PORT GAMBLE FOREST HERITAGE PARK

FRAMEWORK APPENDICES

DECEMBER 2022

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2-1 APPENDIX

LIST OF PLANS, POLICIES, AND PROJECTS REVIEWED

APPENDIX

List of Plans, Policies, and Projects Reviewed

EXHIBITS ATTACHED TO PORT GAMBLE FUNDING APPLICATION & EXHIBITS

1. Kitsap County and Kitsap Community Foundation MOU
2. Upland Ownership Map
3. Port Gamble Trails Map
4. Port Gamble_Site_Plan_Trails
5. 12.12.18 Parks Port Gamble Ride Parks Agreement
6. Port Gamble Ride Park 6-12-18 FINAL
7. WWRP-LP 14-1484 Port Gamble Ride park- Kitsap Forest Bay Project
8. Forest Stewardship Plan for PGFHP 6-1-2016
9. Port Gamble Forest Trail Plan Documentation
10. Port Gamble Access and Stewardship Plan
11. Port Gamble Management Plan
12. NKTA Shoreline Trail Proposal
13. String of Pearl Concept Plan
14. VKP Tourism Article
15. Draft Economic Analysis Peninsula RTPO_Trails Plan
16. Evergreen 2017 Survey Results
17. 2016 WMBC Survey Summary
18. Economic Impacts of Local Parks
19. Earth ECO Trails sorted for Kitsap
20. Annotated Earth Economics Analysis
21. Rails to Trail Fact Sheet
22. Economic impact of Mountain Biking in Squamish 2014
23. Annotate 2000- 2018 SCORP
24. Stottlemeyer 30 Race 201
25. Snap Shot Economic Impact Recreation June 2012
26. Washington State Park Assessment Yurts and Cabins
27. EHD Budget Estimate
28. Cost Estimate for Access Road
29. STO Study
30. Port Gamble Work plan 2019
31. Port Gamble Stewardship Committee PDF
32. Port Gamble Project Summary 2016
33. Letters of Support
34. Press Release announcing land acquisition

TOWN OF PORT GAMBLE PLANS

Port Gamble Ownership Map 10/29/2018
Port Gamble Land Transfers to Pubic Open Space 9/20/17
Port Gamble Town Redevelopment Plan DRAFT EIS 09/17/2019

DEEDS AND ENCUMBERANCES

2017 Port Gamble Acquisition
Assignment of Real Estate Purchase and Sale Port Forterra NW
Deed Port Gamble Shoreline Block
Deed Right Port Gamble Ride Park
DOE Grant KC 189-13 Executed
Forest Block Deed of Right Signed 122816
Forest Block Phase 2 Notice of Grant Restrictions 0405018
Notice of Continuous as Current use or Forest Land Public record 61138143-4
Land Classified Port Gamble Shoreline RCO Deed of Right 02 12 14
Owner Agent Agreement 2018
E Contract Washington State Recreation and Conservation Office KC 434 13
Kitsap Contracts Forterra Assignment of Real Estate KC 337 14
E Contracts Kitsap County Washington State Recreation Office KC 434 13

KITSAP COUNTY PLANS AND POLICIES

Comprehensive Plan
Zoning Map
Land Use Map and Table
PROS Plan

STATE PLANS

State Comprehensive Outdoor Recreation Plan SCORP
State Trail Plan
2020 Forest Action Plan
Washington State Integrated Forest Management Plan

RESTORATION DOCUMENTS

20/12/03 PGFHP Forest Restoration Study
Forest Stewardship Plan for Ecological Restoration
NKBIF Strategy Plan 07/14/2011
Silviculture for Archetype 1Ecposystems Douglas Fir – Western Hemlock Forest
Table 11.15 Ecological Silva Culture for Douglas Fir-Western Hemlock Forest
Analysis of OPG Harvesting Block Data
Analysis Upland Stand Date
Forest Stand Maps 10/27/20
Bond Road Harvest unit
Port Gamble Harvest Dates
Timber Purchase Option
Timber Harvest Plan 2019
Tree Age Plan
Haul Maps

RIDE PARK

Port Gamble Ride Park Site Plan

Project Snapshop 14-1484
Ranger EMBA Agreement
Ride Park RCO Grant
WWRP Grants 2014

STEWARDSHIP PLANS

Port Gamble Management Plan
KFBP-TNC Annual Monitoring Report
Land Classification Amp 2017
PG Public Workshop Comments 3/28
Park Land Use Classification Summary
PG Work Plans 2018-2021
Port Gamble Block PH11 Monitoring Report
Port Gamble Executive Summary Brochure

TRAILS

E Bike Trail Draft
2021 Trail Plan
EWOK Reroute Trail Plan
Trail Activity Permit
Trailhead User Statistics
Twisted Sister Map
Sawdust Trail Map
RCO Request for Stottlemeyer Parking
Peninsula Regional and Non-Motorized Connectivity Study
STO 2012

RECREATION PROPOSALS

Tree Adventure Park Concept
Wild Play Discussion Points

VISIT KITSAP

Stottlemeyer Race Statistics
Recreation Trends 2015
western Governors Conference on Recreation
WSTC PPT Economic Development

2-2 APPENDIX

RECOMMENDED CHANGES TO THE KITSAP COUNTY ZONING USE TABLE

Port Gamble Forest Heritage Park - Framework Land Use Recommendations

LEGEND

P	Allowed use, activity or facility
P*	Allowed and required by deeds, easements and agreements
N	Use not allowed per current County code
ACUP	Allowed with County Conditional Use Permit (CUP)
SR-HE	Special review by the Hearing Examiner
C	Allowed with conditions
NA	Not applicable

	More restrictive than current County zoning
	Less restrictive than current County zoning
CPA	May require Comprehensive Plan amendments
	Nso discussion in Agreement

EXPLANATION

The table summarizes land use recommendations and community preferences on uses, facilities, and activities to be allowed in landscape classifications.
The landscape classifications are based on those established in the 2015 Stewardship Plan.
The recreational, educational, and infrastructure uses are separated from the natural resource, forestry, and conservation related uses and activities.
The natural resource, forestry, and conservation recommendations should be incorporated into updated Stewardship and Forest Management Plans.
The list of uses was compiled from review of code, County Zoning Use table, County and PGFHP plans, acquisition agreements and uses.

1	Categorizes as Land Use, Facilities, or Activities
2	Description of Land Use, Facilities, or Activitiess- undesired uses allowed by code are included to further limit or condition
3	Indicates current policy in plans, zoning, and land use
4 to 8	Recommendations Shading indicates the recommendation is more restrictive than the current land use code
9 to 13	Summary of requirements in deeds of use and easements granted as part of acquisition process

Gray shading indicates the agreement is silent on the use. Some legal interpretation may be required
Land uses further restricted by the acquisition agreements will supersede County Zoning and PGFHP Framework recommendations

1	2	3	4	5	6	7	8	9	10	11	12	13	
Category	**Description**	**County Plans**	**PARK LANDSCAPE CLASSIFICATION**						**ACQUISITION AGREEMENTS**				
			NA	**CON**	**PR**	**CE**	**AR**	**SR**	**SHORE**	**E BLK**	**W BLK**	**RIDE P**	**NOTES**
LAND USE / FACILITIES / ACTIVITIES		Park Zoning per Draft Land Use Table	Natural Area	Conservation	Passive Recreation	Conservation Education	Active Recreation	Special Recreation	Shoreline Block 02/12/14 (534AC)	East Forest Block 12/28/16 (1,394 AC)	West Forest Block 04/05/2018 (1,329 AC)	Ride Park 2017(177.5 AC)	Not all Uses, Activities or Facilities are referenced in acquisition agreements. All blocks allow for recreation and conservation. Therefore many uses, activities and facilities may be allowed under definition of conservation/recreation. The Western Forest Block Agreement references the 2015 Forest Stewardship and Access Plan. Access and use recommendations in places conflict with the acquisition agreements. In these instances, the legal agreements will prevail. Western Forest Block agreement references the Stewardship Plan as a guide to allowable uses. The other three blocks have requirements that conflict with the Stewardship Plan- the legal agreements must prevail. Shoreline and CAO
	Recreation, Education, & Infrastructure (all referenced in plans, code and/or agreements)												
LAND USE													
Land Use	Access - Perpetual Public (per acquisition agreements)	P	P	P	P	P	P	P	P*	P*	P	P*	Agreements require public access
Land Use	Accessory Use or Structure	P	N	N	P	P	P	P		P*	N	P	Must be water related in Shoreline Block
Land Use	Accommodation Temporary Single Family	P	N	N	N	P	P	P	N	P*	N		
Land Use	Accommodation Temporary Transitory	P	N	N	N	P	P	P	N	P*	N		
Land Use	Accommodations- Cabins	P	N	N	N	P	P	P		P*	N		
Land Use	Accommodations- Campground	P	N	N	N	P	P	P		P*	N		
Land Use	Accommodations- Yurts	P	N	N	N	P	P	P		P*	N		
Land Use	Accommodations- Permanent, Transitory	P	N	N	N	P	P	P		P*	N		ACUP permitted in Public Facilities Zone
Land Use	Agricultural use- Primary	P	N	N	N	P	P	P	N		N		
Land Use	Agriculture- Nursery	P	N	N	N	P	P	P	N		N		No buildings in Western Forest Block

Category	Description	County Plans	PARK LANDSCAPE CLASSIFICATION						ACQUISITION AGREEMENTS				NOTES
			NA	CON	PR	CE	AR	SR	SHORE	E BLK	W BLK	RIDE P	
Land Use	Ag-Farm Structures	P	N	N	N	P	N	N		N	N		
Land Use	Ag-Farm Worker RV or Residence	P	N	N	N	ACUP	N	N	N		N		
Land Use	Agritourism Assembly Events	P	N	N	N	P	P	P		N		P*	
Land Use	Amphitheatre	P	N	N	N	P	P	P			N		
Land Use	Amusement Centers	ACUP	N	N	N	N	N	N	N		N		
Land Use	Aquarium	ACUP	N	N	N	N	ACUP	ACUP	N		N		
Land Use	Arborea Botanical Gardens	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP					No buildings in Western Forest Block
Land Use	Archery or Firearms Range	SR	N	N	N	N	N	N	N		N		
Land Use	Buildings (use/easement/acquisition agreements)	P	N	N	ACUP	P	P	P		N	N		
Land Use	Campground	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Cultural Exhibits	ACUP	N	N	N	ACUP	ACUP	ACUP					
Land Use	Caretaker Residence	P	N	N	N	P	P	P	N	N	N		Permitted in Public Facilities Zone
Land Use	Carnival or Circus	ACUP	N	N	N	N	N	N	N	N	N		
Land Use	Clubs	ACUP	N	N	N	ACUP	ACUP	ACUP		N	N		
Land Use	Conference Center	ACUP	N	N	N	ACUP	ACUP	ACUP		N	N		ACUP Public Facilities Zone
Land Use	Concessions	P	N	N	P	P	P	P	N		N		
Land Use	Destination-lodge dining retail, conf ctr	P	N	N	N	P	P	P		NO			
Land Use	Day Care Center	ACUP	N	N	N	ACUP	ACUP	ACUP	N	N	N		
Land Use	Easements- Other	P	P	P	P	P	P	P	P	P	P	P	If Water related- Shoreline Block
Land Use	Education Facility	P	N	N	N	P	P		P	NO	P		
Land Use	Env learning & research center	P	N	N	P	P	P			NO		No Buildings in NA or CON	
Land Use	Education Facility		N	N	N	P	P	ACUP	P	NO	P		Review will depend on scale
Land Use	Environmental Education Center	ACUP CPA	N	N	SR	ACUP	ACUP	ACUP			N		Review will depend on scale
Land Use	Entertainment Facility- Indoor	P	N	N	N	N	N	N	N		N	N	
Land Use	Entertainment Facility- Outdoor	P	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Engineering and Construction Offices	ACUP	N	N	N	ACUP	ACUP	ACUP		N			
Land Use	Event Facility	ACUP	N	N	N	ACUP	ACUP	ACUP			N	P	
Land Use	Equipment Sales, Rentals and Repairs- Recreation	P	N	N	N	P	P	P	N	N	N		
Land Use	Extraction-Sand, Rock, Mineral, Gravel	N	N	N	N	N	N	N	N	N	N		
Land Use	Farm Stand or Farm Market	P	N	N	N	P	P	P			N		
Land Use	Fireworks Sale- Temporary	P	N	N	N	N	N	N	N		N		
Land Use	Galleries	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Golf Course	ACUP	N	N	N	N	N	N			N		
Land Use	Government or Public Structures	P	N	N	N	P	P	P		P	N		
Land Use	Historical & Cultural Exhibits	ACUP	N	N	ACUP	ACUP	ACUP	ACUP		N	P		
Land Use	Industrial- (per acquisition agreements)	N	N	N	N	N	N	N	N	N	N		No buildings in Western Forest Block
Land Use	Landfill- (per acquisition agreements)	N	N	N	N	N	N	N		N	N		
Land Use	Harvesting- Traditional Tribal Uses / Harvesting	ACUP	C	C	P	C	P	P	P	P	P*	p*	
Land Use	Indoor Recreation Facilities	P	N	N	N	ACUP	P	P	N	N	N		
Land Use	Manufactured RV Park, Model Tiny Home	ACUP	N	N	N	N	N	N		N	N		
Land Use	Material Storage	P	N	N	P	P	P	P		N	NA		If Park & Rec related
Land Use	Mobile Vendor	P	P	P	P	P	P	P			N		
Land Use	Museums & Galleries	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Non-motorized Recreation Rentals	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Office - 4,000 to 9,999 SF	ACUP	N	N	N	ACUP	ACUP	ACUP		N	N		
Land Use	Office < 4,000 SF	P	N	N	N	P	P	P		N	N		
Land Use	Open Space	P	P	P	P	P	P	P	P	P	P	P	
Land Use	Outdoor Movie Theatres	SR-HE	N	N	N	N	N	N	N	N	N		
Land Use	Marina	ACUP	N	N	N	NA	N	N		NA	NA	NA	

