other areas residential.	High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	High IC Ch 10 Map 10-4 Reach Scale Ecological functions - Habitat	Supports federally listed Chinook salmon, chum salmon, coho salmon, and steelhead (Table 2-5) (Map 5). Rearing habitat for juvenile Chinook salmon and to serve as a migration corridor in the fall for adult Chinook, fall chum and coho (WDFW, 2009), no spawning habitat Summer and winter steelhead spawn in portions of the river Rearing habitat for summer steelhead.
Sub-Reach WASH_RV_01-1 Mouth of Washougal River, west Bank (Alignment of SE Adams Street to BNSF RR) Vegetated buffers range from 125 ft to 1,400 ft Parcel between Birch and Everett Streets contains extensive wetlands.	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Rating clarification: Moderate Extensive vegetated buffers	Rating clarification: Moderate About 40% of the site has large enough buffers and wetlands to provide hyporheic functions	Rating clarification: Moderate Vegetated buffer areas are isolated and fragmented by intervening BNSF and SR 14 from habitat areas to the north	Likely migration corridor and rearing only Substrate and flow conditions not suitable for salmon or steelhead spawning
Sub-Reach WASH_RV_01-1 Mouth of Washougal River west Bank Development Potential Zoned HI – Heavy Industrial Little potential for industrial development with existing 150'	Moderate function would remain. Potential for change or degradation will depend on site design. Non-water dependent development would preserve and enhance riparian buffers and result in preservation of most of	Moderate function would remain. Potential for change or degradation will depend largely on site design. Non-water dependent development would preserve and enhance riparian buffers and result in preservation of	Moderate function would remain. Little additional degradation of buffers would occur from additional or alternative industrial development.	Moderate function would remain. Little additional degradation of buffers would occur from additional or alternative industrial development.	Meets No Net Loss Criteria with the presumption that General Shoreline Use and Development Regulation 5.1.10 will require that all development achieve no net loss of ecological functions and most likely

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
riparian buffers and wetland +wetland buffer preservation requirements	the existing buffer area and wetlands on the site. New development would meet current stormwater standards in CMC 14.02 Stormwater Control.	most of the existing buffer area and wetlands on the site. Water dependent uses would not provide riparian buffers at water dependent facilities.			would involve no increase in footprint or off-site mitigation. New non-water-dependent use would be required to incorporate restoration which would improve conditions.
Sub-Reach WASH_RV_01-2 Mouth of Washougal River east Bank (SR 14 to BNSF RR) Existing Shoreline Designation: Conservancy (islands) and Urban Medium/Low	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Rating clarification: Moderate Extensive vegetated buffers	High Complex area of sloughs and wetlands off the main channel provide hyporheic functions along entire reach except BNSF RR and 6 th Street.	High Area of sloughs and wetlands is large and complex enough to provide substantial habitat value	Complex area of sloughs and wetlands. Restoration work is occurring on island adjacent to SE 6 th bridge. Vegetated buffers range from 125 ft to 1,400 ft from main channel but are between 80 and 300 feet from the edge of sloughs and wetlands
Sub-Reach WASH_RV_01-2 Mouth of Washougal River east Bank Development Potential Zoned HI – Heavy Industrial Proposed Shoreline Designation: Urban Conservancy Little realistic potential for industrial development.	Moderate function would remain given the low likelihood of development.	Moderate function would remain given the very low likelihood of development.	High function would remain given the very low likelihood of development.	High function would remain given the very low likelihood of development.	Meets No Net Loss Criteria with the presumption of a very low likelihood of development. If development occurred, it likely would be non-water-dependent and would be required to incorporate restoration which would improve conditions.
Sub-Reach WASH_RV_01-3 BNSF RR to confluence of Lacamas Creek. Zoning: Joy Street to NE 3rd is MF. SE 6 th to Joy is MX.	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Buffer limited to steep slope adjacent to river	Rating clarification: Low Buffer limited to steep slope adjacent to river. No wetlands. Not enough vegetation to provide hyporheic functions	Rating clarification: Low Vegetated buffer on slope has limited habitat value and is isolated and fragmented	
Sub-Reach WASH_RV_01-3 Proposed Shoreline Designation- Medium Intensity (no change) Little or no potential for additional development. Single family residences may remodel, however they are limited from developing waterward of the OHWM with steep slopes.	Moderate function will likely remain. Little change or degradation is likely due to low likely level of future development.	Low function will likely remain. Little likely change or degradation is likely due to low likely level of future development. Low level of function will likely remain with SMP 5.3 Critical Areas, CMC 16.61.040 FWHCA riparian buffers	Low function will likely remain. Little likely change or degradation is due to low likely level of future development.	Low function will likely remain. Little change or degradation is likely due to low likely level of future development.	Meets No Net Loss Criteria because little change in ecological conditions will occur due to low likely level of future development and existing generally low function. If additional multi-family development occurs it would meet non-water-dependent criteria to incorporate restoration which would improve conditions.
Reach WASH_RV_02a North bank from Lacamas Creek to eastern city limits	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low to Moderate Rating clarification: Moderate to High	High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	High IC Ch 10 Map 10-4 Reach Scale Ecological functions - Habitat	Existing Modifications 1 joint utility and pedestrian bridge 1 mapped dock/pier

