APPENDIX I
Data Layer Types And Sources for Targeted Ecosystem Services
(from suggestions made during in-depth interviews and in written feedback)

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent)*	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
LAND COVER							

● Land Cover & change	● Satellite imagery
	● Orthophotos
	● Lidar/multispectral
	  ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	  ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	● North American Land Cover (NALCMS) & Land Cover Change (2010-2015) (30m pixels)
	● Satellite Forest Information For Canada (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html
	  ○ Landcover
	  ○ Agricultural/forest land cover
	● UN Biodiversity Lab
	  ○ ESA CCI Land Cover 1992-2000 (300m pixels)
	  ○ ESA CGLS Land Cover 2015-2019 (100m pixels)
	  ○ Esri 2020 Land Cover 10m
	● Agriculture Canada (AAFC) semi-decadal land use time series
	● Trends Earth Tracking Land Change – Land cover (QGIS download) – 1992-2018 (300m)
	● Joint Ventures BC Land Cover Map (not public)
	● UBC Sustainable Agriculture Landscapes Lab – Land use-land Cover Change in Lower Fraser Valley 1978-2018 (30m)
		● Regional baseline conditions.
		● Ecosystem conversion rates/ human footprint
		● Monitoring land use changes
		● Overall ecological resilience (amount and contiguity of remaining natural habitat).
		● Ecological corridors and stepping stones
		● Land cover diversity
			● Baseline conditions
			● Conversion rates
				● Baseline conditions
				● Conversion rates
					● Cumulative impacts on traditional territories and Aboriginal Rights	● Overall watershed health/run-off moderation
						● Hydrological/ watershed modelling
							●

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** as defined by and with First Nations consent)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	(https://sal-lab.landfood.ubc.ca/projects/spatiotemporal-analysis-of-land-use-land-cover-and-soil-organic-carbon-in-lower-fraser-valley/)						
VEGETATION COVER / ECOSYSTEMS	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE

● Terrestrial Ecosystems	● TEM/BEC site series,
	● VRI
	● SEI
	● Analogs (bird guilds, animal models)
	● Lidar/multispectral
	  ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	  ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	● Marxan (CDFCP mapping layers)
	● Islands Trust Contiguous Forest Cover Mapping
	● Parks Canada Mapping
	● WWF Max canopy height in Canada 2019 (250m)
	● https://data.4tu.nl/collections/_/5421810/3
	● Biodiversity Lab – global intertidal change
	● Global Forest Change 2000-21 (30m); Global Land Analysis & Discovery, derived from https://www.science.org/doi/10.1126/science.1244693
	● Satellite Forest Information For Canada (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html
		● Sensitive ecosystems
		● Priorities for retention or restoration:(e.g. Garry oak meadows, wetlands, woodlands, riparian areas, etc.).
		● Freshwater fish habitat
		● Habitat for species at risk
		● Ecological corridors and stepping stones
		● Priority restoration areas (to link up larger ecosystem patches and reduce ecosystem fragmentation)
			● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas
				● Heights, BA, CC, SPH info can be highly improved with LiDAR
					● Ecosystems that potentially support culturally important plants (e.g. camas, cedar, sitka spruce, devils club, etc.)
					● Habitats that potentially support culturally important wildlife
					● Priorities for retention and cultural restoration/ management
						● Watershed health/run-off moderation (e.g % forest cover)
						● Hydrologically sensitive ecosystems (wetlands, riparian areas, floodplain systems, etc.)
						● Hydrological/watershed modelling
						● Priority retention and restoration areas (e.g. riparian areas, wetlands, floodplains)
							● Forest types at higher (eg dry conifer) vs lower (e.g. broadleaf) fire risk

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	o Forest change and change type						
● Ecosystem Productivity	● VRI (site index), ● Provincial Site Productivity Layer	● Site productivity – how fast vegetation grows, and how big it gets ● Priorities for retention/restoration (e.g. productive 'big tree' old growth, estuaries)	● Capability of ecosystem to store carbon. ● Priorities for retention (i.e. ecosystems currently storing high amounts of carbon) ● Priorities for restoration (degraded ecosystems on productive sites, capable of storing high amounts of carbon in the future)	● Capability of ecosystem to sequester carbon. ● Priorities for retention (ecosystems sequestering high carbon at high rates) ● Priorities for restoration (degraded ecosystems on productive sites, capable of sequestering at high rates in the future)	● Priority cultural plant areas for retention and restoration (e.g. productive sites capable of growing monumental cedars)	●	● Can higher productivity forests be used as an indicator of fire resilience? ●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			