Category	Description	County Plans	PARK LANDSCAPE CLASSIFICATION						ACQUISITION AGREEMENTS				NOTES
			NA	CON	PR	CE	AR	SR	SHORE	E BLK	W BLK	RIDE P	
Land Use	Marina Support Services	ACUP	N	N	N	NA	N	N		NA	NA	NA	
Land Use	Museum	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Park	P	P	P	P	P	P	P	P	P	P		
Land Use	Parking & Accessory Uses	P	N	N	ACUP	P	P	P	P	P			
Land Use	Parking- Off Street	ACUP	N	N	N	ACUP	ACUP	ACUP	P	P		P	
Land Use	Parking- Structure	ACUP	N	N	N	N	N	N			N		
Land Use	Parking- Commuter Park and Ride	ACUP	N	N	N	N	N	N			N		
Land Use	Recreation Facilities- Outdoor Active	P	N	N	N	P	P	P	P*	P*	P	p*	
Land Use	Recreation Facilities- Outdoor Passive (trail only)	P	P	P	P	P	P	P	P*	P*	P	P*	
Land Use	Recreational Facilities- Indoor	ACUP	N	N	N	ACUP	ACUP	ACUP			N	P	
Land Use	Recreations- Eco Based	P	P	P	P	P	P	P	P	P	P	P	
Land Use	Recreational Facilities- Private	ACUP	N	N	ACUP	ACUP	ACUP	ACUP			N		
Land Use	Residential- All (per acquisition agreements)	N	N	N	N	N	N	N		N	N	N	
Land Use	Residential Group Living 1-6 or 7+	ACUP	N	N	N	ACUP	ACUP	ACUP	N	N	N		ACUP in Public Facilities Zone
Land Use	Race Track (Auto)	C	N	N	N	N	N	N			N		
Land Use	Research Center <4,000 SF		N	N	N	ACUP	ACUP	ACUP			N		Need CPA
Land Use	Resort	ACUP	N	N	N	ACUP	ACUP	ACUP			N		Confirm Land Use update adopted
Land Use	Retail <4,000 SF	ACUP	N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Retail >4,000 SF	C	N	N	N	C	C	C			N		
Land Use	Roads- Fire	P	P	P	P	P	P	P	P	P*	P	P	
Land Use	Roads- Park Access	P	N	P	P	P	P	P	P	P*	P	P	
Land Use	Roads- Recreational Facility Access	P	N	P	P	P	P	P	P	P*	P	P	
Land Use	Roads- Emergency Access	P	P	P	P	P	P	P	P	P*	P	P	
Land Use	Roads- Timber Harvest access	P	P	P	P	P	P	P	P	P*	P	P	Allowed per deeds /easement agreements
Land Use	Shoreline Access	P	P	P	P	NA	P	P	P*	NA	NA	NA	
Land Use	Shooting & Gun Facility	C	N	N	N	N	N	N			N		
Land Use	School, College, Vocational >8,000 SF		N	N	N	ACUP	ACUP	ACUP			N		
Land Use	Tasting Room	P	N	N	N	N	N	N			N		
Land Use	Utility Service- Water Conveyance	P	P	P	P	P	P	P		P*			
Land Use	Utilities- Substations	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP		P*	N		
Land Use	Utility- Gas Facilities	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP		P*	N		
Land Use	Utilities- Water	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP		P*	N		
Land Use	Utilities- Wireless Communication	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP		P*	N		
Land Use	Utilities- Energy Infrastructure	P	ACUP	ACUP	ACUP	ACUP	ACUP	ACUP			N		
Land Use	Wineries, Breweries, Cideries, and Distilleries	P	N	N	N	N	N	N			N		
Land Use	Zoo	P	N	N	N	N	N	N			N		
FACILITIES													
Facility	STO Non Motorized public shared use path	P	P	P	P	P	P	P	P	P	P	P	All facilities to meet or exceed ADA Stds
Facility	Access road	P	N	P	P	P	P	P	P	P	P	P	
Facility	Signage	P	P	P	P	P	P	P	P	P	P	P	
Facility	Parking Areas	P	N	N	ACUP	P	P	P		P	P	P	
Facility	Ride Park	P	N	N	N	P	P	P			N	P	
Facility	Kiosks	P	N	P	P	P	P	P		P	P		
Facility	Tree Adventure Park	P	N	N	N	N	P	P			N	P	
Facility	Equipment storage	P	N	N	ACUP	P	P	P			N		
Facility	Ball Fields	P	N	N	N	P	N	N			N		
Facility	Bike Recreation Areas	P	N	N	N	N	N	P					
Facility	Bird Blinds	P	N	P	P	P	P	P			N		
Facility	Boardwalks	P	P	P	P	P	P	P					

Category	Description	County Plans	PARK LANDSCAPE CLASSIFICATION						ACQUISITION AGREEMENTS				NOTES
			NA	CON	PR	CE	AR	SR	SHORE	E BLK	W BLK	RIDE P	
Facility	Boat Dock	P	N	N	N	NA	P	N		NA	NA	NA	
Facility	Day Use Area	P	N	N	SR	P	P	P	P	P	P	P	
Facility	Disk Golf	P	N	N	N	NA	P	P					
Facility	Destination Facilities	P	N	N	N	ACUP	ACUP	ACUP			N		
Facility	Equestrian trails	P	P	P	P	P	P	P	P	P	P	P	
Facility	Farm Stand or Farm Market	P	N	N	N	ACUP	ACUP	ACUP			N		
Facility	Fire Towers and Huts	P	N	N	P	P	P	P			N		
Facility	Kayak Launch Facility	P	P	P	P	NA	P	P			NA		
Facility	Lighting	P	N	N	P	P	P	P		P	P	P	
Facility	Model Airplane fly fields	P	N	N	N	P	P	P	P				
Facility	Mooring Anchors	P	N	N	N	NA	N	N			NA		
Facility	Mooring- Motorboats	P	N	N	N	NA	N	N			NA		
Facility	Mooring-sail boats	P	N	N	N	NA	N	N			NA		
Facility	Mt Bike Ride Park	P	N	N	N	N	P	P			N	P	
Facility	Nature Playground	P	N	N	N	N	P	P		P		P	
Facility	Parking & Accessory uses	P	N	N	ACUP	P	P	P		P		P	
Facility	Parking Off street	P	N	N	N	P	P	P		P		P	
Facility	Parking Structure	P	N	N	N	N	N	N			N		
Facility	Parking-Commuter Park and Ride	P	N	N	N	ACUP	ACUP	ACUP			N		
Facility	Playground	P	N	N	C	P	P	P					
Facility	Performance Areas	SR-HE	N	N	N	SR-HE	SR-HE	SR-HE			N		No buildings in Western Forest Block
Facility	Picnic and day use	P	N	N	C	P	P	P	P	P		P	
Facility	Picnic Shelter	P	N	N	C	P	P	P	P	P	N	P	
Facility	Rec Vehicle Camping Parks	ACUP	N	N	N	N	N	N		N	N		
Facility	Recreational Facilities outdoor	P	N	N	C	P	P	P	P	P	p	P	Refer to Stewardship Plan for Western Block
Facility	Recreational Equip Storage	P	N	N	P	P	P	P	P	N	N		
Facility	Restrooms	P	N	N	P	P	P	P	P	N	N	P	
Facility	Rental ,Repair Equip Recreation	P	N	N	N	P	P	P			N		
Facility	Ropes Course	P	N	N	N	P	P	P					
Facility	Signage Safety and directional	P	P	P	P	P	P	P	p*	P*	P*	P	
Facility	Signage-interpretive & education	P	P	P	P	P	P	P		P	P		
Facility	Tree Adventure Park	P	N	N	N	P	P	P			N		
Facility	Skate park	P	N	N	N	N	N	N			N		
Facility	Special Event Facilities	P	N	N	P	P	P	P	P	N	N	P	
Facility	Storage	P	N	N	P	P	P	P	P	N	N	P	
TRAILS													
Facility	Type 2 primitive dirt (Low capacity)	P	C	P	P	P	P	P		P		p*	C-Confirm agreements allow limiting
Facility	Type 3 primitive dirt 4-5' (low capacity)	P	C	P	P	P	P	P		P		p*	C-Confirm agreements allow limiting
Facility	Type 4 gravel (high capacity)	P	C	P	P	P	P	P		P		p*	C-Confirm agreements allow limiting
Facility	Type 5 paved-STO (high capacity)	P	N	P	P	P	P	P		P		p*	
Facility	Trails Back Country	P	P	P	P	P	P	P	P*	P*	P	p*	
Facility	National Water Tail	P	P	P	P	P	P	P	P*	NA	NA	NA	
Facility	View Points	P	P	P	P	P	P	P	P*	P	P	P	
Facility	View Platforms	P	NO	ACUP	P	P	P	P		P	N		
Facility	Water Trail Launch Facility	P	N	N	P	P	P	P	P	NA	NA	NA	
ACTIVITIES													
Activity	Events- Bike Rallies, Rides, Races	p	P	P	P	P	P	P	P	P	N	P	
Activity	Art- Public	P	P	P	P	P	P	P					
Activity	Bicycling- Night Rides	P	N	P	P	P	P	P		P		P	

Category	Description	County Plans	PARK LANDSCAPE CLASSIFICATION						ACQUISITION AGREEMENTS				NOTES
			NA	CON	PR	CE	AR	SR	SHORE	E BLK	W BLK	RIDE P	
Activity	Bicycling - Mountain Biking (on trail only)	P	P	P	P	N	P	P		P		P	
Activity	Bicycling- Motorized (on trail only)	N	N	N	N	C	C	C		P		P	If allowed, ONLY STO and Class 4 & 5 trails
Activity	Bicycling- Recreational (on trail only)	P	P	P	P	P	P	P				P	
Activity	Bird Watching	P	P	P	P	P	P	P					
Activity	Cross Country Skiing	P	N	C	P	P	P	P					
Activity	Disk Golf	P	N	N	N	P	P	P					
Activity	Diving	P	N	C	P	P	P	P			NA		
Activity	Dog Walking- Off Leash	P	N	N	N	N	N	N					
Activity	Dog Walking- On Leash & On Trail	P	P	P	P	P	P	P					
Activity	Drones	P	N	N	N	ACUP	ACUP	ACUP		P			
Activity	Events- Charitable & Social	P	N	N	C	P	P	P		P*		P*	
Activity	Events- Model Airplanes	P	N	N	N	NA	P	P	P*				
Activity	Events- Runs (on trail only)	P	C	P	P	NA	P	P		P*			
Activity	Events- Tours	P	C	C	C	P	P	P		P*			
Activity	Events- Walks (on trail only)	P	N	P	P	P	P	P		P*			
Activity	Events- Water Trail	P	N	N	P	P	P	P		P*			
Activity	Fishing	P	N	N	P	NA	P	P		p*			
Activity	Geocaching	P	N	N	P	N	P	P					
Activity	Hiking (on trail only)	P	P	P	P	P	P	P	P	P	P	P	
Activity	In-line skating	P	N	N	N	P	P	P					
Activity	Jogging (on trail only)	P	P	P	P	P	P	P					Stewardship Plan asks or permits for access
Activity	Kayaking	P	N	P	P	P	P	P	P				
Activity	Model Airplane Fly fields	P	N	N	N	P	P	P					
Activity	Outdoor Learning	P	P	P	P	P	P	P					
Activity	Skate Boards / Scooters (on trails only)	P	N	N	N	P	P	P					
Activity	Swimming	P-REC	N	N	P	P	P	P					
Activity	Water Access	P	P	P	P	P	P	P	P				
	Natural Resource & Conservation - Land Uses / Facilities / Activities (all referenced in plans, code and/or agreement)												
LAND USE													
Land Use	Community Agriculture	P	N	N	P	P	P	P					
Land Use	Agriculture	P	N	N	N	P	N	N					
Land Use	Aquaculture	P	N	C	p	P	P	P					
Land Use	Community Forestry	P	C	C	P	P	P	P		P	P		
Land Use	Conservation (Land & Natural)	P	P	P	P	P	P	P	P	P*	P*	P*	
Land Use	Easement- Remediation	P	P	P	P	P	P	P		P*			
Land Use	Easements for Grading, Access, Storm Water Utilities	P	C	P	P	P	P	P		P*			
Land Use	Forestry	P	P	P	P	N	P	P		P	P	P	Harvest per agreement, Stewardship Plan
Land Use	Forestry- Timber Harvest - County	P	C	P	P	P	P	P		N	P		Western Forest Block per agreement
Land Use	Forestry- Timber Harvests- 3rd Party	P	C	C	C	C	C	C	N	P	N	P	
Land Use	Harvesting Timber	P	N	N	ACUP	ACUP	ACUP	ACUP		P	N		
Land Use	Hunting or Trapping- Exotics	SR	SR	SR	SR	SR	SR	SR		P	N		
Land Use	Hunting, Shooting, Trapping	P	SR	SR	SR	SR	SR	SR		N	N		
Land Use	Natural Resource Conservation	P	P	P	P	P	P	P			P*		
Land Use	Pasturing / Grazing	P	N	N	ACUP	ACUP	ACUP	ACUP					
Land Use	Shellfish Harvesting - Commercial	P	N	N	N	NA	N	N	N				
Land Use	Shellfish Harvesting - Recreational	P	C	C	P	NA	P	P					
Land Use	Shellfish Hatching and Harvesting	P	C	C	P	NA	P	P					
Land Use	Wildlife Shelter	P	N	N	ACUP	ACUP	ACUP	ACUP					
FACILITIES													

Category	Description	County Plans	PARK LANDSCAPE CLASSIFICATION						ACQUISITION AGREEMENTS				NOTES
			NA	CON	PR	CE	AR	SR	SHORE	E BLK	W BLK	RIDE P	
Facility	Access Road for Commercial Forestry	P	C	C	P	P	P	P	P	P	P	P*	Per easement agreements
ACTIVITIES													
Activity	Access- Closure for more than 180 Days	P	P	P	P	P	P	P		N	N	NO	Triggers RCO Sec 23 conversion
Activity	Access- Monitoring / Remediation	P	P	P	P	P	P	P				P*	
Activity	Beekeeping	P	N	N	P	P	P	P					
Activity	Cutting and Composting	C	N	N	C	C	C	C					
Activity	Habitat Conservation / Salmon Recovery	SR	SR	SR	SR	SR	SR	SR	P				Requires deed of right
Activity	Habitat Enhancement	P	SR	P	P	P	P	P	P		P*	P	Requires consistency with ESA
Activity	Habitat Protection	P	P	P	P	P	P	P	P	P	P*	P	
Activity	Habitat Restoration	P	P	P	P	P	P	P	P	P	P*	P	
Activity	Harvesting- Berries	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Harvesting- Cedar Bark	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Harvesting- Traditional & Medicinal Plants	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Harvesting- Brush: Salal and Huckleberry	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Harvesting- Commercial Timber	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Harvesting- Mushroom	P	C	C	C	P	P	P			p*		Per Native American Treaty Rights
Activity	Hunting or Trapping- Exotics	C	C	C	C	C	C	C		P	p*		Per Native American Treaty Rights
Activity	Management Plan for LT Conservation (TNC)	P	p	p	p	P	p	p			P*		Required by TNC- Funder
Activity	Mobile Vendor- Temp	P	N	N	N	ACUP	ACUP	ACUP					
Activity	Monitoring Plan	p	p	p	p	P	p	p	P		P*		Required by TNC- Funder
Activity	Plant Native Species	P	P	P	P	P	P	P	P	P	P	P	
Activity	Remediation & Restoration	P	p	p	p	P	p	p		P*	p		
Activity	Removal of Native Species	C	C	C	C	C	C	C		NO			
Activity	Remove Exotic Species	P	P	P	P	P	P	P	P	P	p	P	
Activity	Research	P	P	P	P	P	P	P	P		P		
Activity	Restoration of Natural Resource Values	P	P	P	P	P	P	P	P	P	P		
Activity	Scientific Research & Monitoring	P	P	P	P	P	P	P	P	P	p		Reference Stewardship Plan
Activity	Storm Water & Drainage Easement	P	P	P	P	P	P	P	P	P*			
Activity	Stump Grinding, Firewood	C	N	N	C	C	C	C					
Activity	Timber Thinning (except for unhealthy)	P	N	P	P	P	P	P		N			
Activity	Topsoil Production	C	N	N	C	C	C	C		N			
Activity	Tree Removal for Habitat Restoration or Enhancement	P	C	C	P	P	P	P	P		P*		Comply with ESA
Activity	Wildlife Management	P	P	P	P	P	P	P	P	P	P*		

2-3 APPENDIX

FULL DEMOGRAPHICS REPORT (HIGHLANDS)

Port Gamble Forest Heritage Park Master Plan

Demographics

Kitsap County had approximately 272,200 residents in 2020 (Washington Office of Financial Management, 2020). The US Census Bureau divides the County into five Census County Divisions (CCDs): Bremerton, Port Orchard, Kingston, Bainbridge Island, and Poulsbo. Bremerton CCD in the south is the most populated County division, with over 40 percent of the County population. Poulsbo CCD, where the Park is located, has nearly 46,000 residents, accounting for approximately 17% of the County population. The Park is located adjacent to the historic town of Port Gamble, and across the Port Gamble Bay from the Port Gamble S'Klallum Reservation (estimated population of 634). The Port Madison Reservation, home to the Suquamish Tribe, is also nearby with a diverse population of Suquamish and non-Natives estimated at 7,919 people.