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
River Miles 1.1 Existing Land Use Industrial – 1029% Vacant – 54%15% SF Residential 15% City Owned Open Space 60% Shoreline Designation: Natural		IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Varies. Some areas well vegetated, other areas residential.			200-foot ROW for power lines. Unique Features Washougal River Greenway city owns approx. 4,000 linear feet, includes abandoned gravel quarry
Reach WASH_RV_02a Proposed Shoreline Designations: Natural Development Potential Site at the Confluence with LA camas Creek is largely wetland. Industrial development is likely to be limited to a small area adjacent to the BNSF Rv. Single-family area at the eastern end is established. City parcel may be the future site of a new joint-city community center.	High function will likely remain. Little likely change or degradation Developable vacant areas will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers. Future development will meet current stormwater standards in CMC 14.02 Stormwater Control	Moderate to High function will likely remain. Little likely change or degradation of the shoreline will result because development will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers.	High function will likely remain. Where hyporheic functions are present because of extensive wetlands or vegetated uplands, they will be preserved. Elsewhere steep banks provide limited function	High function will likely remain. Land preserved in city ownership in greenway is large and complex enough to continue to provide habitat Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria because little change in ecological conditions will occur from development with, FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring. Future use is likely to be non-water-dependent and would be required to incorporate restoration which would improve conditions.
Lacamas Creek Reach LACA_CR_01a South bank of Lacamas Creek between Washougal River and Round Lake Length miles = 0.81.4 Existing Land Use Industrial – 22% Open space – 18%69% Multi-Family – 14% School property - Vacant – 45% Existing Shoreline Design: Conservancy	Moderate Rating clarification: Moderate to High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Moderate Rating clarification: Moderate to High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality High quality within the park with dense vegetation. Moderate quality outside of park. Banks vegetated with shrubs but floodplain partly developed.	Moderate Rating clarification: Moderate to High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	Moderate Rating clarification: Moderate to High IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat	Modification Dam on Lacamas Lake. Lacamas Creek Park (city-owned)
Lacamas Cr. Reach LACA_CR_01a Proposed Shoreline Designation: Urban Conservancy (no change) Development Potential unlikely at north area near Round Lake that is zoned R-7.5 given that is owned by Georgia Pacific. Redevelopment unlikely in MF-24 area near NE 3 rd Ave. where there is a wastewater	Moderate to High function will likely remain. Little likely change or degradation Developable vacant areas will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers. Future development will meet current stormwater standards in CMC 14.02	Moderate to High function will likely remain. Little likely change or degradation of the shoreline will result because development will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers.	Moderate to High function will likely remain. Where hyporheic functions are present because of extensive wetlands or vegetated uplands, they will be preserved. Elsewhere steep banks provide limited function	Moderate to High function will likely remain. Land preserved in public ownership in greenway is large and complex enough to continue to provide habitat Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA	Meets No Net Loss Criteria because little change in ecological conditions will occur from development given that it is largely publicly-owned. Georgia Pacific ownership also ensures a level of protection. If future use occurs it is likely to be non-water-dependent and would be required to incorporate restoration