● Forest Structural Stage/Integrity	● Vegetation Resource Inventory (VRI)
	● Lidar/multispectral
	  ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	  ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	● Analogs:(bird guilds, animal models)
	● Satellite Forest Information For Canada (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html
	  ○ Wildfire year
	  ○ Harvest year
	  ○ Post disturbance recovery
	  ○ Forest elevation height
	  ○ Basal area
	  ○ Urban Greenness score
	  ○ And more
	● Canadian Forest Service forest disturbance mapping 1984-2015 (30m) https://open.canada.ca/data/en/dataset/add1346b-f632-4eb9-a83d-a662b38655ad
	● Global Forest Height 2019 (30m); Global Land Analysis & Discovery https://glad.umd.edu/dataset/gedi/
	● UN Biodiversity Lab –
	  ○ Forest Landscape Integrity Index (300m)
	● Global Forest Change 2000-21 (30m); Global Land Analysis & Discovery, derived from https://www.science.org/doi/10.1126/science.1244693
		● Sensitive/priority areas for retention (e.g. old and mature forest)
		● Ecological corridors/connectivity
		● Forest integrity/condition and change in integrity
		● Old/mature forest climate refugia (shadier/lower temperatures)
			● Cross walk with carbon valuation models for each structural stage, to determine priority areas for retention, restoration, or improved management	● Cross walk with carbon valuation models for each structural stage, to determine priority areas for retention, restoration, or improved management	● Potential cultural plant areas (e.g. large cedars for canoe building)	● Hydrological/watershed modelling
						● Hydrologically sensitive areas, e.g.
						  ○ old forest in watershed headwaters (affects water flows via snowpack accumulation and melting rates)
						  ○ Old and mature forest in riparian areas , floodplains, alluvial fans,, etc.(affects water flows and quality)
						● Shade from old/mature forest lower's water temperatures
						● Priority retention areas
							● Forest stages at higher risk (e.g. dense pole sapling) vs lower fire risk (e.g. mature-old with separated crowns, uneven age)

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems **(only** *as defined by and with First Nations consent)*	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			

Biodiversity	● UN Biodiversity Lab – Biodiversity intactness Index (2000-2015)
	● iBird
	● iNaturalist
	● Composite distribution maps used for CDFCP Marxan and NPLCC Tool, https://ncc.carleton.ca/app/wheretowork_advanced?sp_hide_navbar=true
	  ○ Old Forest communities
	  ○ Savannah communities
	  ○ Wetland communities
	  ○ Shrub communities
	  ○ Beta biodiversity
		● Biodiverse ecological communities
		● Species diversity and richness
		● Ecosystem diversity
		● Biodiversity intactness;
		● Forest integrity;
		● Human footprint
		● Land cover diversity
		● Priorities for retention, management and restoration					

SPECIES & ECOSYSTEMS AT RISK	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE

● Species at risk	● CDC element occurrences,
	● First Nations/local knowledge
	● Goshawk models, nesting and foraging habitat maps
	● Marbled Murrelet models and suitability mapping
	● W. Screech owl models under development
	● Composite distribution maps used for CDFCP Marxan and NPLCC Tool,
	  ○ Old Forest communities
	  ○ Savannah communities
	  ○ Wetland communities
	● iNaturalist
	● iBird
	● Federal Species at Risk Range Maps
	● BC Reptile & Amphibian Range maps
	● CRD potential sharp-tailed snake
		● Known records of species at risk
		● Potential habitat for species at risk
		● Priority areas for retention, restoration and management
			●	●	● Cultural hunting considerations?	●	●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** _as defined by and with First Nations consent_)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	habitat ● Biodiversity Lab – Threatened Species Richness/Rarity/						
● Ecological communities at risk	● CDC element occurrences, ● TEM ● CWHXm1 TEM project ● Garry Oak mapping ● SEI ● PEM ● Garry Oak TEM data	● Known locations of ecological communities at risk ● Likely occurrences of ecological communities at risk (e.g. extrapolated from TEM polygons) ● Priority areas for retention/ restoration/ management	●	●	● Potential culturally important plants ● Priority areas for retention/ cultural restoration/ management	●	●
● Critical Habitat	● Federal government's Critical Habitat mapping	● Critical habitat for species at risk, as mapped by the Federal Government ● Priority areas for retention/ restoration/ management	●	●	●	●	●
REGIONALLY SIGNIFICANT FISH & WILDLIFE	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Fish sensitive areas	● Fish observations ● Freshwater Atlas (fish bearing streams) ● Pacific Salmon Foundation Salmon Explorer; https://www.salmonexplorer.ca/#!/vancouver-island-mainland-inlets ● First Nations/local knowledge ● CMN-Fraser Valley Watershed Atlas https://cmnbc.ca/atlasgallery/fraser-valley-watersheds-atlas/	● Fishbearing streams and water bodies, ● Streams feeding into fishbearing streams ● Priority areas for retention/ restoration/ management	●	●	● Important fishery streams/sites ● Priority areas for retention/ cultural restoration/ management	● Priority areas for retention/ restoration/ management	●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** as defined by and with First Nations consent)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
● Ungulate sensitive areas (winter range etc.)	● Ungulate winter range maps; ● First nations and local knowledge ● FLNRORD Deer and Elk models (TEM)	● Important ungulate habitat and movement corridors ● Priority areas for retention/ restoration/ management	●	●	● Important game areas ● Priority areas for retention/ cultural restoration/ management	●	●
● Important Bird Areas	● IBA Canada Important Bird Areas map	●	●	●	●	●	●
ESTUARINE/ INTERTIDAL SYSTEMS	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Estuaries	● PECP Ranked estuaries https://pacificbirds.org/2021/02/an-updated-ranking-of-british-columbias-estuaries/ ● BEC site series ● TEM/ SEI in some places ● Georgia Basin Habitat Atlas (lower mainland tidal habitat) https://cmnmaps.ca/GBHA/	● Sensitive ecosystems ● Important fish and wildlife habitat ● Important bird areas ● Biodiversity hotspots ● Priority habitats for retention/ restoration/management	● Productive sites with high carbon storage capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Productive sites with high carbon sequestration capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Estuaries and associated marshes support culturally important plants (e.g. springbank clover, silverweed) ● Sensitive salmon habitat ● Sensitive wildlife habitat ● Priority areas for retention/ cultural restoration/management	● Crosswalk with ecosystem service valuations (flood control, water quality & quantity, etc.), to determine priority areas for retention/ restoration/management	●
● Intertidal	● ShoreZone (high resolution imagery & video) ● SEI mapping ● CMN – BC Eelgrass Inventory ● UN Biodiversity Lab – Global Distribution of Seagrasses ● BCMCA: Marine Atlas of Pacific Canada (2011) https://cmnbc.ca/atlasgallery/bc-marine-conservation-analysis-	● Sensitive ecosystems ● Important intertidal habitat ● Important fish habitat ● Biodiversity hotspots ● Priority habitats for retention/ restoration/management	● Productive sites with high carbon storage capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration	● Productive sites with high carbon sequestration capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention	● Clam gardens ● Fish traps ● Sensitive aquaculture areas ● Priority areas for retention/ cultural restoration/management	●	●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	atlas/ ● Georgia Basin Habitat Atlas (lower mainland eelgrass & tidal habitat) https://cmnmaps.ca/GBHA/		areas	and restoration areas			
HYDROLOGY, TOPOGRAPHY & TERRAIN	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Watersheds	● Freshwater Atlas- watershed boundaries ● PSF Salmon Explorer ● Lidar (topography) ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995 ● Topography/contour mapping ● CMN – Aquatic Information Partnership Atlas - Watershed statistics https://cmnmaps.ca/AIP/ ● Terrain stability mapping ● Terrain hazard mapping	●	●	●	●	● Watershed boundaries ● Areas vulnerable to erosion and landslides.	●
● Floodplains/fluvial deposits	● Terrain mapping, ● BEC site series ? ● Lidar (drainage) ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995 ● Province wide flood plain maps (Pre-1998, many do not account for climate	● Rare and sensitive ecosystems ● Important fish and wildlife habitat ● Biodiversity hotspots ● Climate refugia ● Priority habitats for retention/restoration/management	● Productive sites with high carbon storage capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Productive sites with high carbon sequestration capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Areas likely to support culturally important plant areas (e.g. cedar, salmonberry, spruce, springbank clover) ● Priority areas for retention/ cultural restoration/management	● Hydrologically sensitive areas (store groundwater water, affect water flows and quality) ● Sensitive ground water areas ● Crosswalk with ecosystem service valuations (flood control, water quality & quantity, etc.), to	● Wetter microclimate with lower fire risk ● Fire break (more broad leaf trees)