Table 1 shows the 2019 population (the most recent data available) for each CCD and the major cities and the two Reservations in the County**. Of the nearly 60,000 people in the Poulsbo and Kingston CCD, the Park may be within approximately 10 miles of their residence. Adding in the approximately 25,000 people on Bainbridge Island, there may be approximately 85,000 County residents living within approximately 20 miles of the Park**. Looking to the future, the County population is projected by the Washington Office of Financial Management to grow by 4% to 35% from 2020 to 2040, with a mid-level projection of growth of 17% (Office of Financial Management, 2017). In the mid-level population forecast, by 2040 the County population is estimated to be approximately 323,000 people. Assuming this growth is evenly distributed across the County, then the population within 10 miles and 20 miles of the Park may increase, respectively, to approximately 70,000 people and 100,000 people.

The population is primarily rural. As shown in **Table 1** in italics, the largest city in each CCD typically comprises only approximately 20% to 35% of the CCD population. Across the County, 66% of the population lives in unincorporated areas (Washington Office of Financial Management, 2020). However, the County is proximate to and closely linked by highway and ferry to the approximately four million residents of the greater Seattle-Tacoma-Bellevue metropolitan area, as well as to residents on the Olympic Peninsula, Gig Harbor Peninsula, and in Olympia.

Table 1: Kitsap County and Surrounding Areas Population, 2019

Geography	Population	Miles to Port Gamble Forest Heritage Park (Bay View Trailhead)
Kitsap County		
Poulsbo CCD	45,805	
Poulsbo	*10,602*	~9
Port Madison Reservation (Suquamish Tribe)	*7,919*	~10
Kingston CCD	12,524	
Kingston	*2,193*	~7
Port Gamble Reservation & Trust Land (Port Gamble S'Klallum Tribe)	*634*	~8
Bainbridge Island CCD	24,486	~17
Bremerton CCD	112,732	
Bremerton	*40,631*	~26
Port Orchard CCD	70,335	
Port Orchard	*14,062*	~31
Total County[1]	271,473	

Source: US Census Bureau, 2019. American Community Survey, 2019 and 2015-2019 survey data. Distance based on Google maps directions.

1/Since some CCD only have available data from 2015 to 2019, and some from 2019 alone, the County total for 2019 is higher than the sum of the CCD data, most of which are the 2015-2019 average.

Interest and engagement in outdoor recreational activities can differ by race and ethnicity. Understanding these differences by race, and providing opportunities that meet a diverse set of preferences, can help increase access to recreational opportunities. Table 2 presents data on Hispanic/Latinx ethnicity and race in Kitsap County and the two CCD's most proximate to the Park, as well as data for Washington and the US for comparison. As highlighted in the table, the County as a whole, and the two CCD's closest to the Park are 90% to 95% non-Hispanic/Latinx and 80% to 85% white, with approximately 15% to 20% of the population self-identifying as American Indian, Asian, Native Hawaiian and Pacific Islander, or of some other race/combination of races.

As noted above, recreational activities and preferences can vary by race and ethnicity. Data for recreators statewide in Washington indicate that across all of these demographic groups, walking in a park or trail setting was the number one outdoor recreation activity. However, there were some notable differences, particularly amongst races, with four to five leisure activities at a park (playing, attending a concert or event, general relaxing, family gatherings, or picnicking/cooking out) ranking in the top 10 activities amongst Hispanics, Asians, and African-Americans. The only leisure activity at a park ranking in the top 10 activities for whites was attending a concert or event. As such, for broad appeal across all races and ethnicities, facilities for groups and for general relaxation and playing may be important.

Table 2: Kitsap County Race/Ethnicity, 2015-2019

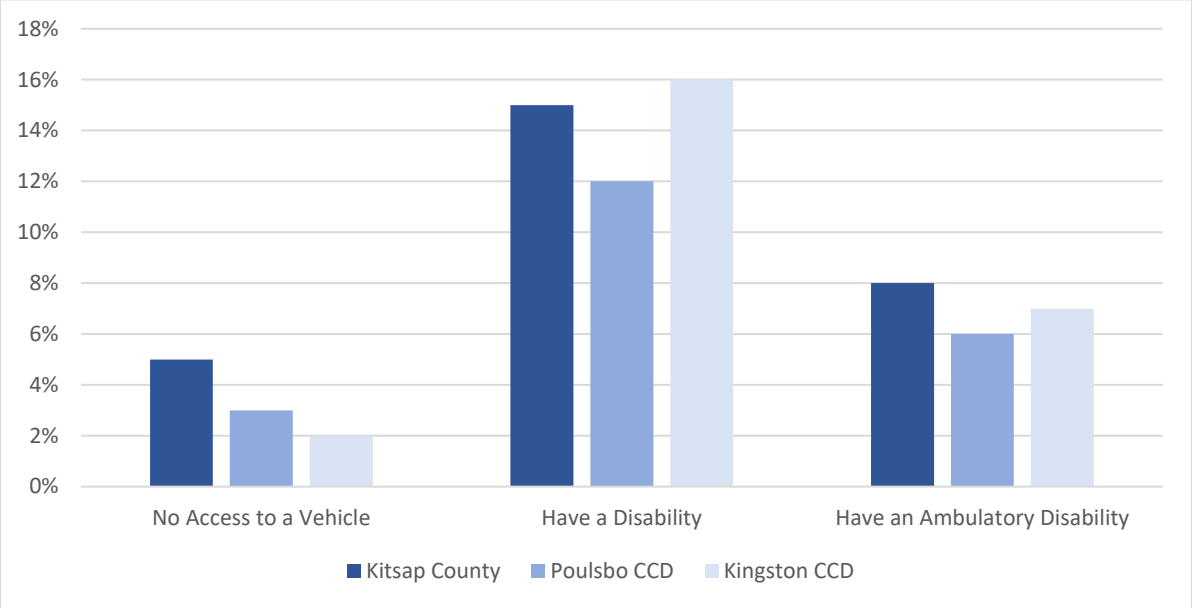
Ethnicity/Race	US	Washington	Kitsap County	Kingston CCD	Poulsbo CCD
Hispanic or Latinx	18%	13%	8%	4%	9%
Not Hispanic or Latinx	82%	87%	92%	96%	91%
White alone	72%	75%	81%	83%	84%
Black or African American alone	13%	4%	3%	0%	1%
American Indian and Alaska Native alone	1%	1%	1%	5%	1%
Asian alone	6%	9%	5%	2%	3%
Native Hawaiian and Other Pacific Islander alone	0%	1%	1%	0%	1%
Some other race alone	5%	4%	2%	1%	3%
Two or more races	3%	6%	8%	9%	7%
Total	100%	100%	100%	100%	100%

Source: US Census Bureau, 2015-2019. American Community Survey, 2015-2019 survey data, Table BO3002.

Another aspect of outdoor recreational opportunities is accessibility. We address two aspects of demographics regarding accessibility here: the population of people who have a disability and the population who does not have access to a vehicle. According to data from the U.S. Census Bureau, approximately 15% of all County residents have a disability (hearing, vision, cognitive, ambulatory, or independent living difficulty). **Specific to ambulatory disabilities which may be particularly important when considering outdoor recreation access, nearly 8% of the County population (nearly 18,000 people), approximately 7% of the Kingston CCD (approximately 900 people), and approximately 6% of the Poulsbo CCD (approximately 2,400 people) has an ambulatory disability**. These residents, and likely many others, would all benefit from a park with accessibility for many modes of trail use, such as wheel chair use.

Regarding access relate to vehicles, **approximately 5% of households in the County and approximately 2% to 3% of households in Kingston and Poulsbo CCD's do not have access to a vehicle**. In the Kingston and Poulsbo CCD's, this equates to approximately 800 people; Countywide, this equates to approximately 7,400 people. While all Kitsap residents can benefit from public-transit and non-motorized access to the Park, these residents have no other option.

Figure 1: Access Considerations: Population With Disabilities or No Access to a Vehicle, 2015-2019

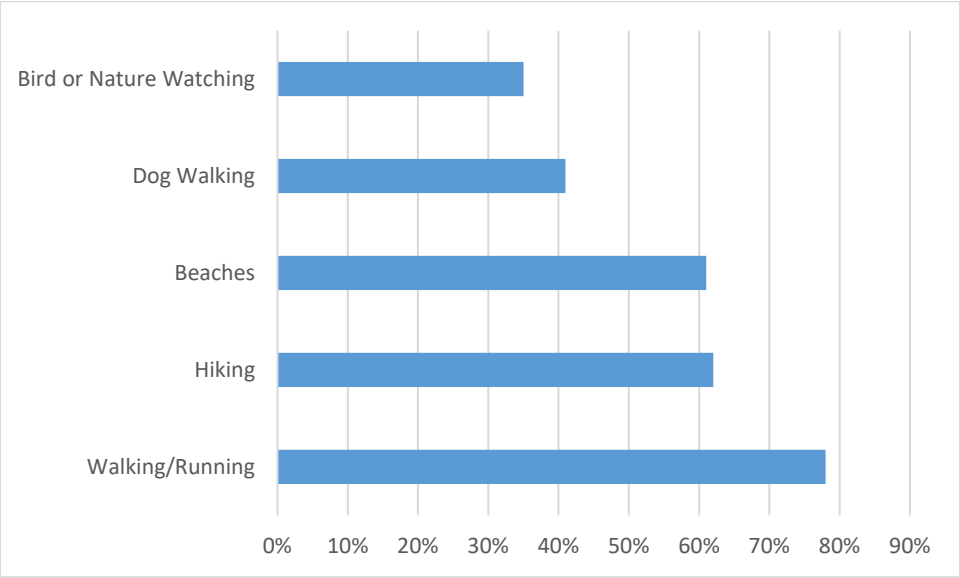


Source: American Community Survey Estimates, 2015-2019, U.S. Census Bureau for Kitsap County, Poulso Census County Division, Kingston Census County Division

County Recreation Preferences and Views

All data on recreation preferences indicate the importance of trail-based recreation at Port Gamble Forest Heritage Park. Kitsap County residents enjoy walking and/or running at County parks more than any other activity (Kitsap County, 2018). We estimate that Kitsap County residents may walk or hike in a park or in a trail setting over 10 million days a year based on recreation participation rates at the state level; assuming the same participation level, with population growth this number is projected to increase approximately 17% by 2040 to approximately 11.7 million days per year. For the approximately 100,000 people who may live within 20 miles of the park by 2040 (see discussion in population section above), there may be a demand for approximately 3.7 million user days for trail uses/walks in parks. **Figure 2** presents the five most popular activities at County parks by County residents, with the associated percentage of responses in a 2018 recreation preferences and needs survey of County recreators (Kitsap County, 2018).

Figure 2: Participation in the Top 5 Activities at County Parks, % of County Park Recreators



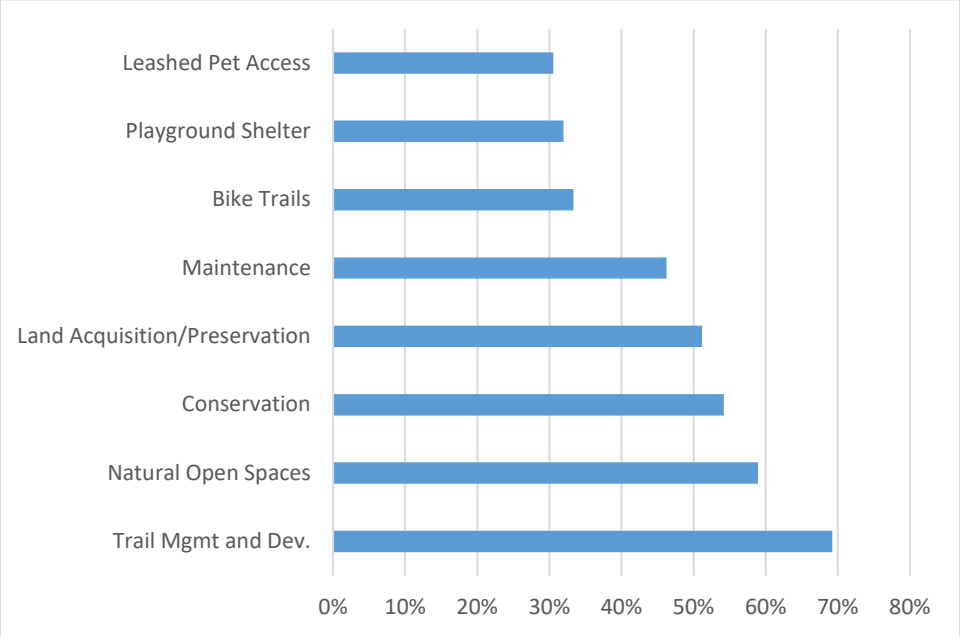
Source: (Kitsap County, 2018)

Consistent with their preference for trail-based recreation, management and development of trail systems in Kitsap County is highly important to County recreators. As shown in Figure 3, nearly 70% of Kitsap County recreators find trail management and development the most significant County park area of interest, followed by natural open spaces (59%), conservation (54%), and land acquisition and preservation (51%). The most frequent barriers to visiting Kitsap County parks include lack of park location knowledge, poor facility maintenance, parking and availability of restrooms (Kitsap County, 2018). While these survey findings are related to all county parks, the results highlight opportunities for improving the recreational enjoyment at Port Gamble Forest Heritage Park.

Specific to North Kitsap, in 2010, the North Kitsap Trails Association in collaboration with the National Parks Service and the Kitsap County Health Department conducted an online survey on a trail plan (North Kitsap Trails Association, National Park Service, Kitsap County, 2011). **Consistent with the rest of the County, the responses from 724 residents indicate that almost everyone wants trails, particularly walking trails. Biking trails, running paths, and horseback riding also were important to many respondents. Respondents noted the importance of trails to quality of life, as well as the need for trails to provide opportunities to exercise.**

In summary, surveys repeatedly show that there is high local demand and interest for recreational trails in Kitsap County. Trail uses, including for walking, running, biking, and horseback riding, rank consistently as the top outdoor recreation activity engaged in by County residents, and trails are the County park area most often ranked as important by County residents.

Figure 3: Percent of County Park Recreators Identifying County Park Areas as "Important"



Source: (Kitsap County, 2018)

3-1

APPENDIX

SURVEY RESULTS- IN-FIELD, PUBLIC MEETINGS,
WEBSITE QUESTIONNAIRES

In one or two words, what would be your favorite recreational activity in this park in the future?