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
pump station.	Stormwater Control			SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	which would improve conditions.
Lacamas Creek LACA_CR_01b (UGA) East bank of Lacamas Creek between Washougal River and Round Lake Length miles = 0.7 Existing Land Use: Open Space – 100% Clark County Lacamas Lake Park Existing Shoreline Design: Conservancy	Moderate Rating clarification: High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Moderate Rating clarification: High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality High quality with dense vegetation.	Moderate Rating clarification: High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Large vegetated areas provide hyporheic functions along entire reach.	Moderate Rating clarification: High IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Large vegetated areas provide habitat functions along entire reach.	Existing Modifications Dam on Lacamas Lake. Trails through park (no parking lots or structures).
Lacamas Cr. Reach LACA_CR_01b Proposed Shoreline Designation: Natural Development Potential Site at the confluence with Washougal River is largely wetland No other developable sites.	High function will likely remain. Little likely change or degradation Developable vacant area will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers. Future development will meet current stormwater standards in CMC 14.02 Stormwater Control	High function will likely remain. Little likely change or degradation of the shoreline will result because development will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers.	High function will likely remain. Where hyporheic functions are present because of extensive wetlands or vegetated uplands, they will be preserved. Elsewhere, steep banks provide limited function	High function will likely remain. Land preserved in city ownership in greenway is large and complex enough to continue to provide habitat Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria because little change in ecological conditions will occur from development with FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring.
Lacamas Creek Reach LACA_CR_02a West bank of Lacamas Creek between Lacamas Lake and northwestern city limits Length miles =0.5 Existing Land Use Recreation – 41% Multi-family – 13% Vacant – 26% Shoreline Designation: Conservancy Existing Modifications: Conversion to recreational lands and multi-family housing.	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low Revised Rating –Moderate to High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality: Moderate to poor quality. Large areas of vegetation outside of golf course which is more sparsely vegetated. Golf course buffer ranges from 200 to 300 feet with ¼ to ½ wetlands and the remaining trees. Balance has dense trees, except for transmission line corridor	High Revised Rating –Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Limited areas of native vegetation provide moderate hyporheic functions.	Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat	Unique Features: 59 acres of wetland Heritage Trail Camas Meadows Golf Course
Lacamas Cr. Reach LACA_CR_01b Shoreline Designation: Urban Conservancy (no change) Development Potential Site at the northerly end of the reach is about 20 acres with 1,500 feet of shoreline. Development would retain buffers and golf course is considered	High function will likely remain. Little likely change or degradation Development will provide riparian buffers per SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland buffers. Future development will meet current stormwater standards in CMC 14.02	Moderate to High function will likely remain. Little likely change or degradation of the shoreline will result because development will observe riparian and wetland buffers.	High function will likely remain. Where hyporheic functions are present because of wetlands they will be preserved. Functions related to vegetated areas would be reduced.	Moderate function will likely remain. Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria because little change in ecological conditions will occur from development with FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring. Future use is likely to be non-water-dependent and would be required to incorporate restoration