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	change):https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/integrated-flood-hazard-management/flood-hazard-land-use-management/floodplain-mapping/floodplain-maps-by-region ● Regional Districts' flood plain mapping, e.g.: ○ Cowichian Valley regional district:https://www.cvrd.ca/DocumentCenter/View/100315/2021-04-21---Schedule-O---Floodplain-and-Dam-Maps ○ Squamish: https://squamish.ca/assets/IFHMP/1117/5dbb51bad9/20171031-FINAL_IFHMP_FinalReport-compressed.pdf					determine priority areas for retention/ restoration/management ● Areas vulnerable to erosion	
● Riparian ecosystems	● TEM/BEC site series ● SEI ● FWA buffer ● Joint Ventures-TNT Topographic Riparian Area mapping	● Rare and sensitive ecosystems ● Important fish and wildlife habitat and corridors ● Climate refugia ● Biodiversity hotspots ● Priority habitats for retention/ restoration/management ● Large woody debris recruitment (fish habitat)	● Productive sites with high carbon storage capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Productive sites with high carbon sequestration capability ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Areas likely to support culturally important plants (e.g. cedar, elder, mock orange, saskatoons) ● Priority areas for retention/ cultural restoration/management	● Hydrologically sensitive areas (store groundwater water, affect water flows and quality, reduce water temperature) ● Crosswalk with ecosystem service valuations (flood control, water quality & quantity, etc.), to determine priority areas for retention/ restoration/management	● Wetter microclimate with lower fire risk ● Fire break (more broad leaf trees)

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** _as defined by and with First Nations consent_)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
● Wetlands & lakes	● Freshwater Atlas, ● TEM/BEC site series ● CWS ranked wetlands 2018 ● CWS National Wetland Inventory (under development) ● Satellite Forest Information For Canada - wetlands (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html ● Georgia Basin Habitat Atlas (lower mainland/ Fraser Valley wetlands) https://cmnmaps.ca/GBHA/	● Rare and sensitive ecosystems ● Important fish and wildlife habitat ● Climate refugia ● Biodiversity hotspots ● Priority habitats for retention/ restoration/management ● Important bird areas	● Sites with high carbon storage capability (e.g. wetlands) ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Ecosystems with high carbon sequestration capability (wetlands with tree canopies) ● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas	● Sensitive fish habitat ● Areas likely to support culturally important plants (e.g. springbank clover, silverweed, Labrador tea) ● Sensitive wildlife habitat ● Priority areas for retention/ cultural restoration/management	● Hydrologically sensitive areas (store water, affect water flows and quality) ● Crosswalk with ecosystem service valuations (flood control, water quality & quantity, etc.), to determine priority areas for retention/ restoration/management	● Wetter microclimate with lower fire risk ● Fire break

● Watercourses	● Freshwater Atlas
	 ● CMN-Fraser Valley Watershed Atlas
	 ● Lidar (drainage)
	   ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	   ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	 ●
		● Sensitive ecosystems
		 ● Important fish and wildlife habitat
		 ● Biodiversity hotspots
		 ● Priority habitats for retention/ restoration/management
		 ● Climate refugia
			●	●	● Sensitive fish habitat
					 ● Priority areas for retention/ cultural restoration/management
						● Hydrologically sensitive areas (affect water flow and quality)
						 ● Crosswalk with ecosystem service valuations (flood control, water quality & quantity, etc.), to determine priority areas for retention/ restoration/management
							● Create wetter microclimates with lower fire risk
							 ● Fire break