97%
Engagement

188
Responses



In one or two words, what do you think is the most important priority for the Master Plan process?



Engagement

165

Responses



In one or two words, what is the biggest challenge facing the planning process?

84%
Engagement

144
Responses



In one or two words, what is the best way to give everyone a sense of belonging in the park?

82%
Engagement

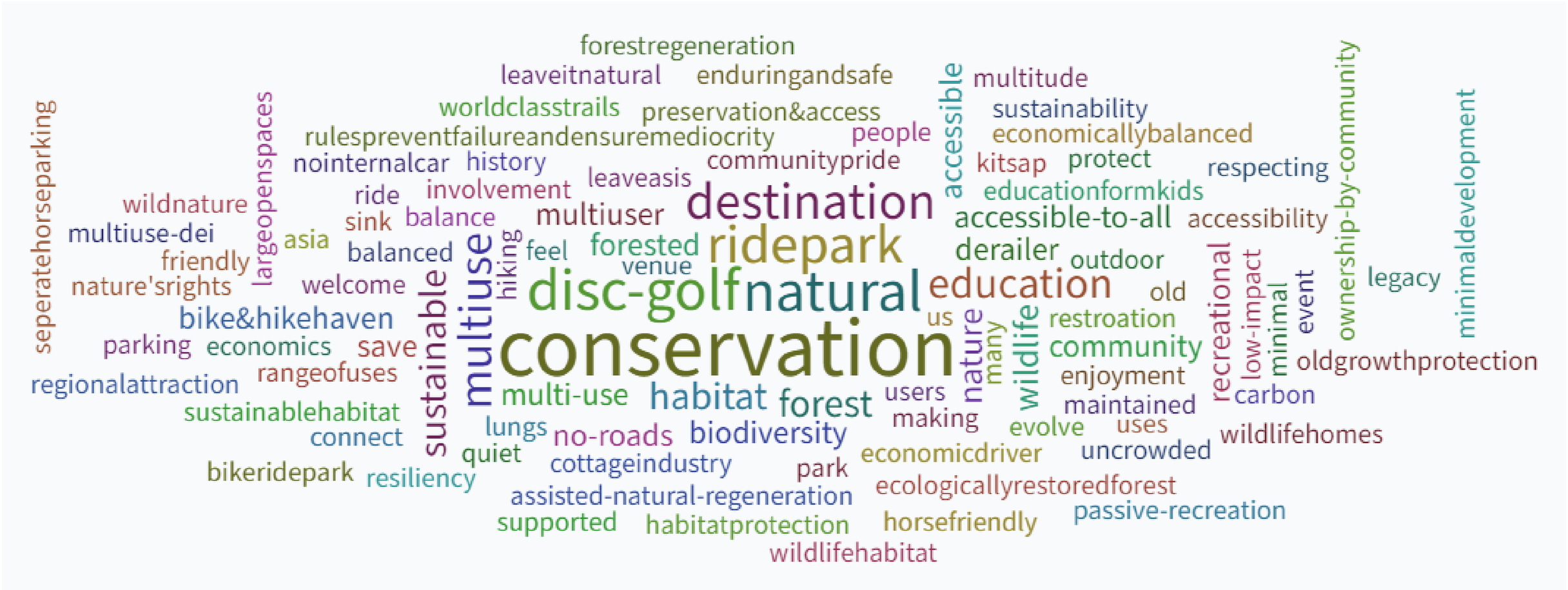
135
Responses



Choose one or two words that best describes your ideal future vision for the park.

86%
Engagement

151
Responses



Public Meeting #2 Live Polling Results

Emerging Opportunities Polls

Participants in the public meeting held June 22, 2021, were presented with information on challenges and opportunities based on emerging themes in the categories of recreation, natural resource management, and environmental and cultural education, as well as a range of uses and facilities or programs associated with those themes.

A pair of poll questions were asked for each set of potential opportunities for uses and facilities or programs associated with the emerging opportunities, to begin to determine what preferences are held by these meeting participants:

1. The first question in a given pair asked participants to indicate up to three opportunities that were of most interest to them, or that they thought were most important, of the set of opportunities.
2. The second question in the pair asked participants to indicate up to three opportunities that were of least interest to them, or that they thought were least important, of the set of opportunities.

A total of 68 meeting attendees participated in the live polls associated with the review of potential opportunities for uses and facilities or programs associated with the emerging themes in each category. The full results of each of these poll questions is provided in Attachment 1. The sections below synthesize results of each pair of poll questions into resulting preference "bins".

1. Of these potential recreation facilities and uses, which 3 are of most/least interest to you?

When synthesizing both polls, trailhead parking and water access had the highest level of interest, while disc/frisbee golf and adventure course had the lowest level of interest. Disc/frisbee golf was only selected 3% of the time for most interest, and was selected 23% of the time for least interest.

Most Interest	Mid-Interest	Least Interest
Trailhead Parking	Event Staging Area	Disc/Frisbee Golf
Water Access	Open-air Amphitheater	Adventure Course
Birding and Wildlife Viewing Areas	Nature-based Playground	Low-impact Accommodation
	Picnic Area & Shelter	

2. Of these potential trail-specific opportunities, which 3 are of most/least interest to you?

When synthesizing both polls, the results were very straightforward; the trail-specific opportunities that were selected most often as being of most interest were the same as those selected least often as being of least interest. Similarly, the trail-specific opportunities that were selected most often as being of least interest were the same as those selected least often as being of most interest. The Trail System "Loop" Trails option was selected 25% of the time as being of most interest and 0% of the time as being of least interest.

Most Interest	Mid-Interest	Least Interest
Trail System: "Loop" Trails	Logging/Fire Roads: Improve Existing for Multi-use	Opportunities for Electric and Assistive Devices
Multi-use Trails	Single-use Trail: Contemplative	Single-use Trail: Equestrian
Single-use Trail: Hiking/Walking	Trails for Mobility	Single-use Trail: Mountain Bike
	Logging/Fire Roads: Improve Existing for Multi-use	

3. Of these potential recreation programs, which 3 are of most/least interest to you?

When synthesizing both polls for potential recreation programs, Guided Nature Walks and Trail Runs & Races had the highest level of interest. The recreation programs selected most often as being of least interest were the same as those selected least often as being of most interest.

Most Interest	Mid-Interest	Least Interest
Birding and Wildlife Events	Access to Mobility: Enhancing Equipment	Food Concessions
Guided Nature Walks	Bike Rides & Races	Equipment Rentals for Trail Use
Trail Runs & Races	Guided Foraging Activities	Orienteering/Geocaching
	Equipment Rentals for Water Use	

4. Which 3 natural resource management priorities, under the umbrella of "Forest Regeneration," are most/least important to you?

When synthesizing both polls for natural resource management, Increase Species Diversity was noted as the highest importance, while Meadows and Protect Culturally Significant Flora were noted as the lowest importance. Unlike other poll question pairs, natural resource management had a split in opinion in one key option: Habitat Enhancement to Protect Wildlife was among the options chosen most often for ***both*** the most important (14%) and least important (16%) polls; therefore, it was placed in the mid-importance category in these summary bins.

Most Important	Mid-Importance	Least Important
Increase species diversity	Hazard (fire) mitigation	Meadows
Sustainable forest management	Habitat enhancement to attract more wildlife	Protect culturally significant flora
Watershed restoration & protection	Shoreline restoration and conservation	
	Invasive species control	

5. *Of these potential environmental education facilities and uses, which 3 are of most/least interest to you?*

When synthesizing both polls, the environmental education facilities and uses that were selected most often as being of most interest were the same as those selected least often as being of least interest. Overall, Environmental & Cultural Education Center (medium-large) and Overnight Accommodations for Education had the lowest level of interest.

Most Interest	Mid-Interest	Least Interest
Research Facility	Native Plant Nursery	Environmental & Cultural Education Center (medium-large)
Viewing Platforms	Environmental & Cultural Education Center (small-medium)	Overnight Accommodations for Education
Outdoor Classroom Areas		Multi-use Community Facility
		Visitor's Center/Museum

6. *Of these potential environmental education programs, which 3 are of most/least interest to you?*

When synthesizing both polls, the results were very straightforward; the environmental education programs that were selected most often as being of most interest were the same as those selected least often as being of least interest. Similarly, the programs that were selected most often as being of least interest were the same as those selected least often as being of most interest.

Most Interest	Mid-Interest	Least Interest
Environmental Education	Job Training	Interpretive Programs
Stewardship Volunteers Programs	Cultural Education	Foraging Plants
Research	Guided Nature Walks	Community Gardens

Funding and Economic Development Polls

Participants in the public meeting were also presented with information on how different land use options at the park may affect both economic development opportunities in the community and funding for the park. The participants were then asked to express their preferences between four sets of two options for land use / funding. Funding mechanisms (and associated land use strategies that were presented to participants were[1]: 1) Park user fees (entrance or parking fees) to fund park operations, with park land uses determined based on local user preferences; 2) Facility use fees (accommodations, facility rentals, events, concessionaire leases) to help fund park operations and attract visitors to the area, with some land use dedicated to these visitor facilities; 3) Dedicated community taxes or development fees to fund park operations, with park land uses determined

[1] Note that these choices were selected based on the fact that they may affect land use and visitation at the park; other funding mechanisms such as donations or grants or off-site business opportunities were not included as they do not directly affect land use or visitor experience at the park.

based on local preferences; and 4) Leases for energy infrastructure or farming or rights of way that would help fund park operations, with some land in the park dedicated to these uses.

Meeting participants tended to rank these options as follows:

Most Preferred → Least Preferred

Comm. Taxes | General Park User Fees | Facility Use Fees | Energy / Farming Leases

As discussed above and as expected, meeting attendees (who are generally park users) generally favor land uses aligned with current park uses such as trail use and nature-based pursuits such as wildlife viewing/bird watching, and do not favor facilities and uses that may attract out of area visitors and that would provide revenue-generation potential and appear to strongly oppose land uses/fee generation through non-recreation land uses such as energy or farming development. Further, as indicated in their preferences between funding options, meeting attendees prefer park costs to be spread over the general population through taxes/development impact rather than have costs borne by users through general user fees paid by all (or nearly all) park visitors. However, when asked to compare user fees for all park visitors to revenue generating facilities at the park, meeting participants when fairly evenly split (48% to 47% preference), although there were more participants with a strong preference for user fees instead of revenue-generating visitor facilities.

Finally, participants were also asked how much they would be willing to pay annually through user fees or taxes to recreate at the park. Nearly all meeting participants who responded (96%) indicated they would be willing to pay at least $25 annually, with 59% indicating they would be willing to pay $100 per year or more. Average willingness to pay was $84 per respondent.

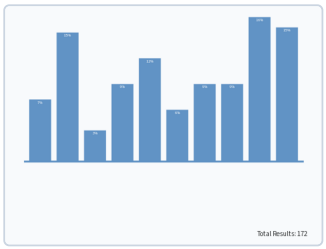
In considering these notes, it is important to note that different stakeholder groups may have very different preferences, and that we expect that the following potential stakeholder groups were not have been represented in the public meeting:

1. Average county resident who might use the park if other were opportunities available, such as a nature-based playground/outdoor classrooms/amphitheater/etc., and who would pay taxes under a tax-based funding system.
2. Outdoor-related and tourism-related businesses and Port Gamble Town businesses who may benefit the most from economic development associated with an increase in visitation at the park from non-local visitors if park land uses were geared towards attracting a regional pool of visitors.

Attachment 1
Emerging Opportunities Polling Results

Attachment 2
Funding and Economic Development Polling Results

Of these potential recreation facilities and uses, which 3 are of most interest to you?



Response options	Count	Percentage
	12	7%
	25	15%
	6	3%
	15	9%
	20	12%



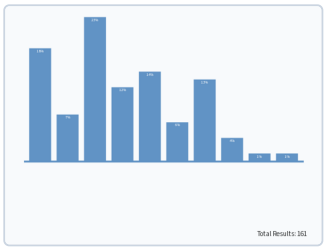
Engagement

172

Responses

Response options	Count	Percentage
	10	6%
	15	9%
	15	9%
	**28**	**16%**
	26	15%

Of these potential recreation facilities and uses, which 3 are of least interest to you?



Response options	Count	Percentage
	29	18%
	12	7%
	**37**	**23%**
	19	12%
	23	14%

84%

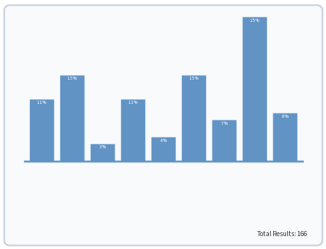
Engagement

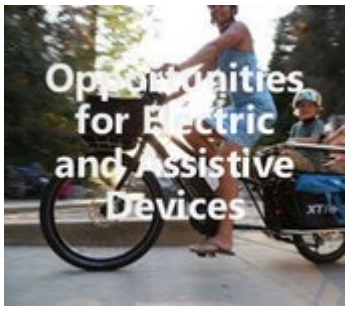
161

Responses

Response options	Count	Percentage
	10	6%
	21	13%
	6	4%
	2	1%
	2	1%

Of these potential trail-specific opportunities, which 3 are of most interest to you?



Response options	Count	Percentage
	18	11%
	25	15%
	5	3%
	18	11%
	7	4%



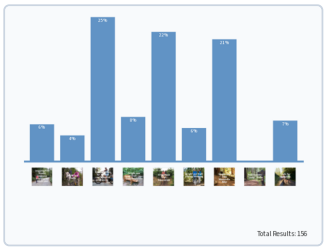
Engagement

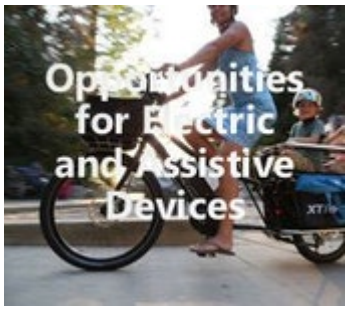
166

Responses

Response options	Count	Percentage
	25	15%
	12	7%
	**42**	**25%**
	14	8%

Of these potential trail-specific opportunities, which 3 are of least interest to you?



Response options	Count	Percentage
	10	6%
	7	4%
	**39**	**25%**
	12	8%
	35	22%



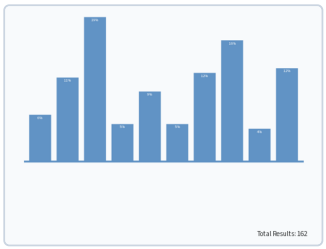
Engagement

156

Responses

Response options	Count	Percentage
	9	6%
	33	21%
	0	0%
	11	7%

Of these potential recreation programs, which 3 are of most interest to you?



Response options	Count	Percentage
	10	6%
	18	11%
	**31**	**19%**
	8	5%
	15	9%



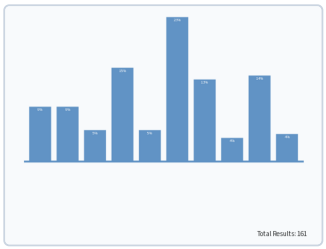
Engagement

162

Responses

Response options	Count	Percentage
	8	5%
	19	12%
	26	16%
	7	4%
	20	12%

Of these potential recreation programs, which 3 are of least interest to you?