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
an amenity that would likely not be converted to a more intensive use.	Stormwater Control				which would improve conditions.
Lacamas Creek Reach LACA_CR_02b (UGA) East bank of Lacamas Creek between Lacamas Lake and northern city limits Length miles = 0.7 Existing Land Use Institution Church Camp – 32% County Park 50% Single family residential – 34% Vacant, Commercial 10% Other Vacant – 15% Existing Modifications picnic shelters and restrooms	High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low Revised Rating –High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Moderate quality. Forested area associated with Camp Currie Over 60% of the shoreline has buffers of dense native vegetation in excess 500 feet. Sparser vegetation is present in the northerly portion of the reach.	High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Extensive areas of native vegetation and wetland areas provide high hyporheic functions.	Moderate Revised Rating –High IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Areas of vegetation and wetlands are large and complex enough to provide substantial habitat value	Unique Features 44 acres of wetland Camp Currie Shoreline Designation: Conservancy
Lacamas Cr. Reach LACA_CR_02b East bank to northern city limits Shoreline Designation: Urban Conservancy (no change) Development Potential Little development potential, unless the church camp redevelops, considered unlikely. Commercial land north of Goodwin Rd is isolated from the shoreline by a large wetland complex	High function will likely remain. No change if no development. If Church Camp were developed - little likely change or degradation Development will provide riparian buffers per SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland buffers. Future development will meet current standards in CMC 14.02 for stormwater control	High function will likely remain. No change if no development. If Church Camp were developed - little likely change or degradation of the shoreline would result because development will observe riparian and wetland buffers.	High function will likely remain. No change if no development. If Church Camp were developed - little likely change or degradation Where hyporheic functions are present because of wetlands they will be preserved. Functions related to vegetated areas would be reduced.	High function will likely remain. Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria because little change in ecological conditions will occur from development with FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring. Any future non-opens-space use is likely to be non-water-dependent and would be required to incorporate restoration which would improve conditions.
Round Lake Reach ROUN_LK_01a Western and smaller half of the lake that flows into a body of water that is locally known as Mill Pond and through to Lacamas Creek. Length miles = 0.9 Shoreline Designation: Conservancy Existing Zoning: Community Commercial (CC) Existing Land Use: Mobile homes – 83% Camas Produce Market - 10% Vacant - 35% Public 40% Unique Features	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	High Revised Rating –Moderate IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Moderate quality. Shoreline is mostly vegetated	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Limited areas of native vegetation provide moderate hyporheic functions.	Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat	Shoreline is heavily vegetated except for the existing mobile home park which has little riparian vegetation.

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Lacamas Lake Regional Park Mobile home park					
Round Lake Reach ROUN_LK_01a Western smaller half of the lake Proposed Shoreline Designation: Urban Conservancy (no change) Development Potential Existing market has obtained permits to expand .	Moderate function will likely remain. Development will provide riparian buffers per SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland buffers. Future development will meet current stormwater standards in CMC 14.02 Stormwater Control	Moderate function will likely remain. Little likely change or degradation of the shoreline will result because development will observe riparian and wetland buffers.	Moderate function will likely remain. Where hyporheic functions are present because of wetlands they will be preserved. Functions related to vegetated areas would be slightly reduced.	Moderate function will likely remain. Buffer areas will preserve continuity and provide aquatic and upland habitat functions under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria because little change in ecological conditions will occur from development with, FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring.
Round Lake Reach ROUN_LK_01a Alternative Shoreline Designation: Natural for balance with MI for area of existing commercial zoning <ul style="list-style-type: none"> 3016 and 2940 NE Everett involving about 250 feet of shoreline frontage, and the mobile home park with about 600 feet of shoreline. Development Potential Commercial development is anticipated on the northerly of the two properties No redevelopment of the Mobile Home site is anticipated in the foreseeable future .	High function will likely remain. Little likely change or degradation Developable areas will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, which will preserve existing native vegetation buffers. Future development will meet current standards in CMC 14.02 for stormwater control	High function will likely remain. Little likely change or degradation of the shoreline will result because development will observe SMP 5.3 Critical Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland Buffers.	High function will likely remain. Where hyporheic functions are present. Such uses are not present in the parcels proposed for MI designation	High function will likely remain overall in the reach. For the small area subject to MI designation existing habitat functions provided by native vegetation would be improved under SMP 5.3 Critical Areas CMC 16.61.040 FWHCA SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.	Meets No Net Loss Criteria As non-water-dependent uses, any new development in the proposed MI areas would be required to incorporate restoration which would improve ecologic conditions.
Round Lake Reach ROUN_LK_01b (UGA) Eastern and larger half of the lake Length miles = 1.1 Existing Land Use Open Space – 100% publicly owned Existing Modifications Presence of dam structure. Shoreline Designation: None (city) Conservancy (county) Unique Features Lacamas Lake Regional Park Lacamas Creek flows in and out of lake.	Moderate Revised Rating – High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic Revised Rating –High	High Revised Rating –High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality High quality. Shoreline is fully vegetated with shrubs and trees.	Moderate Revised Rating –High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Large areas of native vegetation and wetland complexes	Moderate Revised Rating –High IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Large contiguous areas of native vegetation provide complex habitat	
Round Lake Reach ROUN_LK_01b (UGA)	High function will remain. Little or no change in existing park management	High function will remain. Little or no change in existing park management	High function will remain. Little or no change in existing park management	High function will remain. Little or no change in existing park management	Meets No Net Loss Criteria Little or no change in existing park

