South Salish Sea
Coastal Catchment Analysis Project (CCAP)
Data Dictionary

September, 2016

Shoreline – shoreline segmented to match Nearshore Zone / Nearshore Catchment boundaries
Nearshore Zone (NZ)- Zone from Shoreline inland 200 meters
Nearshore Catchment (NC)- Catchments abutting shoreline
Upland Catchment (UC)- Catchments one catchment inland of nearshore catchment/abutting Nearshore Catchment
Island Catchment – Small island catchment. Attributed but not ranked
Interior Catchment – Catchment abuts an upland catchment. Used only to calculate Neighborhood scorings. Not used in rankings

- See GIS metadata for additional data definitions and procedures.

Shoreline Feature Class: Source file was WDNR ShoreZone Inventory line feature class which contains multiple shoreline & intertidal attributes.

Shoreline & Intertidal attributes. Used in relational database to calculate Nearshore Zone & Nearshore Catchment shoreline attributes.

- Note that 'inland' and 'interior' catchments do not have shoreline attributes.

CATCHMENT_ZONE_ID is the unique identifier for Shoreline, Nearshore Zones, & Catchments. The ID will be the same for a shoreline, Zone, & Catchment sharing the shoreline segement. ID used for feature classes joins & relates.

Catchments Feature Class: Source file was NWIFC: SSHIAPHydro SegCats (Waldo et. Al. 2008) Many edits were made to catchments to fill holes in the source file and to achieve a more uniform catchment size. Many catchments at stream mouths were also modified to more realistically include the ecological features and functions immediately adjacent to these stream mouth features.

Nearshore Zones Feature Class: Were derived by clipping the *Catchments* feature class 200 meters inland from the shoreline. Additional editing of the clipped layer was done to remove multipart artifacts from the topology, such as slivers and disconnected polygons.

Catchment Size. Northwest Indian Fishery Commission SSHIAP Catchments have been edited using topographic maps to fill holes within the polygon feature class and define a more uniform Catchment size with the intent of facilitating the ability of Project Partners to evaluate, place, & undertake projects upon the landscape at a project / site scale.

Mean size of Analysis Units

Nearshore Zones (1620 zones) : 19.1 acres
Nearshore Catchments (1620 catchments) : 50.6 acres
Upland Catchments (737 catchments) : 117.8 acres
Interior Catchments (552 catchments) : 165.3 acres
All Catchments (2909 catchments) : 89.4 acres

Shoreline (1620 segments) : 0.273 miles / 1441 feet

Source Data Availability:

Puget Sound Nearshore Ecosystem Restoration Project (PSNERP):

http://www.pugetsoundnearshore.org/

Download PSNERP GIS data via the link at;

http://www.pugetsoundnearshore.org/library.html

Washington Department of Natural Resources (WDNR) ShoreZone:

http://www.dnr.wa.gov/programs-and-services/aquatics/aquatic-science/nearshore-habitat-inventory

Northwest Indian Fisheries Commission (NWIFC); Salmon and Steelhead Stock Inventory Assessment Program (SSHIAP): Hydrography & Statewide Integrated Fish Distribution:

https://salishsearestoration.org/wiki/Salmon_and_Steelhead_Habitat_Inventory_and_Assessment_Program

National Oceanic and Atmospheric Administration (NOAA); Coastal Change Analysis Program (C-CAP):

https://coast.noaa.gov/dataregistry/search/collection/info/ccapregional

Shoreline Feature Class *note: Not included in online version of database

Field Name	Definition: Alias & Source
OBJECTID	ArcGIS internal ID
SHAPE	ArcGIS internal geometry
CATCHMENT_ZONE_ID	Unique feature ID. Used for GIS joins & relates. Nearshore Catchment & Nearshore Zone IDs match
CATCHMENT_TYPE	*Catchment Type:* Nearshore Zone, Nearshore Catchment,