Response options	Count	Percentage
	14	9%
	14	9%
	8	5%
	24	15%
	8	5%



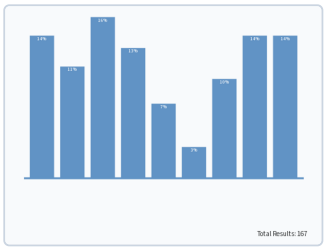
Engagement

161

Responses

Response options	Count	Percentage
	**37**	**23%**
	21	13%
	6	4%
	22	14%
	7	4%

Which 3 natural resource management priorities, under the umbrella of " Forest Regeneration," are most important to you?



Response options	Count	Percentage
	23	14%
	18	11%
	**26**	**16%**
	21	13%
	12	7%



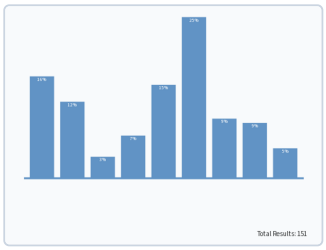
Engagement

167

Responses

Response options	Count	Percentage
	5	3%
	16	10%
	23	14%
	23	14%

Which 3 natural resource management priorities, under the umbrella of " Forest Regeneration," are least important to you?



Response options	Count	Percentage
	24	16%
	18	12%
	5	3%
	10	7%
	22	15%



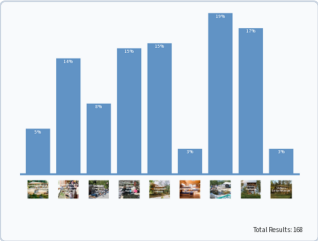
Engagement

151

Responses

Response options	Count	Percentage
	**38**	**25%**
	14	9%
	13	9%
	7	5%

Of these potential environmental education facilities and uses, which 3 are of most interest to you?



Response options	Count	Percentage
	9	5%
	23	14%
	14	8%
	25	15%
	26	15%



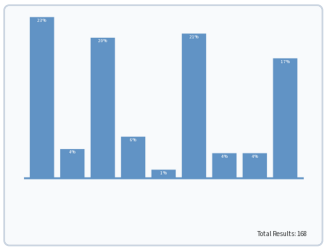
Engagement

168

Responses

Response options	Count	Percentage
	5	3%
	**32**	**19%**
	29	17%
	5	3%

Of these potential environmental education facilities and uses, which 3 are of least interest to you?



Response options	Count	Percentage
	**39**	**23%**
	7	4%
	34	20%
	10	6%
	2	1%



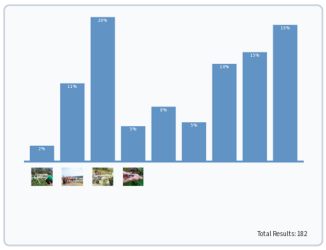
Engagement

168

Responses

Response options	Count	Percentage
	35	21%
	6	4%
	6	4%
	29	17%

Of these potential environmental education programs, which 3 are of most interest to you?



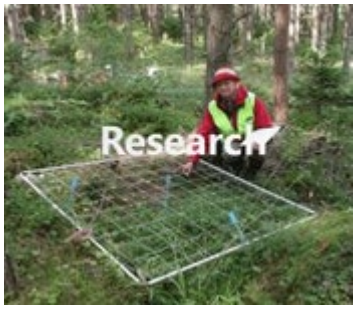
Response options	Count	Percentage
	4	2%
	20	11%
	**37**	**20%**
	9	5%
	14	8%



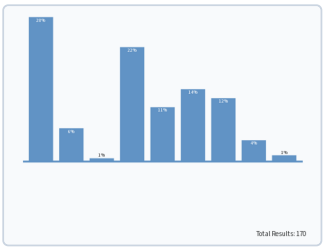
Engagement

182

Responses

Response options	Count	Percentage
	10	5%
	25	14%
	28	15%
	35	19%

Of these potential environmental education programs, which 3 are of least interest to you?



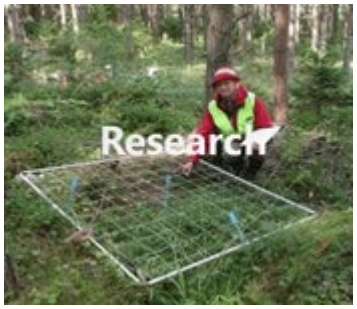
Response options	Count	Percentage
	**48**	**28%**
	11	6%
	1	1%
	38	22%
	18	11%



Engagement

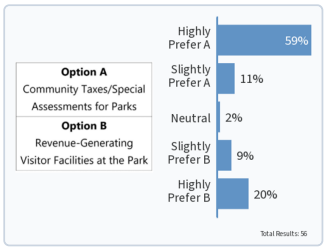
170

Responses

Response options	Count	Percentage
	24	14%
	21	12%
	7	4%
	2	1%

5	68	56	83%
Activities	Participants	Average responses	Average engagement

Funding Question #1

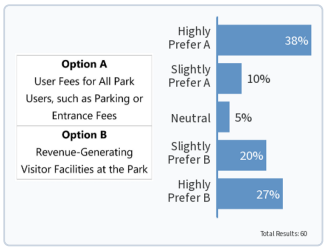


Response options	Count	Percentage
Highly Prefer A	**33**	**59%**
Slightly Prefer A	6	11%
Neutral	1	2%
Slightly Prefer B	5	9%
Highly Prefer B	11	20%

82%
Engagement

56
Responses

Funding Question #2

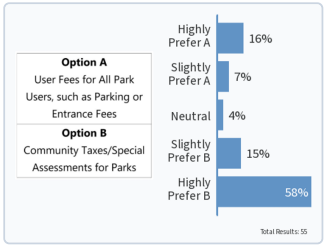


Response options	Count	Percentage
Highly Prefer A	**23**	**38%**
Slightly Prefer A	6	10%
Neutral	3	5%
Slightly Prefer B	12	20%
Highly Prefer B	16	27%

88%
Engagement

60
Responses

Funding Question #3

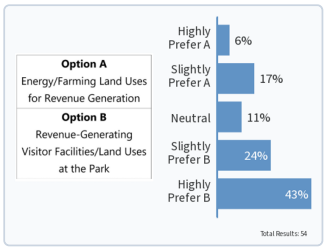


Response options	Count	Percentage
Highly Prefer A	9	16%
Slightly Prefer A	4	7%
Neutral	2	4%
Slightly Prefer B	8	15%
Highly Prefer B	**32**	**58%**

81%
Engagement

55
Responses

Funding Question #4

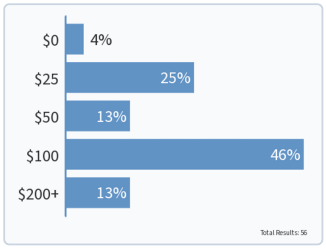


Response options	Count	Percentage
Highly Prefer A	3	6%
Slightly Prefer A	9	17%
Neutral	6	11%
Slightly Prefer B	13	24%
Highly Prefer B	**23**	**43%**

79%
Engagement

54
Responses

How much would you be willing to pay per year through taxes or use fees for the opportunity to recreate at Port Gamble Forest Heritage Park?



Response options	Count	Percentage
$0	2	4%
$25	14	25%
$50	7	13%
$100	**26**	**46%**
$200+	7	13%

82%
Engagement

56
Responses

Field Survey by PG Stewardship Committee
June 2021

I have now entered all 207 survey responses. Here are few things to note about them:

- I have extrapolated some results. For example, if they said they would spend $25 before improvements and left the amount after improvement blank, I assumed they would still be willing to spend $25.
- Because the survey was slightly modified over time some questions don't align. I have adjusted these for consistency. For example, the response regarding small farms on question 15 was item "l' on some surveys but item "m" on most. I made sure they were recorded in the same place.
- As I said before, if they checked more than 3 items on question #15 I generally didn't fill in anything at all. The purpose of limiting responses to 3 items was to determine priorities; when people checked many more than that this objective is lost.
- Quite a few people didn't realize that there was a back side to the survey so those questions weren't answered.
- This was not a random sample; neither the dates or locations were randomly selected. The Bayview East trailhead was not covered at all so usage for that location is not accurate. Also, since only pedestrian access is permitted there the number of people who use the park for walking is under-represented. That will also be true for people looking for beach access or views.
- I doubt if Q9 on park location used is accurate. The question did not exist on some survey forms and also was not answered frequently. People are unlikely to know what areas are north, south, etc. as exemplified by some responses in relation to the parking area used.
- For the most part I think the narrative responses are not useful. The responses are too generic; for example, because it is beautiful. Being close to home was frequently cited. Consequently, I will not be entering additional narrative responses except for a few that appear beneficial to me. I will give the survey back to Mark the next time I get a chance to do so.
- Some people checked multiple reasons for using the Park that day. For example, Hiking and viewing wildlife. I was not able to capture that directly. I did list them as part of their favorite reasons for visiting the park. Thus, the "favorite" reasons for visiting is probably a better indicator of why people are there than that day's activity.
- Adding restrooms and more parking were frequently cited improvements wanted. A few people mentioned adding bench (or logs) where people could sit and rest. [Note: NKTA plans to add a couple of benches along the Bluff Trail.]
- I have not had a chance yet to break the responses down by various groups (i.e., what parking area they used).
- A bit more than 10% of used came from out of the County.
- Less than half for the respondents cited using other Kitsap Co. parks. That may be in part due to bikers who prefer the larger area available at PGFHP.
- Unsurprising, people like using single-track trails. I think the logging roads serve as a way to reach desired single-track trails to a large degree.

1. Are you aware of the process to create a Master Plan for PGFHP? Yes 99 No 93

2. Have you participated in a public meeting to date? Yes 27 No 165

3. Age Group:

0-12	13-19	20-39	40-59	60+
Number: 1	6	55	85	60

5. With a Dog? Yes = 68 No = 135

4. Home town based on Zipcodes:

Kitsap Users	##	**From Other Counties**	##
Poulsbo	70	Seattle	8
Kingston	28	Port Townsend	6
Bainbridge Is.	20	Port Ludlow	3
Bremerton	20	Sequim	3
Indianola	5	Maple Valley	2
Port Orchard	4	Puyallup	2
Silverdale	3		
Suquamish	3		
Seabeck	2		
Keyport	1		

Others (1 each): Bothel, Issaquah, Kirkland, North Bend, Bellingham, Morton, Nordland, Quilcene, Tacoma, Kennewick,

6. About how often have you visited Port Gamble Forest Heritage Parks in the past 6 months?

Number of PGFHP Visits:	1-6	7-12	13-24	25+
	62	21	39	78

7. What Park entry points do you use?

Bayview West	107
Bayview East	30
Stottlemeyer	129
Old Airfield	49
Old Port Gamble Road	106

8. a) Estimate the percentage of time you spend on Logging Roads 42%
Single Track Trails 58%

10. Indicate today's primary recreational activity and up to 3 of your favorite PGFHP activities. *

Today *		Top 3 **
##	%	##

Walking	82	40%	128
Running	24	12%	57
Biking	87	42%	111
Horseback Riding	4	2%	7
Wildlife viewing	1	0.5%	31
Foraging	0		23
Beach time or paddle sports	0		14
Relaxing/viewing nature	0		37

* Does not add to 100% because some people didn't answer the question.
** Some people checked more than 3 items. In those cases, I did not enter any data as it would not show us what brought most people to the park.

13. About how often have you visited other Kitsap County Heritage Parks in the past 6 months?

Visits	Tally
1-6	38
7-12	11
13-24	8
25+	19

15. The county hopes to generate revenue to improve and maintain the park.
Which of 3 ideas for raising revenue do you most favor? Which 3 do you least favor?

	Favor	Don't Favor
a. Eco-tourism and tours (e.g., environmental education)	30	7
b. Recreational events with fees (biking, hiking)	50	7
c. Privately operated facilities in park (e.g., ropes course)	11	24
d. Minimum commercial tree harvesting in some areas	19	32
e. Parking fee (e.g., Annual Parking Pass)	21	37
f. User Fees	9	43
g. Low impact accommodations (tent campground, yurts)	18	25
h. Dedicated county tax through park district or special assessment	45	5
i. Concession fees (e.g., bike or kayak rentals)	15	10
j. Rental income from a multi-use building (classes, small events)	14	9
k. Conservation education center w/ job training program	12	1
l. Community garden rental	11	2
m. Small farm or plant nursery	25	3

Narrative Responses for the first 77 responses recorded:

Q16. How much would you be willing to pay per year to support PGFHP without any improvements? With any improvements you suggested?
…through taxes or use fees for the opportunity to recreate at Port Gamble Forest Heritage Park with no improvements? How much more would you be willing to pay with the improvements you noted above (question 12)?

Many people answered the narrative questions with general information such as "beautiful" or "fun trails". Many said "to enjoy nature" even if they were mountain biking. I have tried to categorize the responses. I have not responses that seemed to have no useful meaning.

Question 8: Why are these your favorite trails?
Question 11 (10): What do you like about PGFHP now?
The responses to these two questions were pretty much the same: Enjoy nature; Trails are fun; A variety of trails; Not crowded; Close to home

Question 12 (11): Improvements you would like to see.
Adding bathroom was easily the most frequent response.
Improved parking was frequently mentioned.
More single-track trails; an occasional bench along the way

Question 14 (xx): Why visit PGFHP today vs. other parks?
Most responses listed proximity or a variety of fun trails

Question 17 (14): Ideas for generating revenue.
I'll provide a list when I'm done with data entry. Nothing really stood out. Several people thought funding should be from the County budget.

Summary of Narrative Responses:

Question 8: Why are these your favorite trails?

- Fun trails, flow	49
- Beautiful	11
- Quiet, not crowded	5
- Convenience to parking	10
- Challenging	9

Question 11 (10): Why using & What do you like about PGFHP now?

- Quiet, Not crowded	21
- Nature, scenic	31
- Close by	58
- nice trails / variety of trails	77
- Dogs (off leash)	6
- Race	1
- Exercise	6
- Non-motorized trails	1
- Like the service roads	2
- Friendly people	3
- Well maintained	6
- Checking out the trails	2
- Mt. biking class	5
- family friendly	1

Question 12 (11): Improvements you would like to see.

- more single-track trails	25
- Restrooms, water	17
- Parking	11
- Mtn Bike / hiking only trails	11
- Benches or logs to rest on	11
- less logging	8
- better signage, maps	6
- More trail maintenance	2
- Historical signage	1
- None – leave alone	3
- Bike skills area	2
- more bridges for Mt. bikes	1
- Shortcut from Hyperspace to G2100	1
- electric bike trails	2
- Horse only trails	1
- Signage for conservation areas	1
- Educational signs to care for the park	1
- more loop trails	1
- Picnic area with tables, garbage cans, etc.	1
- Garbage cans/dog waste cans	1

Question 14 (xx): Why visit PGFHP today vs. other parks?

- Close by	16
- Trail work	1
- Uncrowded	2
- variety of trails	7
- with a friend/family	8

Question 17 (14): Ideas for generating revenue.