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Eastern and larger half of the lake Development Potential: Little to None, the park is expected to remain primarily low-income and passive recreation.	of the shoreline	of the shoreline	of the shoreline	of the shoreline	management of the shoreline
Round Lake Reach ROUN_LK_01c Northerly Upland portion of the lake in Camas UGA Length miles = 0.1 Existing Land Use Adjacent to the lake Open Space including restroom and parking areas separated from the lake by the road Open Space -21% Public Facility – 14% Single-family residential – 17% Vacant – 32% Shoreline Designation: None (city) Conservancy (county) Existing Modifications 56% impervious surface Roadway parallels lake Unique Features Lacamas Lake Regional Park	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic Revised Rating –High	High Revised Rating –Moderate IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Moderate quality. Shoreline is mostly vegetated.	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	Moderate IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat	
Round Lake Reach ROUN_LK_01c (UGA) Northern portion of the lake Proposed Shoreline Designation: Urban Conservancy Development Potential: Little to none. The public park is expected to remain in its current configuration	Moderate function will remain. Little or no change in existing park management of the shoreline. Development changes across the street are unlikely to affect ecologic functions.	Moderate function will remain. Little or no change in existing park management of the shoreline. Development changes across the street are unlikely to affect ecologic functions.	Moderate function will remain. Little or no change in existing park management of the shoreline. Development changes across the street are unlikely to affect ecologic functions.	Moderate function will remain. Little or no change in existing park management of the shoreline. Development changes across the street are unlikely to affect ecologic functions.	Meets No Net Loss Criteria Little or no change in existing park management of the shoreline
Fallen Leaf Lake Reach FALL_LF_LK_01 south of Lacamas Lake Length miles = 1.2 Existing Land Use Open Space – 95% Single family _ 5% Mobile home – 37% Vacant – 58%	Moderate Revised Rating –High IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic Revised Rating –High	High IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality High quality. Shoreline is fully vegetated with shrubs and trees.	Moderate Revised Rating –High IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic Large areas of native vegetation and wetland complexes	Moderate Revised Rating –High IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Large contiguous areas of native vegetation provide complex habitat	