	Upland Catchment, Interior Catchment*
ANALYSIS_AREA	*Analysis Area:* Sub-Area of Analysis. Nine areas defined in South Salish Sea
RNK_AREA	*Rank Area:* Rank of Zone / Catchments Area in acres
EMBAYMENT	*Embayment:* Pocket estuary/embayment in unit- SSHIAP
FORAGEFISH	*Forage Fish:* Documented Forage Fish (smelt & sand lance) Spawning along Shoreline unit - WDFW
INT_VEG	*Intertidal Vegetation*: Combination of the three intertidal vegetation datasets. Defined as patchy or continuous
PRIORITY_SED	*Priority Sediment:* Feeder Bluff present in unit - WDOE: Feeder Bluff Mapping of Washington
SUM_POS	*Sum of Positives:* Sum of Positively attributed ShoreZone characteristics: Pocket estuary, Forage_Fish, Intertidal_Vegetation,
OV_H20_ST	*Overwater Structures:* Over Water Structures including piers, docks, houses, & bulkheads. Temporary/seasonal structures not included
OV_H20_PM	*Overwater Structures per mile:* Over Water Structures per mile in unit. Indication of density.
OUTFALL	*Manmade Outfall:* Water outfall present in unit- PSNERP
RAMPS	*Boat Ramps:* Boat ramp present in unit – WRCO/WDFW & aerial photo review. Only significant ramps that bisect the intertidal zone
RAMPS_PM	*Ramps per Mile:* Number of ramps per mile along the Shoreline unit
MARINA	*Boat marina* present in unit- PSNERP & aerial photo review. Defined as Large, Medium, or Small
BREAK_JET	*Breakwater/Jetty* present in unit – PSNERP & aerial photo
ARMOR_LEN	Length in feet of armoring present in unit/segment
PERC_ARM	% of shoreline unit/segment that is armored
SUM_NEG	Sum of Negatively attributed ShoreZone attributes: *Boat_Ramp, OverWaterStructure, Breakwater_Jetty, Marina, Outfall*
NOTES_GIS	GIS notations and potential follow-up action needed
NOTES_GEN	Notation on action(s) taken or follow-up action needed
SHORE_LEN	*Shoreline length* in miles
SHAPE_Length	*Shoreline length* in feet. Managed internally by GIS

- Note about SUM_POS, SUM_NEG, & SUM_TOTAL for Shoreline.
  Just for reference.
  Be Aware that these attributes for Nearshore Zone & for Nearshore Catchments include additional landscape features/attributes beyond the shoreline.

NearshoreZone Feature Class: Nearshore Catchments clipped 200 meters inland

- **Note on Nearshore Zone & Catchment attributes**: Many attributes were defined by joining the Nearshore Zone & Catchment feature classes to the Shoreline feature class on the HYDRO_ID field. They are included in these feature classes to make them stand alone datasets and for ease of use.
- Note that in a number of instances the 200m clipping of the Nearshore Catchment to create the Nearshore Zones resulted in a multipart polygon. In these instances, the smaller of the multipart(s) were dissolved into the appropriate neighboring Nearshore Zone.
- **Note on Using GIS Geoprocessing tools on datasets included in this analysis and product:** Use of GIS geoprocessing to overlay various layers was used to initially indicate whether a given landscape attribute was present in a given catchment / zone. However, the multiple datasets used in this analysis and product came from multiple occasionally disparate data sources. As such, users should be aware that some features were represented differently in different datasets, for example WDOE uses polygons to define 303D Impaired Waters which when laid atop the hydrography layer (which is a line feature class) can results in streams (especially immediate tributaries) being erroneously positively identified by an overlay operation as being listed as Impaired Waters when they in fact are not. As such, overlay (and use of 'Select by Location') operations were reviewed to ensure the accuracy of the results and attribute calculations.
  If/when preforming additional GIS overlay / intersect operations it is strongly recommended that GIS generated results be reviewed at a catchment / zone scale to ensure accurate results.
- **Note on Attribute Rankings:** Rankings were calculated in MS Excel and then imported to the Feature Classes. Ranking are calculated for Nearshore Catchments & for Nearshore Zones ONLY (not Upland or Interior Catchments) and are **calculated for the Catchments / Zones within each Analysis Area.** As such, when viewing the entire Feature Class for the entire Study Area (ALL nine Analysis Areas) you will see multiple duplicate rankings.
  !!! Rankings should be considered only within their defined Analysis Area!!!

Field name	Definition – source
OBJECTID	ArcGIS internal ID
SHAPE	ArcGIS internal geometry
CATCHMENT_ZONE_ID	*Catchment Zone ID*: Unique feature ID / identifier Used for GIS joins & relates. Note that Shoreline, Nearshore Zone & Nearshore Catchment IDs match
CATCHMENT_TYPE	*Catchment Type:* Type of catchment; defined as Nearshore Zone, Nearshore, Upland, Island or Interior *note: Not included in online version of database

Domain: *CatchmentType: Type of Catchment*

1 : Nearshore 2 : Upland

3 : Interior 5 : NearshoreZone

- The *Nearshore Catchments* Feature Class includes ALL *Nearshore* & *Island* Catchments

DEVELOPMENT (SYMBOL) CLASS *Development Class:* Classification of a Zone or Catchments' Percent Total Development relative to others in its' *Analysis Area.*

- Defined by applying the Natural Breaks (Jenks) Graduated colors classification symbolization to each Analysis Areas' subset of Zones or Catchments. That being so, users should be aware that Symbol Classifications are not the same in differing Analysis Areas. For example, and *Development Class* of 'High' in a relatively undeveloped Analysis Area, say Totten Inlet, may have a Total Development of 30 % will not be same as the classification in a relatively developed Analysis Area such as the McNeil Island Group which includes the more urbanized areas south of Tacoma where a Zone or Catchment with a Total Development of 30% may have a *Development Class* of 'Medium'.