● Gullies	● BEC site series,
	 ● Lidar (drainage)
	   ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	   ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	 ●
		● Sensitive ecosystems
		 ● Important wildlife habitat and corridors
		 ● Priority habitats for retention/ restoration/ management
		 ● Climate refugia
			●	●	● Areas likely to support culturally important plants (e.g. devil's club, red cedar)	● Sensitive terrain feature, vulnerable to erosion and landslides.
						 ● Sediment recruitment and transport
							● Wetter microclimate with lower fire risk
							 ● Fire break (more broad leaf trees)

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			

● Alluvial Fans	● TEM, BEC site series,
	● Terrain mapping
	● Lidar (drainage)
	  ○ https://www2.gov.bc.ca/gov/content/data/geographic-data-services/lidarbc
	  ○ https://open.canada.ca/data/en/dataset/957782bf-847c-4644-a757-e383c0057995
	●
		● Rare and sensitive ecosystems
		● Important wildlife habitat
		● Biodiversity hotspots
		● Climate refugia
		● Priority habitats for retention/ restoration/ management
		● Important sediment recruitment processes affecting fish and benthic invertebrates
			● Productive sites with high carbon storage capability
			● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas
				● Productive sites with high carbon sequestration capability
				● Cross walk with carbon valuation models for each ecosystem type to determine priority retention and restoration areas
					● Areas likely to support culturally important plants (e.g. spruce, berries)	● Hydrologically sensitive areas (store groundwater, affect water flow and quality)
						● Highly erodible terrain
						● Sediment deposition
							● Wetter microclimate with lower fire risk
							● Fire break (more broad leaf trees)

● Small headwater streams	● Freshwater Atlas - Stream Order	● Important organic matter recruitment and transport area for downstream fish and aquatic invertebrates ● Important aquatic invertebrate habitat	●	●	● Areas likely to support culturally important plants (e.g. devil's club, salmonberry)	● Hydrologically sensitive areas (affect water flow and quality, affect downstream water temperature) ● Sediment recruitment and transport	● Wetter microclimate with lower fire risk ● Fire break (more broad leaf trees)
● Groundwater recharge areas	● Islands Trust Groundwater Recharge Mapping https://islandstrust.bc.ca/wp-content/uploads/2021/02/2019-17-gws-ssi_groundwater-recharge_final.pdf	●	●	●	●	● Hydrologically sensitive areas (recharge and store groundwater)	●
● Karst landscapes	● BEC site series ● Bedrock geology ● Provincial Karst Dataset	● productive forests ● climate refugia ● Rare cave fauna	● High carbon storage areas	●	●	● Hydrologically sensitive areas (store groundwater, affect water flow and quality)	●
● Water quality	● Salish Sea Marine Emissions Tool ● Government of Canada Pollutants Affecting Whales and their Prey Inventory Tool (PAWPIT-OIPABP)	●	●	●	●	●	●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
CULTURAL NATURAL ASSETS	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Culturally important ecosystems	● First Nations/local knowledge ● AOA data (not public) ● Musqueam Place Names Map ● Stó:lō Research & Resource Management Cerntre ● TEM/SEI ● CDC ecological communities at risk mapping ● IMERSS & WhiteSwan ecocultural mapping pilot https://imerss.org/2019/01/01/ecocultural-mapping-pilot/	● Fish, game and cultural plants ● Ecological communities at risk that are enhanced/restored by traditional management practices (including many at risk CDF ecosystems) ● Priority areas for retention and traditional management/restoration	●	●	● Areas supporting or likely to support culturally important plants and animals. ● Priority areas for retention/ cultural restoration/management	●	● Areas traditionally thinned and burned for food production (reduced fire risk)
DISTURBANCE	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE