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
Shoreline Designation: Natural (west half) Conservancy (east half) Existing Modifications Natural area, owned by the city and Land Trust Unique Features picnic structure for public park, former cemetery. 17 acres of wetland.					
Fallen Leaf Lake Reach FALL_LF_LK_01 Entire lake Proposed Shoreline Designation: East Side – Urban Conservancy; West Side: Natural (no change) Development Potential: Little to none, park management to remain on majority of shoreland. Residential home could redevelop under existing zoning of multi-family.	High function will remain. No change in existing open space management of the shoreline	High function will remain. No change in existing open space management of the shoreline	High function will remain. No change in existing open space management of the shoreline	High function will remain. No change in existing open space management of the shoreline	Meets No Net Loss Criteria Little or no change in existing park management of the shoreline. Residential development would be restricted by CAO and shoreline buffers.
Lacamas Lake Reach LACK_LK_01a South (west) portion of the lake within city limits Length miles = 0.1 2.3 Existing Land Use Adjacent to Lake: City Park and Open Space 33% Property Owner Open Space 62% Commercial Recreation 5% Upland of buffers Mobile home – 23% Single-family residential – 17% 50% Recreation 10% Public Road 50% Undetermined – 14% Vacant – 33% Existing Shoreline Desig: Conservancy	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low Revised Rating –Moderate IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Existing Riparian Zone Quality Moderate quality vegetation with shrubs and trees along bank and residential development within floodplain. Entire shoreline has mature trees with buffers from 100' at steep bank at subdivision to 200 to 300 in City-owned open space	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic	Low IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Narrow shoreline buffer provides limited habitat value. Heritage trail introduces proximity impacts.	Water quality impaired due to PCBs and total phosphorus, impaired by invasive exotic species, fair overall health, pollutant loading from upstream; Osprey nests and territory, habitat type protected by WNHP; Unique Features Heritage Trail with a 200-foot conservation zone upon uphill property owners. Heritage Park
Lacamas Lake Reach LACK_LK_01a South (West) portion of the lake Proposed Shoreline Designation: Urban Conservancy (no change) Development Potential	Moderate function will likely remain. Little or no development on the shoreline is projected. If development occurs it will provide riparian buffers per SMP 5.3 Critical	Moderate function will likely remain. Little or no development on the shoreline is projected. If development occurs it will provide riparian and wetland buffers.	Moderate function will likely remain. Where hyporheic functions are present because of wetlands they will be preserved.	Low function will likely remain. Little or no development on the shoreline is projected. If development occurs it will provide riparian and wetland buffers. SMP	Meets No Net Loss Criteria because little change in ecological conditions will occur because little or no development is projected. If infill occurs it will provide development

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
There is virtually no private vacant land with lake frontage. Existing residences are restricted by the Lacamas Shores land use covenant and a requirement for use of (existing) joint-use dock. Not expecting to have substantial remodeling or additions in the next 20 years.	Areas Protection; CMC 16.61.040 FWHCA riparian buffers, and wetland buffers. Future development will meet current standards in CMC 14.02 for stormwater control			6.4.5 Shoreline Stabilization would avoid hard armoring.	with, FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring.
Lacamas Lake LACK_LK_01b (UGA) East side of the lake within UGA boundary Length miles = 6.32.7 Existing Land Use adjacent to Shoreline Ladbetter Road 50% Other Road – 5% Clark Co Open Space 30% Clark County park 10% Forestry –14% Institution –14% Single-family residential – 14% 5% Vacant –59% Existing Land Use upland of Ladbetter Road (50% of Shoreline) Forestry 50% Farmland 30% Approved subdivision with infrastructure. 20%	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Revised Rating –Moderate Poor riparian vegetation adjacent to Ladbetter Road About 40% of shoreline is heavily vegetated.	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic 104 acres of wetland	Low IC Ch 10 Map 10-4 Reach Scale Ecological functions – Habitat Narrow shoreline buffer along Ladbetter Road provides limited habitat value. About 40 percent of shoreline has complex habitat.	Existing Modifications Dam structure present. Flow diversions. Water quality impairments due to runoff. Unique Features Camp Currie Heritage Park Lacamas Creek flows through lake.
Lacamas Lake Reach LACK_LK_01c North upland portion of the lake within city limits, which was not in city's jurisdiction for last SMP update. Length miles = 0.5 Existing Land Use Agriculture – 13% Single-family residential – 25% Vacant – 33% Existing Shoreline Desig: Conservancy (county)	Moderate IC Ch 10 Map 10-1 Reach Scale Ecological functions – Hydrologic	Low IC Ch 10 Map 10-2 Reach Scale Ecological functions – Riparian Limited by narrow buffer between lake and Ladbetter Road	Moderate IC Ch 10 Map 10-3 Reach Scale Ecological functions – Hyporheic 104 acres of wetland	Low IC Ch 10 Map 10-4 Reach Scale	
Lacamas Lake Rch. LACK_LK_01b & c East side of the lake	Moderate function will likely remain. Little or no development on the	Low to Moderate function will likely remain. Little or no development on	Moderate function will likely remain. Where hyporheic functions are	Low function will likely remain at the shoreline.	Meets No Net Loss Criteria because little change in ecological conditions