ANALYSIS_AREA *Analysis Area:* Nine areas defined in South Salish Sea

Domain: *AnalysisAreaDomain: Analysis Area(s) for Catchment/Zone*

10: Budd Inlet	*60: Case Inlet*
11: Budd Inlet & Eld Inlet	*61: Case Inlet and Harstine Island Group*
12: Budd Inlet & Harstine Island Group	*62: Case Inlet and McNeil Island Group*
13: Budd Inlet and Henderson Inlet	*63: Case Inlet and Carr Inlet*
20: Eld Inlet	*70: McNeil Island Group*
21: Eld Inlet and Totten & Little Skookum Inlets	*71: McNeil Island Group and Carr Inlet*
22: Eld Inlet and Budd Inlet	*72: McNeil Island Gorup and Harstine Island Group*

23: Eld Inlet and Harstine Island Group	*73: McNeil Island Group and Henderson Inlet*
24: Eld Inlet and Totten & Little Skookum Inlets and Harstine Island Group	*74: McNeil Island Group and Carr Inlet and Harstine Island Group*
30: Totten & Little Skookum Inlets	*80: Harstine Island Group*
31: Totten & Little Skookum Inlets and Hammersley Inlet & Oakland Bay	*81: Harstine Island Group and Case Inlet*
32: Totten & Little Skookum Inlets & Eld Inlet	*82: Harstine Island Group and Hammersley Inlet & Oakland Bay*
33: Totten & Little Skookum Inlets & Harstine Island Group	*83: Harstine Island Group and Carr Inlet*
34: Totten & Little Skookum Inlets and Eld Inlet and Harstine Island Group	*84: Harstine Island Group and McNeil Island Group*
40: Hammersley Inlet & Oakland Bay	*85: Harstine Island Group and Henderson Inlet*
41: Hammersley Inlet & Oakland Bay and Totten Inlet	*86: Harstine Island Group and Eld Inlet*
42: Hammersley Inlet & Oakland Bay and Harstine Island Group	*87: Harstine Island Group and Totten & Skookum Inlets*
50: Carr Inlet	*88: Harstine Island Group and Budd Inlet*
51: Carr Inlet and McNeil Island Group	*89: Harstine Island Group and Eld Inlet and Totten Inlet*
52: Carr Inlet and Harstine Island Group	*90: Henderson Inlet*
53: Carr Inlet and Case Inlet	*91: Henderson Inlet and Harstine Island Group*
	92: Henderson Inlet and McNeil Island Group
	93: Henderson Inlet and Budd Inlet

Zones / Catchments have been assigned *Analysis Areas* in this manner to allow for inclusion of neighboring Zones / Catchments for a given catchment of a given *Analysis Area.* For example, a Zone or Catchment is within the Budd Inlet *Analysis Area* and abuts the defined *Analysis Areas* border between Budd Inlet & Eld Inlet. The naming convention used allows for selection queries to be used to select all Zones or Catchments within an Analysis Area as well as all Zones or Catchments determined to be neighbors to those within a given Analysis Area.

For example, a query for *Analysis Area >= 10 AND Analysis Area < 20* would select/return all Zones or Catchments within the Budd Inlet Analysis Area as well as all Zones or Catchments that abut them.

To select all Zones or Catchments that would be considered to be within an Analysis Areas 'Neighborhood' write a definition query or selection that includes all Analysis Area Domain values that include the Analysis Area you are attempting to select.

For example, a query for *Analysis Area = 10 OR Analysis Area = 11 OR Analysis Area = 12 OR Analysis Area = 13 OR Analysis Area = 22 OR Analysis Area = 88 OR Analysis Area = 93* would select all catchments within the Budd Inlet Analysis Area and their neighbors that are within neighboring Analysis Areas.

Note that All Ranks calculations & Action Strategies definitions are determined ONLY within each Analysis Area and do NOT include those Zones or Catchments that are neighbors to those within a given subset. For example, the rankings for Budd Inlet

Analysis Area would be only for Zones or Catchments whose Analysis Area definitions begin with 'Budd Inlet'and exclude any Zone or Catchment that has an Analysis Area definition of 'x and Budd Inlet'.