● Disturbance	● Cumulative Effects Framework – Human Disturbance Data from various sources, coarse level https://catalogue.data.gov.bc.ca/dataset/ce-disturbance-2021
	● Pacific Salmon Foundation Cumulative Pressures data https://data.salmonwatersheds.ca/data-library/
	● Satellite Forest Information For Canada (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html
	  ○ Wildfire year
	  ○ Harvest year
	  ○ Post disturbance recovery
		● Cumulative impacts/disturbance on species, ecosystems and ecological connectivity	● Cumulative impacts on carbon storage	● Cumulative impacts on carbon sequestration	●	● Cumulative impacts on watersheds/salmon	●

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		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	○ Forest elevation height ○ Basal area ○ Urban Greenness score ○ And more ● Canadian Forest Service forest disturbance mapping 1984-2015 (30m) https://open.canada.ca/data/en/dataset/add1346b-f632-4eb9-a83d-a662b38655ad ● North American Land Cover (NALCMS) Change (2010-2015) (30m pixels)						
● Wildfire risk	● Wild and Urban Interface Fire Risk maps (strategic level; based on VRI; does not include private land) https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/wui-risk-class-maps/wui-downloads ● Hazardous fuels mapping (based on VRI with groundtruthing) ● Community wildfire risk mapping	● Areas with high wildfire risk to biodiversity ● Priority areas for fuel management ● Priority areas for harvest/retention (e.g. mature and broadleaf forest)	● Areas with high wildfire risk to carbon storage ● Priority areas for fuel management ● Priority areas for harvest/retention	● Areas with high wildfire risk to carbon sequestration ● Priority areas for fuel management ● Priority areas for harvest/retention	● Wildfire risk to culturally significant ecosystems ● Priority areas for fuel management ● Priority areas for cultural management ● Priority areas for harvest/retention	● Areas with high wildfire risk to watersheds ● Priority areas for fuel management ● Priority areas for harvest/retention	● Areas at high/low risk of wildfire
● Wildfire Magnitude	● Satellite Forest Information For Canada (30m) https://opendata.nfis.org/mapserver/nfis-change_eng.html ○ Wildfire change magnitude ○ Post disturbance recovery rate	Restoration potential					
● Insect disturbance mapping	●	● Restoration potential	●	●	●	●	●
CLIMATE	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			

Carbon mapping	● WWF Carbon Storage & Distribution in Terrestrial Ecosystems of Canada (250m)
	  ● https://data.4tu.nl/collections/_/5421810/3
	● Trends Earth Tracking Land Change – soil carbon (250m)
	● GSOC Global Soil Organic Carbon map
	● Metro Vancouver carbon mapping
	● UN Biodiversity Lab carbon mapping (above/below ground, change in woody carbon) (300m)
	● Pacific Climate Impact Consortium Data Portal (https://pacificclimate.org/data)
	● UBC Sustainable Agriculture Landscapes Lab -Soil Organic Carbon mapping in Lower Fraser Valley (30m?) (https://sal-lab.landfood.ubc.ca/projects/spatiotemporal-analysis-of-land-use-land-cover-and-soil-organic-carbon-in-lower-fraser-valley/)
	● Composite distribution maps used for CDFCP Marxan and NPLCC Tool, https://ncc.carleton.ca/app/wheretowork_advanced?sp_hide_navbar=true
	  o Standing Carbon
	  o Carbon potential
		● High productivity areas	● Carbon inventory and tracking
			● Priority areas for carbon storage
			● Priority areas for retention/manage met to maintain carbon storage
				● Carbon inventory and tracking
				● Priority areas for retention/management/restoration, to maintain and enhance carbon sequestration
					●	●	● Priority areas for wildfire risk management

Future ecosystems and climate refugia & corridors	● ClimateBC Map (historic, current & future climate & BEC zones) https://www.climatewna.com/ClimateBC_Map.aspx ● Novel Climate Mapping (Mahoney et al.) ● Adapt West – ● Connectivity between current and	● Corridor analysis and placement ● Priority areas for conservation/management			● Culturally important ecosystems at risk due to ecosystem changes ● Fish refugia, ● Refugia for cultural plants and other resources		● Future changes in wildfire risk Priority areas for fuel management