Reach Information	Ecological functions				Other Information
	Hydrologic function	Riparian function	Hyporheic (or Water Quality Improvement) function	Habitat function	
<p>Proposed Shoreline Designation: Urban Conservancy (city)</p> <p>Development Potential The developable land is separated from the lake by Leadbetter Road. There is virtually no private vacant land with lake frontage. The 1.5 linear miles of land upland of Leadbetter Road are designated for planned development with a road system accessing the property from the east.</p>	<p>shoreline is projected. Development upland of Leadbetter Road will meet current stormwater standards in CMC 14.02 Stormwater Control to address water quality issues.</p>	<p>the shoreline is projected. Over the long term, narrowing of Leadbetter Road to a non-motorized trail may provide opportunities for enhancing riparian vegetation.</p>	<p>present because of wetlands they will be preserved.</p>	<p>Little or no development on the shoreline is projected. If development occurs it will provide riparian and wetland buffers. SMP 6.4.5 Shoreline Stabilization would avoid hard armoring.</p>	<p>will occur because little or no development is projected, and if infill occurs it will provide development with, FWHCA riparian buffers, wetland buffers and restrictions on shoreline armoring.</p>
<p>Lacamas Lake Rch. LACK_LK_01b & c East side of the lake</p> <p>Alternative Shoreline Designation: Provide an area of MI to provide additional opportunities for public use of the lake shoreline with the remaining frontage restored with</p> <ul style="list-style-type: none"> • Leadbetter Road would be set back from the shoreline • Native vegetation will be restored • Public access will be provided <p>A designation of MI upland of Leadbetter Road at the gun club will allow development consistent with zoning. The shoreline will remain Natural in a parallel designation.</p>	<p>Moderate function will likely remain and be improved by road relocation and shoreline restoration Future development will meet current standards in CMC 14.02 for stormwater control to address water quality.</p>	<p>Moderate function will likely result from road relocation and shoreline restoration.</p>	<p>Moderate function will likely result from road relocation and shoreline restoration.</p>	<p>Moderate function will likely result from road relocation and shoreline restoration.</p>	<p>Meets No Net Loss Criteria Any loss of function in the MI area would be compensated for by road relocation and shoreline restoration MI designation at the gun club would result in little impact since the site is isolated from the lake by the existing road.</p>

Column 1-5 Reach Description Existing Information Source: SHORELINE INVENTORY AND CHARACTERIZATION Volume 2: Urban Areas Chapter 2 City of Camas Draft: June 2010

http://cityofvancouver.us/shorelineupdate/Documents/Inventory_and_Characterization_Report_06_30_10_Volume_II/Chapter_2_City_of_Camas.pdf

Columns 2-5 Information Source: SHORELINE INVENTORY AND CHARACTERIZATION APPENDIX E - REACH-SCALE ANALYSIS MATRICES

http://cityofvancouver.us/shorelineupdate/Documents/Inventory_and_Characterization_Report_06_30_10_Volume_I/Appendix_E_Reach_Scale_Matrices/Appendix_E_Reach_Scale_Matrices.pdf

SHORELINE INVENTORY AND CHARACTERIZATION, CHAPTER 10 FINDINGS AND RECOMMENDATIONS

http://cityofvancouver.us/shorelineupdate/documents/inventory_and_characterization_report_06_30_10_volume_i/chapters/chapter_10_findings_and_recommendations.pdf

Column 6 Information Source: Clark County Coalition Draft Cumulative Impacts Analysis – Grant No. G1000058 APPENDIX A Assessment of Shoreline functions

along Clark County Shorelines Table A-1: WRIA 28 <http://cityofvancouver.us/shorelineupdate/Documents/June%202011%20CIA%20&%20NNL/Coalition/Appendix%20A%20WRIA%20Tables.pdf>