PER_TOT_DEV	*% Total Development:* NOAA C-CAP development score: SUM of High Intensity Development, Medium Intensity Development, & Low Intensity Development
R_PER_TOT_DEV	*Rank % Total Development:* Rank of Nearshore Catchments' & Nearshore Zones' *% Total Development* within each Analysis Area *note: Only Nearshore Catchments & Nearshore Zones ranked *note: Not included in online version of database
NBHS_AVG_TDEV	*Nbhd % Tot Dev:* Average of a catchment's / zone's neighboring catchments' / zones' *% Total Development*
R_NBHS_TDEV	*Rank Nbhd % Total Development:* Rank of Nearshore Catchments' & Nearshore Zones' Neighborhood % Total Development within each Analysis Area *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database
COR_PER_TOT_DEV	*Corresponding % Total Dev:* Corresponding *% Total Development* Score for a Nearshore Catchment or Nearshore Zone. Each Nearshore Zone is essentially the result of a 200m clip of it's Nearshore Catchment *note: Corresponding feature will have the same *Catchment / Zone ID* *note: Gives an indication of whether development is more concentrated in the immediate nearshore (200m) or upland *note: Not included in online version of database
COR_NBHS_TDEV	*Corresponding Nbrhd Avg % Tot Dev:* Corresponding *Nbrhd Avg % Tot Development* score for a Nearshore Catchment or Nearshore Zone. *note: Corresponding feature will have the same Catchment / Zone ID *note: Not included in online version of database
SRC_MI_CO_PTDEV	S*ource PTDev minus Corresponding:* Result of Nearshore Catchment % Total Dev score minus its'

	corresponding Nearshore Zone % Total Dev score, or vice versa A negative value indicates that a given zone/catchment is less developed than it's corresponding catchment/zone & development is more concentrated there. A positive value indicates that a given zone/catchment is more developed than it's corresponding catchment/zone & development is more concentrated there *note: Not included in online version of database
REL_NBHS_TDEV	*Relative Nbrhd % Total Dev:* Result of the sum of the difference between a given Catchment / Zone & each of its' neighboring Catchments / Zones divided by the number of neighbors A negative value indicates that a given zone/catchment is less developed than its' Neighborhood. A positive value indicates that a given zone/catchment is more developed than its' Neighborhood.
R_REL_NBHS_TDEV	*Rank Relative Nbrhd % Total Dev:* Rank of *Relative Nbrhd % Total Dev* score within each Analysis Area Ranked from most negative number to most positive. *note: Only Nearshore Catchments & Nearshore Zones
* Note > Not attributed	
AREA_ACRES	*Area: Acres:* Area of Catchment / Zone in acres
AREA_SQMLS	*Area sq ml:* Area of Catchment / Zone in square miles
R_AREA_ACRES	*Rank Area acres:* Rank of Area in acres within each Analysis Area. Ranked from most acres to least *note: Not included in online version of database
SHORELINE_LENGTH_F	*Shoreline Length (ft):* Shoreline length in feet
SHORELINE_LENGTH_M	Shoreline Length (ml): Shoreline length in miles *note: Not included in online version of database
R_SHOELINE_FT	*Rank Shoreline ft:* Ranking of shoreline length within each Analysis Area. Ranked from most shoreline to least *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database
SHORELINE_MOD_FT	*Shoreline Mod ft:* Length of shoreline modification by

	armoring, bulkheading, rip-rap, etc along the zone's / catchment's shoreline *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database. Length of shoreline modification can be calculated by multiplying P_SHORELINE_MOD times SHORELINE_FT
P_SHORELINE_MOD	*% Shoreline Mod:* Percentage of the Zone / Catchment's shoreline that is modified. Result of Shoreline Mod ft divided by Shoreline Length (ft) *note: Only Nearshore Catchments & Nearshore Zones
R_SHORELINE_MOD_FT	*Rank Shoreline Mod ft:* Ranking of % shoreline Modification for each Zone / Catchment within each Analysis Area. Ranked from lowest number of feet of modified shoreline to the most number of feet or modified shoreline. *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database.
PARCELS_ACRE	*Parcels per acre:* Number of parcels intersected by Zone / Catchment divided by the Area Acres
PARCELS_SQML	*Parcels per sq ml:* Number of parcels intersected by Zone / Catchment divided by the *Area Sq Ml* *note: Not included in online version of database.
R_PARCELS_PA	*Rank Parcels per acre:* Ranking of # of parcels /SqAcre within each Analysis Area Ranked from fewest parcels per acre to most parcels per acre *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database.
PER_WETLANDS	*% Wetlands:* % Wetlands as defined by NOAA C-CAP
R_PER_WETLANDS	*Rank % Wetlands:* Ranking of % Wetlands within each Analysis Area *note: Only Nearshore Catchments & Nearshore Zones *note: Not included in online version of database.
PER_FORESTED	*% Forested:* % Forested as defined by NOAA C-CAP
R_PER_FORESTED	*Rank % Forested:* Ranking of % Forested within each Analysis Area *note: Only Nearshore Catchments & Nearshore Zones