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
	future climate analogs in North America ● Integrated refugia and corridor priorities ● Climate Resilience Data Explorer ● UN Biodiversity Lab – ○ Forest Landscape Integrity Index (300m)						
● Hydrological models	● Adapt West -Watershed Climate Data Explorer ● Pacific Climate Impacts Consortium Gridded Hydrologic Model Output (Fraser Valley)	● Impacts on fish and other aquatic life and related management priorites ● Impacts on riparian systems and related management priorities	●	●	● Impacts on important fish populations caused by climate related changes in hydrology.	● Projected climate impacts on watershed functioning ● Water security – planning for future drought and flood mitigation ● Priority areas for retention/ restoration/managem ent	●
● Climate change	● Pacific Climate Impacts Consortium Data Portal https://www.pacificclimate.org/data ● Pacific Climate Impacts Consortium Climate Explorer https://www.pacificclimate.org/analysis-tools/pcic-climate-explorer	●	●	●	●	●	●
OPTIMIZER/TRAD E OFF /VALUATION TOOLS	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Conservation Planning	● Sites Conservation Canada Where to Work (web based tool for conservation prioritization – biodiversity & carbon) https://ncc.carleton.ca/ ● CDFCP Marxan Tool		●	●	●	●	●

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
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			Storage	Sequestration			
● Ecosystem Valuation	● Costing Nature Policy Support System (web-based tool for ecosystem services) http://www.policysupport.org/costingnature		●	●	●	●	●
ADDITIONAL	POSSIBLE DATA SOURCES	BIODIVERSITY	CARBON STORAGE	CARBON SEQUESTRATION	CULTURALLY SIGNIFICANT ECOSYSTEMS	WATERSHED RESILIENCE	WILDFIRE RESILIENCE
● Local government mapping	● Metro Vancouver environmental mapping http://www.metrovancouver.org/data	● Land cover classification (5m hybrid raster) ● Sensitive ecosystems ● tree canopy ● regional greenway corridors	● carbon biomass ● carbon ecotype ● carbon soil	●			● Tree canopy & Impervious surfaces ● watershed boundaries	●
● Local government mapping	● CRD Environmental mapping https://mapservices.crd.bc.ca/arcgis/rest/services/Environmental/MapServer	● Sensitive ecosystems ● Potential sharp-tailed snake habitat	●	●	●	●	●
● Local government mapping	● Surrey environmental mapping https://data.surrey.ca/dataset?groups=environment	● habitat suitability ● terrestrial hubs ● ecosystem corridors ● ecosystem sites (smaller sites 0.25-10ha in size) ● Green infrastructure network ● Aquatic hubs ● watercourses	●	●	●	●	●
● Local government mapping	● Saanich environmental mapping https://www.saanich.ca/EN/main/community/natural-environment/environmental-planning/saanich-ecosystem-mapping.html	● Saanich environmental reference guide ● Environmentally sensitive areas (under development)	●	●	●	●	●

DATA LAYER TYPE	POSSIBLE DATA SOURCES	ECOSYSTEM SERVICE REPRESENTED/DERIVED					
		Biodiversity	Carbon Mitigation		Culturally Significant Ecosystems (**only** *as defined by and with First Nations consent*)	Watershed Resilience	Wildfire Resilience
			Storage	Sequestration			
● Local government mapping	● Courtenay environmental mapping	● Environmentally sensitive areas ● Tree canopy cover	●	●	●	●	●
● Local government mapping	● Islands Trust environmental mapping (http://maps.islandstrust.bc.ca/arcgis/rest/services/Dynamic)	●	●	●	●	●	●
● Local government mapping	● Vancouver GIS data - https://opendata.vancouver.ca/pages/home/ ● North Vancouver GIS data - https://geoweb.dnv.org/data/	●	●	●	●	●	●
● Other data portals	● iMapBC, ● DataBC ● HectaresBC, ● EcoCat ● https://open.canada.ca/en/open-data ● https://www.sentinel-hub.com/explore/eobrowser	●	●	●	●	●	●
● QGIS tool for remote sensing data training	● Semi-Automatic Classification Plugin.	●	●	●	●	●	●