- Set up a foundation for donations	1
- Events that raise funds	16
- Camping sites	1
- donation box	4
- commercial use permits	1
- Business sponsored activities	1
- Volunteer don't pay for parking	1
- Online fund raisers	1
- adopt a park (use volunteers)	3
- "Friend of the Park" memberships	1

WEBSITE QUESTIONAIRE RESPONSES
MAY THRU AUGUST 2021

ID	How do you currently use the park?	What is your favorite place in the park that you would like to see preserved?	Which trailhead/access points do you typically use when visiting the park?	What would you like to do in the park that you can't do now, and what changes would enable you to do that?	Are there any groups or people you think we should engage with in the master planning process?	Are there barriers that currently keep you from using the park more than you do now?	Are there any specific facilities that you would like to see developed in the park? For example, restrooms, shelters, picnic areas, etc.	Do you see any conflicts between different park users? If so, what could be done to alleviate these conflicts?	What improvements could be made to the park that would make it more enjoyable for you or would result in you using the park more often?
1	walking mostly, some biking (mostly on the roads, some single track)	Pretty much as much as possible. The reason I don't go to the park as much as I used to (which was closer to daily) is because of all the clearcuts. I used to enjoy the solitude, peace, quiet, the tree canopy, chance to see wildlife (I have seen large mammals in the park in the past, but no so much anymore), but the park is evolving into something else that is not to my liking. First it seems to be dominated by the mountain biking culture. If the mountain biking could stay contained to the existing trails and the ride park that is best. The rest of the park could then be transitioned to native healthy forest. If your budget allows purchasing the timber rights so that the clearcuttng could cease that would be great. I support the efforts of Our Forest Fund to raise money to buy the rights and thereby preserve standing timber before it's all cut down. Honestly, who really wants to see a park that is clearcut?	Stottlemeyer	I would like to be able to walk under a forest canopy. To make that happen the clearcutting needs to cease.	Our Forest Fund, KEC, Arno Bergstrom, WSU Ext, WA Fish & Wildlife, Great Peninsula Conservancy. I think the planning process needs more preservation focussed individuals and groups to help influence the decision making process. From what I have observed as part of the PGFHP stewardship group and the first planning meeting, there seems to be an economic development focus (Port Gamble town development) and active recreation focus (mountain bike park, paved STO trail). What's being overlooked is the immense intangible value in having a large native forest park. Preserving trees now (by buying the timber rights from Rayonier so they can't keep clearcuttng) will get us there that much faster because we won't have to wait decades before the seedlings are tall enough to create a canopy.	Yes. It's getting ugly with all the clearcutting that's been going on the past few years. It's heartbreaking knowing wildlife are being squeezed into smaller tracts and fleeing to relocate. I live nearby and I see this happening.	ABSOLUTELY NOT! Well one exception would be an educational media campaign and signage for pack it in and pack it out and not to leave dog poop bags on the ground to pick up later, carry it and dispose of it back at the parking area. Keep garbage cans, sanicans etc at the parking areas. Kepp the park as wild as possible. If people want a more refined park, there are plenty of those throughout the county.	The park needs to remain multi-use trails. There's no reason people can't extend common courtesy to each other and in fact it's probably a good opportunity for all of us to practice common courtesy. I have not encounterd a conflict personally. I do think that some of the mountain bikers needs to remember that they're sharing the trail and to alert others ahead (bell, shout out). However, I think that the mountain bikers are supposed to give way to horses and walkers.	Stop the clearcutting before all the trees in the entire park are harvested.
2	biking, walking, mushroom hunting	Wild west trail,	Port Gamble road and bayview	Mountain bike with features - Ride Park will address	mushroom (mycological) society of Kitsap county	no	camping, restrooms	Minor conflicts between horseback riders, mtn bikers, hikers These could be alleviated with better trail design.	already use park 3-5 days per week
3	primarily mt biking	flexible on location - but suggest we need to target an acreage or percentage that should be "low impact" area	Stottlemeyer and/or port gamble hwy entrance	I'm happy camper	generally I feel hikers are concerned about fast cyclist - there may need to be "hiker priority" trails for folks not comfortable with two wheel users	no	still a happy camper	the ride park will soak up most of the "fast young riders" but the park at large may need designated "no ride" zones	happy camper
4	Hiking and trail running 1-2 times a week	I love the Secret Squirrel trail and would love to see it remain unchanged!	I use the Stottlemeyer trailhead 95% of the time.	I'm good, there's nothing I love that I can't do in the park!	It looks like from your master plan that you've already put together quite a team!	Distance from my home is the only thing that keeps me from visiting more often.	I would love to have a port-a-potty or restroom at Stottlemeyer.	So far I haven't seen any conflicts and I myself have found horseback riders, bikers, hikers, and runners to be very friendly and helpful as I've learned the park trail system.	Maybe against your whole master plan but I love how small the Stottlemeyer trailhead access is and the fact that I can walk into the park and not see anybody for several hours at a time! I'm afraid that increasing access too much will make it less enjoyable for those who truly love being immersed in nature and away from other people.
5	Walking	Beaver ponds, Springs area, Wild West, Secret Squirrel; the rest has been pretty much ruined	Have used all	Walk a peaceful path through an intact forest with large trees, and no bikers	The citizens of Kitsap county	Logging trucks, clear cuts	Restrooms are needed, and perhaps a few humble park benches. But a Ride Park? No. A golf coarse? No. A zip line? No. The STO? No. Minimal facilities....Yes. How about trees, plants, wildlife.....	Not enough trails dedicated to walkers only. Too many biking groups	STOP CLEAR CUTTING. Don't build the Ride Park with its road and parking lot, and don't build the STO
6	Mountain biking, trail maintenance	The viewing platform at the top of New Hope	Stottlemeyer, Stumps (aka Bayview), Derailed (off Port Gamble cutoff road)	Mountain bike jump line progression. The ride park and the Ranger Corridor will both make for safe, effective skills progression while also reducing the incentives that lead to rogue trail building, and while helping to deconflict interactions with other trail users.	Evergreen Mountain Bike Alliance (EMBA), and particularly the Evergreen West Sound (EWS) chapter	Parking is sometimes tough	Ride park, pit toilets at trailheads, more singletrack!	Trail etiquette signage, including reminders to just be nice. Proper brushing of trails to improve sight lines. Mountain bike-specific trails.	Ride Park. Ride Park. Ride Park. Oh, and the STO trail would be great.

ID	How do you currently use the park?	What is your favorite place in the park that you would like to see preserved?	Which trailhead/access points do you typically use when visiting the park?	What would you like to do in the park that you can't do now, and what changes would enable you to do that?	Are there any groups or people you think we should engage with in the master planning process?	Are there barriers that currently keep you from using the park more than you do now?	Are there any specific facilities that you would like to see developed in the park? For example, restrooms, shelters, picnic areas, etc.	Do you see any conflicts between different park users? If so, what could be done to alleviate these conflicts?	What improvements could be made to the park that would make it more enjoyable for you or would result in you using the park more often?
7	Passive use. Hiking, wildlife viewing, journaling, spending time in nature.	Beaver Pond and the pond north of the airfield as well as a good portion of the land surrounding the two ponds. All corridors along streams and wetlands.	Stottlemeyer Road, Bayview Trailhead, and Port Gamble Road.	Walk a longer distance on hiker-only trails. There are very few trails for quiet contemplation where bikes aren't speeding by. Probably less than 10 miles total. I wouldn't even count the Shoreline trail because the road noise is very loud in that area from State Highway 104, not a quiet place at all, though the forest is beautiful.	Passive users. Many people use the park passively and are not affiliated with any special group. They tend to be less engaged because they simply enjoy the park and don't have a lot of demands.	Yes, the park has changed significantly over the years. The number of bikers has grown exponentially, as well as usage by other large groups (such as boy scouts, etc...). I only use the park at times when it may not be busy. So, the barrier to use is the number of events (especially on weekends), and the increase in larger groups (such as biking groups) using the park more frequently. The experience for passive users in the park has changed dramatically over the past 10 years.	With the number of people using the park, restrooms seem necessary. Also, dog poop bags at all trailheads, as well as signage about dog leashes.	There are conflicts between bikers and walkers/runners, particularly on single tracks. Unfortunately, the feel of the park has changed because of these conflicts. And, there is a misconception that it is a biking park, which is untrue. Many different users can be found in the park. There are also more conflicts between humans and the wildlife in the park. Namely, an increase in the frequency of human disturbance upon wildlife. The increase in bikers and the speed of travel through natural areas doesn't allow wildlife enough time to respond and/or adapt. In this sense, one notices a sense of place is being lost not only for people who use the park, but for wildlife too. To alleviate the problem, limiting the number of events (through permits) as well as the number of people attending events, would help curb the impact. In addition, limiting the number of large groups who are using the parks regularly to lessen the human disturbance factor.	More thought needs to be given to setting aside more areas for wildlife/conservation, and passive use. Refrain from building new trails until all the side trails people have created are decommissioned and the existing trails are adequately maintained.
8	Hiking and biking	I love it all. It's a great resource and I'd like it extended and preserved.	Port Gamble Rd.	Hike without seeing clear cut areas! Stopping timber harvest		Lack of parking	Rest rooms at trailheads would be nice but would be a maintenance burden. Picnic areas would be great.	No. Everyone seems to respect others.	Extending it all the way to Bond Rd and Port Gamble Rd. Stopping clear cutting and getting rid of Scotch Broom (happy to join volunteer activities to do this)
9	Mountain bike, run trails and walk with dogs	Existing single track trails	Pt Gamble Rd and the RC field parking lot. No longer use Stottlemeyer due to lost road access and modifications to existing access	My concerns are trails lost during logging and the lack of a visible reforestation process. Areas logged more than 2 yrs ago still have no visible replanting	Evergreen MTB, NK Trails, some horse user group (horses put a heavy usage on trails but I do not see an organized horse group helping to do maintenance like Mtn Biking or trails groups do)	Having to go to work. I use it 3+ days per week now	I like nature setting so I do not need those amenities	Horse riders - see comments in q 5.	A plan to rejuvenate logged areas. Last few areas are just wastelands right now. Either buy timber rights or have a better plan to rejuvenate post logging.
10	Hiking	The beaver pond areas	We enter from west of the Babcock Farm field since we live across the highway from there.	Hike on better identified hiking trails. This could just be the addition of more interpretive signs,	Bike clubs. Local neighbors.	No	More signs/maps	No	A lookout area from the highest elevation so we have a destination for hikes.
11	Hiking, Biking, wildlife watching, Horseback riding, kayaking, beach combing	Port Gamble wetlands and the adjoining parking/event site (Airport)	Stottlemeyer, Gamble Bay beach access, and "Airport" access	Have the STO finished from Kingston to Port Gamble. With the new funding and pending acquisition of the Divide Property Parcel the Planning of the complete link should be one of the priorities in the planning the Port Gamble Portion of the STO and the Park.	Handicapped and Senior Citizens, Tribes along with young families that will be using the Park, especially from the new Port Gamble Town Site.	Yes, fire and Rescue response time to Port Gamble area and park.	New Fire Hall in Port Gamble. This should be a recommendation put forth by this committee to Kitsap County Agencies, OPG, the Tribes, Poulsbo Fire District and the General Public in your report. If there is a fire or emergencies, which there will be, response time will be critical. Today's response time is subpar and because of the traffic that will only increase around the Hood Canal Bridge and the increased populations of Port Gamble with the new planned development, fire and rescue, in the Park (and fire will be a big problem with the changes we are now experiencing in the drying of Western Washington) as well as on the water and in Port Gamble Town will suffer if a new Fire Hall is not built and manned in PG. Besides, Historically, there has always been a Fire Hall in Port Gamble until recently. The current Fire Hall that serves PG is 5 miles away, is old and subpar and has to deal with Hood Canal Bridge traffic just to access hwy 3 and	Kitsap County should bring together the user groups of the Park and KCNMFCAC in this Planning process and work out a plan for trails and pathway use. Which is being done here I have heard. There will be problems between horses, hikers, handicapped and bikes on some trails and Pathways if user groups are not logically separated and access is limited to certain user groups on these certain trails and Pathways. Any throttled motorized vehicles (without human assist, but not handicapped wheelchairs), which includes electric bikes and scooters of the class 2 and 3 should be excluded from use at the Park.	Better water access for launching water craft. This could be done if Port Gamble Developers would allow a launch site on the old Port Gamble Mill site.
12	biking and hiking	beaver pond and high ridge trail	stottlemeyer and heritage	bike and walk with young children and elderly. Paved flat trails. outdoor art/sculpture walks frisbee golf			restrooms, picnic areas		
13									IMPROVED HABITAT, CONSERVATION AND CARBON SEQUESTRATION PROJECTS/EXPERIMENTS/INFORMATION
14	Daily walks.	Mature forests.	All of them.	N/A	Biodiversity consultants.	Not at present.	Handicap access areas. Interactive ecosystems areas.	Of course. Adopt a do no harm (ecologicaly - enviormentaly) policy.	N/A