	*note: Not included in online version of database.
COMBINED_RANKS	*Combined Ranks:* Score derived by summing the results of the RANKING of each ranked attribute which had been divided by the greatest Rank of that attribute within each Analysis Area. A lower score indicates a more beneficial score of a Zone / Catchment's intrinsic habitat health and function.
SUM_BEN_LIM	*Sum Beneficial & Limiting:* Summed result of a Zone's / Catchment's *Sum Beneficial* and *Sum Limiting* attributes. Generally, a more positive number indicates more intact ecological structure and function where-as a more negative number indicates the presence of more stressors to environmental health & function. Refer to *Sum Beneficial* and *Sum Limiting* attributes for actual scores for each.
SUM_BENEFICIAL	*Sum Beneficial:* Sum of Beneficial / Positively attributed characteristics: Embayment / Pocket estuary, Forage Fish, Intertidal Vegetation, Protected Lands, Streams & Salmonids, Feeder Bluffs / Priority Sediments
EMBAYMENT	*Pocket Estuary:* Pocket estuary/embayment in unit-SSHIAP
FORAGE_FISH	*Forage Fish:* Documented forage fish spawning- WDFW
INTER_VEGE	*Intertidal Vegetation:* Intertidal Vegetation present in unit-WDNR
PRIORITY_SEDS	*Priority Sediments:* Feeder bluff present in unit – WDOE
HIST_FEEDER	*Historic Feeder Bluffs:* Feeder bluff was historically present in unit - WDOE
STREAM_SALMON	*Streams & Salmon:* Priority Stream & Fish Distribution data- Tier 1, Non Tier 1, Non Salmon Streams-SSHIAP *Note that only Tier I & Tier II streams are attributed as 1.5 & 1 respectively. **It should also be noted that additional streams with documented salmonid presence are not captured in this attribute**. The feature class *SWIFD (Statewide Integrated Fish Distribution)* includes documented presence information on all salmonid distribution as well as other fresh water fish species.

	Also, the Water_Salmon (alias: Salmonid Habitat) attribute indicates actual and all known salmonid use/presence.
PROTECT_LAND	*Protected Lands:* Parcel in unit designated as protected- PSNERP. *Note that the source data as provided to PSNERP by the Nature Conservancy includes many public lands that may not be thought of as protected lands in the classic sense, such as power lines, gas pipeline easements and the like. It is strongly suggested that users review Protected Lands designations Additional Protected Lands were added to the feature class thru a review of county parcels databases. *Note that many protected tidelands /aquatic parcels are immediately adjacent to Nearshore Zones & Nearshore Catchments. For those Zones & Catchments being so adjacent the value for Protected Lands is '0' and a Notes General has been added to allow for review of those Zones and Catchments immediately upland from a protected tideland(s). Also, many Zones & Catchments contain a very small portion of a protected land(s). Those are also attributed as '0' = Not containing Protected Lands
SUM_LIMITING	*Sum Limiting:* Sum of Negatively attributed ShoreZone attributes: Boat_Ramp, OverWaterStructure, Breakwater_Jetty, Marina, Outfall, 303D Waters, Toxic Facility Clean-Up. *Note that shoreline modification and nearshore fill are not included – they are included in the database as separate feature classes. Shoreline modification can be selected through the P_SHORELINE_MOD alias: % Shoreline Mod attribute.
DOE_303D	*Impaired Waters:* Department of Ecology 303d listed water in unit- WDOE *Note that the WDOE_303DImpairedWaters feature class is defined as a polygon feature class even though it defines a stream characteristic. As such some adjacent zones / catchments will be selected when utilizing GIS overlay / intersection geoprocessing funtions. Those zones / catchments were NOT designated as Impaired Waters and as such have a WDOE_303D ImpairedWaters value of '0'.
TOXICS	*Toxic CleanUp:* Department of Ecology toxic cleanup site in unit- WDOE

	Note that the WDOE GIS file is a point layer. In reality, many toxic clean-up sites are significantly larger than a point location
MARINA	*Marinas:* Boat marina present in unit- PSNERP & aerial Photo review defined as Large, Medium, or Small. *Note: Additional limiting effects of marinas were added to the database using the Washington Department of Health's *Shellfish Commercial Growing Areas* GDB. Zones & Catchments within a Shellfish Closure Zone had their Marina attribute calculated to -2, -1.5, or -1 according to the size of the marina.
OV_H20_STRUCTS	*Overwater Structures Present:* Overwater Structures including piers, docks, houses, & bulkheads. Temporary/seasonal structures not included. PSNERP Additional review of aerial photos & WDOE Shorline photos were done to supplement the feature class *note: Not included in online version of database. Presence of Overwater Structures can be selected via the OVERWATER_STRUCTS_PM alias; Overwater Structures per ml attribute.
OV_H2O_STRUCTS_C	*Overwater Structures: Count:* Overwater Structures Total count *note: Not included in online version of database.
OV_H2O_STRUCTS_PM	*Overwater Structures per mile*: Over Water Structures per mile in unit. Indication of density. Multiply *Overwater Structures per mile* times shoreline length for total number.
OUTFALLS	*Outfall(s):* Water(storm) outfall(s) present in unit- PSNERP The source data appears to be incomplete.
BOAT_RAMP	*Boat Ramps:* Boat ramp present in unit – WRCO/WDFW & aerial photo review * note: Only ramps deemed to be significantly affecting shorezone ecological function included *note: Not included in online version of database.
BOAT_RAMP_C	*Boat Ramps Count:* Count of boat ramps in unit. *note: Not included in online version of database.
BOAT_RAMPS_PM	*Boat Ramps per mile:* Boat ramps per mile of shoreline within Catchment / Zone. Indication of Density

BREAKWAT	*Breakwater:* Breakwater/Jetty present in unit – PSNERP & aerial photo review
P_NEARSHORE_FILL	% Nearshore Fill: % of Catchment / Zone designated as Nearshore fill – PSNERP / NOAA TSheets
PARCELS_C	*Parcels: Count:* count of parcels intersected by Catchment / Zone *note: Not included in online version of database.
NEIGHBORS_C	*Neighbors: Count:* Number of neighboring Catchments / Zones *note: Not included in online version of database.
SUM_NEIGHS_DIFF	*Sum Neighbors Differences:* The SUM of the differences of a Zone's / Catchment's % Total Development and each of its' neighbors' % Total Development. Value used to calculate the Nbhd % Total Development: Sum Neighbors Differences divided by Neighbors Count *note: Not included in online version of database.
NGHBR_LIST	*Neighbors: List:* List of neighboring Catchment / Zones' *Catchment / Zone ID*s *note: Not included in online version of database.
NOTES_GEN	*Notes: General:* Notation on action(s) taken or follow-up action needed *note: Not included in online version of database.
NOTES_GIS	*Notes: GIS:* Notation on action(s) taken or follow-up action Needed *note: Not included in online version of database.
SHAPE_Length	ArcGIS internal measure of a Zone's / Catchment's polygon arc length *note: Not included in online version of database.
SHAPE_Area	ArcGIS internal measure of a Zone's / Catchment's polygon arc area in square feet *note: Not included in online version of database.
ACTIONSTRATEGY	*Action Strategy:* The Action Strategy recommendation for a

	given catchment. Twenty percent (20%) of each Analysis Areas' Zones/Catchments were designated for either Conservation / Preservation OR Restoration / Enhancement using the ArcGIS Tool *Sort.*
Con_Pres	*Conservation Preservation:* Zone or Catchment has been defined as a priority for conservation / preservation See the documentation for a description on how this selection was made *note: Not included in online version of database.
Rest_Enhance	*Restore Enhance:* Catchment has been defined as a priority for Restoration / Enhancement See the documentation for a description on how this selection was made *note: Not included in online version of database.
Salmon	*Salmon:* Zone / Catchment has a Tier I or Tier II stream
Wetlands	Wetlands: Zone / Catchment has significant wetlands

Catchments Feature Class: Catchments

OBJECTID	ArcGIS internal ID
SHAPE	ArcGIS internal geometry
HYDRO_ID	Unique feature ID. Used for GIS joins & relates
CATCH_TYPE	*Catchment Type*: Nearshore Catchment, Upland Catchment, Interior Catchment*, Small Island*

Note on Catchment Type: When doing analysis, especially rankings and other comparative operations, be sure to use a selected set of catchments.
As the intent of this analysis is to assist with Nearshore management practices & projects, *Interior Catchments* should only be used for generating *Neighborhood Scorings* and should not be used for Rankings.
Most analyses will exclude *Small Island Catchments as well as Interior Catchments.*
Note also that Catchments defined as in the Tacoma Narrows *Analysis Area* (those north of the Tacoma Narrows Bridge) to be used only for Neighborhood Scorings.

ANALY_AREA	Sub-Area of Analysis. Nine areas defined in South Salish Sea

- Note on Analysis Area: Many Catchments are defined as being in multiple

Analysis Areas due to the fact that they are immediate or secondary neighbors to an adjacent Analysis Area. As such their attributes are used to calculate Neighborhood Scorings in multiple Analysis Areas.