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15	Walking, blackberry harvest	South end	Various	Target Archery, camping, group outdoor gatherings	Local branch of the SCA (society for creative anachronism)	No	No	No	See earlier response
16	I used to go there to hike or occasionally look for mushrooms. It got too depressing to try a new route only to have it venture up into a giant clearcut wasteland.	This is a trick question, right? I'd say keep the parts that gave big, older trees but the contract will allow logging of those beautiful parts.	varied per answer number one. I'd want to NOT go to the zones that have been logged into oblivion and would likely avoid those for many years until trees had been replanted and were coming back in strong.	I'd like a map that shows a current aerial view of what areas are still wooded and which are clearcut horrors so that I could go to just the former and not the latter of the two. And those would need to be kept up. A recent question I asked elsewhere gave me info on where logging was to take place but that was only of limited use versus knowing what was still pristine that I could visit.	People with disabilities, and that would include the design of these web resources which can use some help...something I do for my day job.	Logging operations....can't go to those areas, obviously and then wouldn't want to even when those folks have finished.		I haven't encountered this yet but could imagine mixed use mountain bike and walking would be jarring for walkers, especially those with dogs/kids/elderly in their parties.	See above about better real time info on where the clearcuts are versus which areas are pristine to go visit.
17	Horse back riding	I would like to see the Timber rights be bought by the County And Private money as it is a shame to see the forest being clear cut.	Stottlemeyer Trail head	Ride where it's been clear-cut		Lack of Parking on Week-ends		No at this point the Bikers and Horses seem to get along	
18	Hiking, biking, mushrooming, forest-bathing :-)	I appreciate the views from the lookout spot (and would mind another one toward the south end if possible). I love forest and bike trails on the north end.	main parking lot across from the beach access parking lot, and also from port gamble road	I can't think of anything. I just hope a lot of the current space is preserved.			I'd rather that these kinds of structures were kept very light/few so that mostly its natural ground that is preserved	If traffic increases a lot more it might be helpful to designate walking and biking paths (but don't want to over-index here--flexibility is best in nature--so only if there's a real need)	Looking forward to when the final clear cutting it done so there's an absence of machines and clear cuts, and otherwise just want to preserve it all as naturally as possible
19	Hiking	Tree and trail areas	Port Gamble Rd NE logging entrance	Have a better understanding of where I am. More signage providing location.	Youth, underserved populations	Not at this time. Parking can be an access barrier on busy days.	Perhaps some benches. No picnic facilities in the trails.	The trails we hike are wide so no problems. If trails are narrow, I could see conflict between cyclists, hikers and equestrian users.	Parking
20	Hiking	The entire park should be preserved as wildlife habitat.	Dove Family Trailhead	Avoid dealing with mountain bikes.	Everyone.	The danger & destruction & loss of wildlife caused by mountain bikes.	Remove & revegetate all unnecessary roads.	Restrict bicycles to paved roads!	Close all the roads to vehicles.
21	mt. biking and hiking	really, all of it. I think that the beaver ponds and all riparian ares should be protected.	Mostly the Bayside trailhead and parking area. I would like to see an 18 hole disk golf course. This would require an area that is selectively thinned of timber. 20 acres would be enough.		I think that all park users should be allowed to share their ideas about usage.	No	Just the disc golf course that I mentioned above.	No conflicts.	I use as I want now.
22	Riding bikes, walking, dog walking, kayaking	Trees along Road 1000	All	Tree Adventure park participation	Waterman's Mitigation Bank, Local Tribes, Wild Society	Logging	Bathrooms	As park gets busier, trails may need to be designated by user groups	Purchase Trees to end the logging
23	Walking and birding. Just knowing that this very large area will be protected forever, and that work is being done on more permanent forest/open space conservation.	The Shoreline, area around the beaver pond, both are already planned to be preserved. A bigger challenge is applying restoration ecological planning to the whole park, acre by acre, while building and maintaining trails throughout.	Bayview both sides of the highway, the former model airplane field, Stottlemeyer once in a while.	Access the Sound to Olympics trail along the ridge from the ridge, add parking at the north end of the park. This would also improve accessibility for folks with more limited mobility.	Port Gamble S'Klallam Tribe and Suquamish Tribe. Kitsap Audubon. The Park Stewards. North Kitsap Trails Assn. Great Peninsula Conservancy. Forterra. All the groups that made up the Kitsap Forest and Bay Coalition.	Difficulty getting up to the ridge line as there is no parking near the ridge. Park rules about e-bikes, tho I hear that may be changing soon. Dog walkers letting dogs off leash, a hazard to wildlife and potentially to other people. Crossing hwy 104 between the Bayview parking lots is very dangerous.	Restrooms by the ride park, Bayview and Stottlemeyer. Places to see the views from the ridge which means managing plantings to preserve viewsheds. I would like to see minimal development in the park, leave it more natural which is why we worked so hard to buy the land. I would like to see some area with different trees, like Garry Oak, Madrone, and open savannah type planting. I would like to see the park valued for what it is, undeveloped open space, protected from development far into the future. That will require serious thinking about how to fund	The stewards have done a lot of work to promote cooperation between different user groups and that effort should be supported by the master plan. That was the collaborative culture of the KFBC. There are some trails that are better suited to differently types of users, but most should be shared use, especially the logging roads. I would object to commercial or for profit groups involvement in park activities, especially any that would restrict use to some specialized activity as that would create conflict that is unnecessary. A key feature of the park should be	No big developments, development belongs in the town of Port Gamble. Restrooms as noted above. Work with Forterra regarding the timber rights purchase as per Comm. Gelder's comments at the first master plan community meeting. Improve the parking areas for safe access and egress. See my comments about connectivity of habitat for wildlife and for a better experience for people.
24	Nature walks	Everything east of Hwy 104	Bayview East & Bayview West	I am unable to walk very far or to ride a bike up hills. I would love to see eBikes allowed.	Park stewards, North Kitsap Trails Association, Audubon Society	See above - I am unable to walk very far or to ride a bike up hills.	Restroom, picnic areas, dog park (maybe it will keep some dogs out of the rest of the park), Multi-use building similar or larger than the one at Island Lake	I don't see or hear about a lot of conflicts currently, however, I am sure some occur. More signage is needed to remind people about trail protocol.	More parking is needed. Restorative plantings, some of which grow relatively quickly.
25	I walk the trails and photograph nature, and I enjoy just being there.	Tessa's Trail, I'd like to see it left as a primitive trail, and I'd like to see more primitive trails like it. These are trails where it is necessary to step or climb over fallen trees, boulders, and sometimes the trail is difficult for other reasons. The trail mainly has a soft, forest duff surface because it is not used much. Difficult trails like this are important for maintaining robust walking skills, especially for old folks like me. No bikes or horses on it.	1. Bayview parking lot or 2. Port Gamble Town near Butcher & Baker or 3. Millie's Trail	I would like to see more educational interpretive information in the park, either physical or GPS triggered. I would like to see more ecosystem research in the park — there seems to be a dramatic lack of good ecosystem data about places like that. I'd enjoy helping with both of those.		I would like to see more pedestrian trails with treads of forest duff or covered with moss which would indicate light use and be less stressful on my joints, instead of just the kind of hard-packed trails that are built for bikes and horses.	I would like to see the very unique circle of old trees that is just south of Tessa's trail preserved because it is so beautiful and there is nothing else like it in the park.	Too many unleashed dogs, and bicyclists don't yield enough for pedestrians. When I'm on single tracks, I always step off the trail when I hear a bike coming because in my many years using the park I have never seen a bike yield for me. There seem to be no plans at all to address these, since there are signs about both of these and no mechanism for enforcement. I don't know what the solution is, but one is needed. If one considers the animals who live in the park to be "park users", then the logging of the park is certainly a conflict for them.	I would like to see more of the clearcutting prevented, especially of the older trees, so that more of the forested feel will be maintained, both for me and for the ecosystem in the park, and there will be mature forested areas sooner.

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26	Mountain bike the trails every weekend	The north end	RC airfield. By Port Gamble the most often on 104. Second most often the Stottlemeyer road entrance.	Increase the parking at the Port Gamble road trailhead	Evergreen mountain bike association and the equestrian association.	No	Restrooms. Improved trail marking and signage.	Yes. It would be nice if there was some trails for mountain biking only and for horseback riding only. It would also be nice to have one-way mountain biking trails.	Adding specific trails for mountain biking only and for horseback riding only. One way trails from mountain biking would also be helpful.
27	Mostly for walks, occasional bike riding.	The section on the west side where you come out when you leave Millie's heading east and all that that runs north and east from there. There are no trails. I think that whole section should be left as is and not made accessible to the public, other than the old road that's there now. Leave some of this park alone.	Stottlemeyer	I would like to walk through more forested sections. That is less likely to happen as the clearcutting continues. Seriously, if Kitsap County wants to have a premier park, then trees need to be saved now. A premier park is not a park that has been clearcut. Is that what people take pictures of? No! People take pictures of happy places.	WA Fish and Wildlife, WSU Ext, KEC, Our Forest Fund, Great Peninsula Conservancy	The clearcutting. The ongoing loss is sad. I can't bring myself to go to many sections of the park because all I see are lost beautiful places.	I am not in favor of much development. However, I get the impression that the County is and I speculate that Olympic Property Management is behind that, promising development of Pt. Gamble, bringing in money, etc. I hope people, including the economist you are working with, realize, recognize and value the simple worth of nature as it is. That's where some emphasis needs to be placed. Not on changing nature, but valuing it's intangible worth.	As long as people are reminded of "rules of the road" and to be courteous, I think we can all work it out as we have been doing. I do suggest that Evergreen put out reminders to their members of rules of the road. I also think it's important for dog walkers to learn that leaving poop bags alongside the trail to be picked up later is unacceptable. I have been a dog person. There is absolutely no hardship in carrying around a poop bag until you can deposit it in a garbage can.	Stop the clearcuts. Have Rayonier harvest differently so that they're leaving more trees. Leave sections of the park off limits to people so that wildlife have a place. Lots of education for the public: pack it in, pack it out. Limit all the development to the north end closest to Port Gamble and leave the rest of the park more wild.
28	Neighbor and walker and bike	All	Private access					Horse and bikers	
29	Mountain biking on trails	North end trails	Stottlemeyer or RC air field	Better navigate trails on my own. Several trails intersect, but there aren't any directional signs. Better trail signage would help. Could be a great Eagle Scout project.	I think you already do—Evergreen Mountain biking and an equestrian group; solicit ideas from regular trail users (this survey is a good start).	No	Restrooms at some trailheads; better parking at Port Gamble Road trailhead.	One way trails; trails designated for bikes only; horses only; hikers only as well as some multi use trails. Clear direction on the use of e-bikes in the park.	See #7
30	walking	all of it	they vary	be free from mechanized vehicles, including mountain bikers	true conservationists who see mt. biking in regard to its destructiveness and danger	yes, the mt. biking people.	walking trails that exclude bikers	yes, mountain biking is inherently destructive of the meaning of natural spaces, no use of any kind of mechanized vehicle in the park	Ban mountain biking completely, along with atvs, motorcycles, e-bikes, dirt bikes, and any other mechanized form of movement, except electric chairs for the handicapped. I am strongly opposed to any project that allows mountain biking in natural areas. They can ride the roads where bikes won't destroy anything, or do like everyone else and walk through nature to fully appreciate its uniqueness and beauty. But mountain biking, a new form of wreckreation, isn't really about those positive things, it is only about the bikers' narcotic-like ego-addiction. The truth is that mountain biking is an anti-environmental, destructive, industry supported, self-centered activity that creates destruction where it attempts to penetrate natural lands and the public trust. Unlike the misinformation from proponents of this invasion, it is clear to see this is an industry/bike association/single-minded advocate
31	I walk with my dog in the park for physical exercise and as a peaceful place to enjoy nature. I have ridden my mountain bike in the park. I pick huckleberries and mushrooms in the park. I enjoy the flora and fauna of the park,	Many of my favorite places in the park are no longer so, because they have been clear cut. I'm not sure what you mean by "preserved." Does that mean not subject to future logging? Or does preserved mean not paved or developed in any way with hard surfaces or buildings? I would like to see the most mature forest and wetland preserved.	Bay View Trailhead Port Gamble Trailhead Stottlemeyer Road entrance Port Gamble Road entrance Dove Family Trailhead (occasionally)	I can do what I like to do in the park the way it is.	Wetland biologists, amphibian specialists, Kitsap Mycological Society, Washington Native Plant Society and Kitsap Audubon Society.	Logging operations limit my use of the park. No.		Most people that I encounter on the trails are considerate of others. However, there have been times when I have had to abruptly jump off the trail because a bicyclist is suddenly coming fast around the bend of the narrow trail I'm on, then slamming on the brakes. It is unnerving, and could lead to an accident. If cyclists used bells more frequently that would help. I would like more information on the "future ride park" area. What does that entail? Will that area be open for all park users?	I would like to see more effort put into restoring the clear cuts, eliminating invasive plants, e.g. scotch broom, Himalayan blackberries. These are "improvements" that I would like to see.

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32	Bicycling on the logging roads, mostly. Sometimes we hike on the trails.	The central area as accessed from the big trailhead south of Port Gamble, the one with beach access on the other side of the road. We usually bike a big loop from that point and are ignorant of the areas north and south of that loop.	The central area as accessed from the big trailhead south of Port Gamble, the one with beach access on the other side of the road. We usually bike a big loop from that point and are ignorant of the areas north and south of that loop.	We would be interested in hiking more but don't want to hike through clearcuts. Would really like to be able to better plan bike routes when logging is upcoming or ongoing.		We would be interested in hiking more but don't want to hike through clearcuts. Would really like to be able to better plan bike routes when logging is upcoming or ongoing. We have had experiences of finding our intended route barricaded. Also, we have become confused as to where we are when all the trees are removed. Better signage is needed at trail intersections.	Restrooms and a picnic table or two at trailheads.	There's a low probability but significant risk of collisions at intersections, especially between two bicyclists. I think that you need yield or stop signs at intersections where two cyclist may enter the intersection at speed due to descents	Buy out the logging rights and limit future cuts to thinning for forest health. Improve signage. Restrooms at trailheads. Yield or stop signs at intersections where a cyclists may collide at high speeds.
33	Hiking, mushroom foraging	The Western side that is less heavily visited	Southern end	I would like to see areas for wheeled access limited to more highly trafficked sections of the park, up near the ride park.		Too many people letting their dogs poop without picking it up, it's really bad on the east side of the park.		Irresponsible dog owners, and I own a dog. Also, I'd like to see motorized use of the park eliminated, other than ADA type vehicles.	
34	Mountain biking.	I think the Southwest corner could be managed to provide black bears a space with limited human interactions.	Bayside trailhead on 104 and Port Gamble Road / G1700 trailhead.				I would like to see a lookout tower. I have visited lookout towers made of steel that seem less visually imposing when viewed from a distance.	No, I try to be respectful when riding my bike. Some trails should be given right of way priority to downhill mountain bike traffic.	Create a prairie with controlled burns on the recently logged high ground to preserve the views (with a lookout tower) , promote the ecological edge effect, and encourage edible plants like huckleberry.
35	Have not yet, but plan to use it for walking.		Will use L side entering PG from the S.		Native Plant Society.	No.	Restrooms, shelters for picnic, some resting benches.	Keep bicyclists away from trail walkers.	Directional signage for trail system. More mature trees, with natural variety, sizing, and spacing. Please don't replant a monoculture "tree farm".
36	1-4 times per week	1. Tessa's Trail as a hiking only trail. 2. The central peat bog. 3. Areas where bears, deer, bobcats, and owls nest or raise young.	Either Bay View or junction of 104 and Port Gamble roads.	I want some areas preserved for the birds and animals.	Wa State Fish and Wildlife. If I'm not mistaken, they have recently posted a sign prohibiting access to one bike trail that goes through the bear den area. But they missed another bike trail that is currently being constructed nearby.	No	No opinion	I respect the bike riders but I feel they are putting trails through too many areas. I'm afraid they will disturb too many birds and animals.	More hiking only trails.
37	Walking/hiking	I would like to see some walking trails that do not allow equestrian or bikes, so that people can stroll quietly in peace without having to jump out of the way for bikes and horses.	I plan to use the Port Gamble access or the Stottlemyer access.	I hope that you will preserve/create lots of walking/hiking trails. More restrooms would be helpful. More signage would be helpful. Mutt mitts. Please add some wheelchair or mobility aid-accessible paths. Please be clear about where dogs are allowed and not allowed. Maybe add some designated dog areas - like a dog-specific trail? - but have other areas where dogs are not allowed. Add a frisbee golf course?	Boys & Girls Clubs, running clubs,		More restrooms would be helpful. More signage would be helpful. Mutt mitts, please. Picnic shelters would be great! Please add some wheelchair or mobility aid-accessible paths. Please be clear about where dogs are allowed and not allowed. Maybe add some designated dog areas - like a dog-specific trail? - but have other areas where dogs are not allowed. Add a frisbee golf course?	We enjoy walking quietly, but this can be disrupted by bikers or horses, so we'd like to see some trails that are designated as pedestrian only.	Loop trails, more habitat restoration, restrooms & picnic shelters.
38	Walking dogs on and off leash, horseback riding, mountain biking.	Please keep the deepest oldest growth forest whenever possible. There's a magical serenity experienced among the woodlands that is irreplaceable.	Stottlemeyer, Heritage park off Miller Bay, White Horse golf course, parking at the orange gate off north end of Pt Gamble Suquamish road, the airplane field, main parking lot off Pt Gamble across from the water access parking.	Safely walk dogs off leash who are voice command trained, but we can't safely do it because of irresponsible dog owners who turn their aggressive dogs loose without any control. Also, ride the horses safely without fear of getting in a head on collison with other bikers who are going too fast with their ear buds in and don't have a clue we are around the corner.	Silver Spurs Saddle Club, Kitsap County 4 H clubs, Bainbridge Island Saddle Club, all horse owners in our county- because we are in the minority but really need our voices heard. 'Sharing the road' and "following the rules of trail etiquette seem to be a thing of the past, sadly.	YES- the above mentioned dangers caused by lack of consideration and selfishness. I am a biker, hiker and rider and have been enjoying these trails for over 40 years. It is disheartening to witness the changes that Kitsap County's growing population has brought to our beloved park. There seems to be a blatant disrespect for the safety and well-being of our fellow outdoor enthusiasts, to the point where several folks I know have given up and simply don't go to the park any more.	NOPE. I like it how it was. It doesn't need 'improvements', in my opinion, other than bear-proof trash cans at trail heads.	Thank you for asking. Isn't it sad that this is the biggest complaint of users? Why can't we all get along for the common good and safety and enjoyment of all? I've often thought, Hey- I'm a bike rider and a horse rider so I should go speak to the bike club meeting and help explain the serious, real dangers of not following trail etiquette and procedures. but then my husband says, they won't listen. They will say, that's your own problem for choosing to ride a dangerous animal. What do you suggest??	Other than what I've stated above regarding somehow educating and enforcing courtesy amongst users, nothing at all. My husband and I use the park at least 5 times a week, year round. I thank God for this treasure of open space and Jon Rose for his patience and vision to not sell out quickly but do everything possible to retain the land for our recreation.
39	5 days per week	Forbidden Forest, ET trail	Beaver Dam, Stotelmeyer	Am very thankful for the ability to hike and bike in the park. A bit easier access for biking would be helpful.	Hmmmm	Sometimes the logging.	Picnic areas would be great!	Maybe trail etiquette. Mostly folks are respectful.	I use the park a lot as it is... very very very thankful!! I have walked, biked and rode my horse consistently for decades on the trails!
40	I use it for horse riding and cycling - both gravel biking and mountain biking (non-technical).	I like the woods and hope to see less logging in general.	When mountain biking, I park off Stottlemeyer Road. This area generally isn't large enough to park a horse trailer so I generally park closer to Port Gamble with the trailer.	I love the park as is. However, it would be wonderful to have a safe way to bike to the trail system from Bremerton through Poulsbo. A regional trail network would be amazing.	I believe all interested parties are involved.	Parking - there is just not enough of it during peak times and riding to the park is too dangerous so generally not an option for me.	Restrooms would be really nice as well as picnic areas with hitch posts.	I believe that horses and bikes get along fine but I would not want to introduce motorized vehicles.	Bridges can get slippery in the wet months. Would be nice to put something down to make them less so. My horse fell on the main bridge that goes from the parking lot near Port Gamble when it had rained. It was terrifying.