P_TDEV	*% Total Development:* NOAA C-CAP development score: SUM of High Intensity Development (P_HID), Medium Intensity Development (P_MID), & Low Intensity Development (P_LID) attributes
RNK_P_DEV	*% Total Development Rank:* Sequential ranking of unit total development percent
P_HID	*% High Intensity Development:* NOAA C-CAP percent designated High Intensity Development
P_MID	*% Mid Intensity Development*: NOAA C-CAP percent designated Medium Intensity Development
P_LID	*% Low Intensity Development:* NOAA C-CAP percent designated Low Intensity Development
NBHS_AVG_TDEV	*Avg Neighborhood % Total Development:* Straight Average of Catchment/Zone's Neighboring units P_T DEV (% Total Development) NOAA C-CAP total development Scores
RNK_NBHS_AVG_TDEV	*Rank Avg Neighborhood % Total Development:* Sequential ranking of Catchment's NBHS_AVG (Neighborhood Avg) Only Nearshore Catchments & Nearshore Zones are ranked.
CORRESPOND_TDEV	*Corresponding % Total Development:* P_TDEV value for corresponding Nearshore Catchment (for NeasshoreZone) or Nearshore Zone (for Nearshore Catchment). Only for Nearshore Catchments & Nearshore Zones
CORRESPOND_NBHS_AVG_TDEV	*Corresponding Neighborhood % Total Development:* NBHS_AVG_TDEV values for corresponding Nearshore Catchment (for NeasshoreZone) or Nearshore Zone (for Nearshore Catchment). Only for Nearshore Catchments & Nearshore Zones
SOURCE_MINUS_CORRE_TDEV	*Source Minus Corresponding % Total Development:* Difference between Nearshore Catchment P_TDEV value & its' corresponding Nearshore Zone P_TDEV value.
P_WET	*% Wetland:* NOAA C-CAP percent designated Wetlands
RANK_P_WET	*% Wetland Rank:* Sequential ranking of unit wetland percent
P_FOR	*% Forest:* NOAA C-CAP percent designated Forestry
RANK_P_FOR	*% Forest Rank:* Sequential ranking of unit forest percent
SHORE_LEN	*Shoreline length (miles):* ONLY for catchments that abut shoreline – WDNR Shoreline length
CATCH_AREA	*Catchment Area (sq miles):* Area of Catchment in square miles

PROTECTED	*Protected Area:* Parcel in unit designated as protected PSNERP
STRM_SALM	*Streams & Salmon:* Stream & Salmonid data- SSHIAP
ECY_303D	*WDOE 303D:* Department of Ecology 303d listed water in unit - WDOE
TOXIC_FAC	*Toxic Facility:* Department of Ecology toxic cleanup site in unit - WDOE
PARC_COUNT	*Parcels In Unit:* Number of parcels in or intersecting catchment/zone – UW
PARC_P_SM	*Parcels per sq mile:* Number of parcels intersecting Catchment/zone per square mile
NOTES_GIS	*Notes GIS:* GIS notations and potential follow-up action(s) needed
NOTES_GEN	*Notes General:* Notations on action(s) taken or follow-up action(s) needed
NUM_NEIG	*Number of Neighbors:* Number of neighboring catchments
R_NBHS_AVG	*Neighborhood Avg Rank:* Sequential ranking of Catchment's NBHS_AVG (Neighborhood Avg) NOAA C-CAP total development scores
NBHS_RAVG	*Neighborhood Relative Avg:* Relative Average of Catchment's Neighboring units' NOAA C-CAP total development scores
R_NBHS_RAV	*Neighborhood Relative Avg Rank:* Sequential ranking of Catchment's Neighboring units' relative neighboring NOAA C-CAP total development scores
NGHBR_LST	*Neighbors List:* Comma separated list of neighboring Catchments
HYDRO_ID_1	*Hydro_ID (Shoreline):* Shoreline feature class Hydro_ID. Used for relate between Catchment & Shoreline
ANALY_AREA_A	*Analysis Area (Shoreline):* Shoreline feature class ANALY_AREA

<u>Positive Attributes</u>

PROTECTED	Parcel in unit designated as protected - PSNERP
STRM_SALM	Stream & Salmonid data - SSHIAP
EMBAYMENT (NC & NZ only)	*Embayment:* Pocket estuary/embayment in unit – SSHIAP
FORAGEFISH (NC & NZ only)	*Forage Fish:* Documented forage fish spawning – NPST
INT_VEG (NC & NZ only)	*Intertidal Vegetation:* Intertidal vegetation present in unit- NPST
PRI_SED (NC & NZ only)	*Priority Sediment:* Sediment source designated as *priority* in unit- NPST
SUM_POS	*Sum of Positives:* Sum of positive attributes

<u>Fill and Armor</u>

PERC_ARM (NC & NZ only) *% Armored:* Linear % of unit modified by shoreline armoring- PSNERP & SIT Review
RANK_P_ARM (NC & NZ only) Sequential ranking of shoreline armoring percent
FILL (NZ only) Percent of unit designated as fill- PSNERP

Negative Attributes
ECY_303D Department of Ecology 303d listed water in unit- WDOE
FACILITY Department of Ecology toxic cleanup site in unit- WDOE
MARINA (NC & NZ only) *Marina:* Boat marina present in unit- PSNERP
OV_H20_STR (NC & NZ only) *Overwater Structures:* Overwater Structure(s) present) – PSNERP
OV_H2O_PM (NC & NZ only) *Overwater Structues per Mile:*
OUTFALL (NC & NZ only) *Manmade Outfall:* Water outfall present in unit - PSNERP
RAMPS (NC & NZ only) *Boat Ramps:* Boat ramps deemed to be affecting shorezone - PSNERP & SIT Review
RAMPS_PM (NC & NZ only) *Ramps per Mile:* Boat ramps per mile
BREAK_JET (NC & NZ only) *Breakwater / Jetty*: Breakwater / jetty present in unit - PSNERP & SIT Review
SUM_NEG *Sum of Negatives:* Sum of negative attributes

Notes:

Hydro_IDs are coincident for Shorelines & Nearshore Zones
Hydro_IDs for Catchments are unique & do not match Shoreline or Nearshore Zone

Definitions

Positive Attributes

PROTECTED: Protected parcel(s) in unit
Code: rating score

Present	1
Absent	0

STRM_SALM: Stream(s) Fish(es) in unit

Code:

rating	score
Non-Tier 1 Stream Present	0.5
Tier 1 Stream Present	1
Fish Present	1.5
Absent	0

EMBAYMENT: Pocket estuary(ies) or embayment(s) in unit

Code:

rating	score
Present	1
Absent	0

FORAGEFISH: Documented forage fish spawning(s) present in unit

Code:

rating	score
Present	1
None	0

INT_VEG: Intertidal vegetation(s) documented in unit

Code:

rating	score
Present - patchy	0.5
Present - continuous	1
Absent	0

PRI_SED: Identified priority sediment(s) source(s) in unit

Code:

rating	score
Present	1
Absent	0

Fill and Armor

P_ARM: Percent of unit shoreline footage that has been modified by shoreline armoring. A value used to weight the unit by multiplying the linear percentage of armoring in the unit by the length of the unit.

FILL: Percent of existing unit that consists of nearshore fill. A value used to weight the unit by multiplying the square feet percentage of fill in the unit by the square feet of the entire unit.

Negative Attributes

ECY_303D: 303d listed water(s) present as designated by WDOE

Code:

rating	score
Present	-1

Absent	0	

TOXIC_FAC: toxic cleanup site(s) present as designated by WDOE

Code:

rating	score
Present	-1
Absent	0

MARINA: Designated boat marina(s) within 20 meters of shoreline
Classified as Large (> 50 slips), Medium (30-50 slips), or Small (<30 slips)
*Note: Additional limiting effects of marinas were added to the database using the Washington Department of Health's Shellfish Commercial Growing Areas GDB. Zones & Catchments within a Shellfish Closure Zone had their Marina attribute calculated to -2, -1.5, or -1 according to the size of the marina.

Code:

rating		score
Present	Large	-2
	Medium	-1.5
	Small	-1
Absent		0

OV_H20_S_P: Designated dock / Over Water Structure

Code:

rating	score
Present	-1
Absent	0

OUTFALL: Designated water outfall(s) (not stream)

Code:

rating	score
Present	-1
Absent	0

RAMPS: Boat ramp that appears to have effects on shorezone drift

Present	-1
Absent	0

BREAK_JET: Breakwater / jetty within 20 meters of unit

Present	-1
Absent	0

Action Strategy Designations

The designating of Action Strategies was completed to give an initial indication of Catchments / Zones that could be considered candidates for a project or action including preservation or restoration.

There are four designations with two being recommended Action Strategies and the other two being more of an indicators of environmental health and biological function which we have called Habitat Indices.

The two Action Strategies are;

Conservation / Preservation and ***Restoration / Enhancement.***

The two Habitat Indices designations are;

Salmonids and ***Wetlands***

The four designations may be most beneficially considered and applied by combining / overlaying. As in, Catchments / Zones designated as *'Conservation / Preservation'* and as *'Salmonids'* would be a good starting point for a grouping of areas to consider for a land purchase to protect a high value & high functioning property that is used by salmon. Or Catchments / Zones designated as *'Restoration / Enhancement'* and *'Wetlands'* would be a good starting point to review areas with potential as a wetlands enhancement project. To emphasize, the designations are conceived as a good starting point to open a collaborative conversation between biologists and managers about where on the landscape to consider a particular action or project. It would be at this point that biological expert opinion would be applied to provide insight as to where and particular action or project would have the greatest beneficial impact and the greatest probability for success.

Note that the GIS feature class Projects is included. This dataset represents the previously completed projects as provided by the Washington Recreation and Conservation Office and includes most of the projects submitted through the Habitat Work Schedule.