ID	How do you currently use the park?	What is your favorite place in the park that you would like to see preserved?	Which trailhead/access points do you typically use when visiting the park?	What would you like to do in the park that you can't do now, and what changes would enable you to do that?	Are there any groups or people you think we should engage with in the master planning process?	Are there barriers that currently keep you from using the park more than you do now?	Are there any specific facilities that you would like to see developed in the park? For example, restrooms, shelters, picnic areas, etc.	Do you see any conflicts between different park users? If so, what could be done to alleviate these conflicts?	What improvements could be made to the park that would make it more enjoyable for you or would result in you using the park more often?
41	hiking	I hike on the Secret Squirrel, remnants of Downhell/Hood, Forbidden Forest and Ranger trails.	The one on the east side of the park, with parking along Hwy 104 (with small overflow parking across the road).	Nothing		No		No. I think the park is spacious enough for current users to coexist easily. I wonder if this will still be the case after the park is developed and it's "discovered" by more people. I know that increased usage and enjoyment is a good thing. I just think this question will be one that should continue to be asked as the park gets more popular.	Update maps to include some trails or extensions (eg Secret Squirrel) that are not currently shown. This doesn't impede me because I know the trails well, but I have encountered people who are sometimes lost or confused.
42	horseback riding and walking	Trails off stottlemyer	Stottlemyer is my first choice but because of lack of parking for horse trailers I've been using the old Orca field parking lot	park a horse trailer	Horseback riders	lack of horse trailer parking	out houses at parking lot	some time bike riders abuse the yield to horse policy and pose a danger because they ride very fast on the trails	Horse trailer parking
43	Mountain bike and hiking	Hope trail	Stottlemeyer Rd	Nothing		No	No	Creating facilities creates trash and trash can be contaminating to wildlife and humans. Everywhere we travel we have seen waste facilities ruined by humans dumping trash Into them. It's costly to remove this trash. A pack it in - pack it out policy is admirable; humans begin to expect someone else to take responsibility for their consumerism. Facilities and shelters may encourage homeless camps and may discourage user safety. Yes, these will create conflicts down the road. For an example, go to Seward Park, the restrooms are nasty filthy and always trashed and frequently closed.	Keep it as natural as possible.
44	Mountain biking and hiking	Area nearest to port gamble town	Stotty, Stumps, Port Gamble, Airfield, and Port Gamble Rd so pretty much all of them.	Ride longer distances through park all on singletrack with no fire roads. More singletrack trails. Multi use and/or mountain bike only.	Evergreen Mountain Bike Association - West Sound Chapter	Not really. I am in the park 2-3 times a week. But more parking is needed.	Restrooms. More parking. Lookout is nice, maybe a few more shelters like that.	Horses. I don't ever see equestrian groups building/maintaining trails. Then when there's signs up for them to stay off newly built trails they ride on them and create hundreds of "post holes" where the hooves poked holes in the new trail.	More singletrack trails. Mountain bike park. Directional mountain bike only trails.
45	Mountain bike/gravel bike		Bottom of derailed and Herritage park trail head	Ride a complete loop of the park without having to travel on fire roads	Evergreen mountain bike Alliance	No	Restrooms	More bike only trails allowed to be built while closing some multi use trails to bikes	More diversity of trail types
46	Mountain biking!!!!!!	Ranger trail area and the trails that exist	The "stumps" trailhead	Progress my mountain biking skills with progressive trails with challenging features like jumps and drops.	Horseback riders. Then tend to not follow signage and are disrespectful to other users in the park.	No barriers but lack of progressive trails to keep my interest.	Picnic areas would be nice.	Horseback riders and all others. The horses leave their droppings all over and other users have to deal with poop everywhere. Horseback riders don't respect signage and ride I. Trails they shouldn't.	No horses and more mountain bike trails!
47	Mountain Biking and hiking	The trees	Stottlemeyer and Stumps	Deconflict with horses on narrow trails	Evergreen MTB Alliance	Logging	More parking	Creation of bike only and horse only trails and enforcement	Keep more trees and recovery of the fire roads to rideable conditions after logging operations
48	Ride horses -- I am now physically limited and cannot hike, but I can ride so it provides an opportunity to "hike on horseback."	I have often entered on south side by crossing Bond Road since I can ride to that point instead of using a trailer. I would like to see flashing lights, slower speeds, and signage regarding crossing. Drivers are crazy and rarely slow down when approaching people, bikes, or horses along roadside. They are often tailgaiting so chance of multiple collision. Tickets should be given similar to those for road workers.	I like the variety of terrain. Large trees and aged woods are very relaxing. I have often entered on south side by crossing Bond Road since I can ride to that point instead of using a trailer. I would like to see flashing lights, slower speeds, and signage regarding crossing. Drivers are crazy and rarely slow down when approaching people, bikes, or horses along roadside. They are often tailgaiting so chance of multiple collision. Tickets should be given similar to those for road workers.	It would be nice to have a point in interior that you can get off horse and eat lunch. Small corral or tie lines with benches to sit on. Just item for wish list	Kitsap Lady Trail Riders	Traffic on Bond/Highway	It would be nice to have a point in interior that you can get off horse and eat lunch. Small corral or tie lines with benches to sit on. Just item for wish list	My biggest concerns are rude, wild bike riders and loose dogs. I used to ride a horse for a guy that insisted on bringing his dog and encourage it to chase rabbits. I finally told him he'd have to find someone else to work his horse. The designated bike trails is the best for those seeking speed and wild times since they are a danger to non-bikers. Hard to enforce though.	Again,traffic on Bond/Highway and Stottlemeyer if planning more facilities there. Most Drivers don't adhere to posted speed limits and safe driving practices as it is, so increased enforcement would help. It's not just ferry traffic issue either.
49	Mountain biking.	The old growth tree area over by ranger.	Stottlemeyer and the Heritage Park Entrances	Have more challenging mountain bike trails (steeper)	Evergreen Mountain Bike, West Sound Chapter	Continue logging operations	The mountain bike ride park	Designate certain trails as multi use and others as user specific.	Less logging
50	Bike	More bike trails	Heritage	Moto trails	Evergreen mountainbike alliance and bremerton cruisers motorcycle club		Pump track and the long promised mtb ride park		Dog park.

ID	How do you currently use the park?	What is your favorite place in the park that you would like to see preserved?	Which trailhead/access points do you typically use when visiting the park?	What would you like to do in the park that you can't do now, and what changes would enable you to do that?	Are there any groups or people you think we should engage with in the master planning process?	Are there barriers that currently keep you from using the park more than you do now?	Are there any specific facilities that you would like to see developed in the park? For example, restrooms, shelters, picnic areas, etc.	Do you see any conflicts between different park users? If so, what could be done to alleviate these conflicts?	What improvements could be made to the park that would make it more enjoyable for you or would result in you using the park more often?
51	Mountain biking and running	I love the Derailed trail!	I usually use the Stottlemeyer parking lot when biking, but sometimes enter from the RC airfield for a run.	Really looking forward to the ride park!			I think it would be great to see restrooms and additional parking at the Stottlemeyer trailhead.		
52	Hiking	Mirkwood and Ewok trails	Bay view and Old Gamblewood Road trailheads	More difficult hikes	Don't know	None	Restrooms and picnic areas	No conflicts	Better trail signage, more accurate maps
53	Hiking	Forested and view trails	Port Gamble just past Port Gamble	Ensure equity between available biking and hiking paths with separate paths continued to be available		No		As noted above, sometimes bikers and hikers need designated spaces. Definitely continue to prohibit all motorized vehicles for safety and to preserve the natural experience	
54	Poulsbo locals, 2 mi from park. Cycling, hiking, dog-walking	The older growth lowlands; views of Millie's glass mountains; all forested areas.	Stottlemeyer, Millie's, PG field; PG Heritage	See more spotted owls (last time in Nov 2019). Cut fewer trees.		Yes! Why is the road blocked at Stotllemeyer? Rayonier? I need to sneak through peoples yards now.	The wilder, the better.	Get everyone else back to their offices! No more 'working' from home....	Let's not pave or widen any of the park's roadways. It would be better to redirect that effort to locals' public safety by emphasizing ways to encourage peeps to ride, horse, or walk to the park entrances! Paved shoulders (or bike lanes) on surrounding roads would dramatically enhance safety for local users of the park. For ex, Gunderson and PG Roads off the parks SE corner can be scary (especially at Ferry time). For that matter, all southern approaches need improved safety for non-drivers: ...try biking on Bond, Columbia, Lincoln, or Stolttlemeyer roads....
55	Mountain biking and dog walking.	Mountain views from the lookout on new hope trail.	Stottlemyer		Evergreen mtb alliance	Lack of facilities.	Restrooms. Safer road crossing from current parking lot.	Animal waste left on the trails	Bathrooms, water fountains.
56	I walk 2-3 hour loops usually twice a week	There are so many special places from heavy forest canopy to wide open views of the mountains. To think about all the deforestation that is planned in the next 20+ years makes my heart sick.	All of them	I think the park is perfect as it is. I go there for sanity, to experience its wildness and am pleased with the shared community of users.	Ecologists, biologists, environmentalists, global warming experts	No, but with the current plan, I can see that there will be a problem of overuse.	Absolutely none of the above	I'm pretty happy with how folks behave now. If more "facilities" are brought in, the caliber of users and pressure on the land will degrade this experience. A ride park benefits only a portion of those using the area.	Eliminating the part of the Master Plan that appeals to economic gain. Economic gain for whom? This should never be a motivation, there is no place for it. Greed, as seen clearly in the vast clear cuts of the area, will negate all benefits. Let us not take the actions that will degrade the experience for all.
57	I mt bike there a lot!	Advanced trails in the Ranger Corridor.	Stumps trailhead		Evergreen MTB	There are not very many challenging trails	No	Yes, we have people that sabotage mt bike features.	Fun Trails!
58	Generally walking or walking my dog	Shoreline trail should be expanded length of park and into Port Gamble (foot path only, not for bikes)	All. Need improved parking at all trailheads	I'm interested in the parking having a sustainable revenue source to keep it well maintained and managed. I'm willing to give up a small% of the 3,500 acres for a use that will help the park in the long run. 35 acres is 1% of the park.			Priority 1, better trailhead access so people/children aren't walking in the road	Work through the challenges as they come up but park is for everyone!! We need to accommodate mountain bikes but not allow them everywhere, especially on all narrow uphill trails.	Better connections between trails so that it morphs into a trail system. Some locations should be for quiet slow enjoyment.
59	Hiking, trail running, gathering berries and mushrooms	I enjoy the heavily forested areas. Especially near the twisted sister trail.	I use all but the northernmost trailhead depending on which activity I am doing.	I actual love everything I'm already doing. I can't think of any additional activities.		It's always upsetting when huge sections are roped off for logging and the trails are destroyed.	A restroom facility off the main highway would be nice. I prefer that the park is more secluded and private though.	All of the current users that I have came across are respectful and friendly. I love that motorized vehicles are not allowed.	I already use the park 2-3 days per week year round.
60	Mountain bike trails	Derailed, Ranger, Hood	Derailed, ranger, hood	skills park, pump track, progressive jumps, techie downhill, flowy down hill	Velo solutions, sage dirt works	more downhill bicycle only trails.	restroom, bike repair shelters with pump, tools, etc	Hikers on derailed	more events - enduro races, kids races, etc. More trails like the Zoo loop and dry hill in PA. Progressive jump lines. Flow trails like freund canyon in leavenworth.
61	3 days per week on average.	Wooded mountain bike trails	Heritage park trailhead, bottom of derailed trailhead	More one-way mountain bike specific trails				Plastic dog poo bags left on the trail, horses not cleaned up after	
62	Ride for exercise/pleasure	Ranger/Lynx/Titan area	All trailheads see even use	I would like to have more technical trails like Drop trail/Lynx	Horse riding groups seem to have no input into park but enjoy as much as everyone else.	No	Nothing specific, restrooms would be nice somewhere instead of a single porta potty	I havent seen any conflict other than horses punching holes in some trials. This could be prevented with outreach/signage	MORE TECH LESS FLOW
63	Mountain bike, hike, and run	The three north end trails, near babadook	Crabshell lane	Shred more trials without worrying about pissed off hikers, more bike only trails.			Water fountains and maybe a mtb skills park	Between bicyclist and everyone else, make more distinction between who can go where.	Water fountains
64	Hike, run, mountain bike, walk dog.	The quiet beaver pond, but I love all of the trails.	Stottlemeyer Trailhead	N/A	no	No	Parking and restrooms at Stottlemeyer trailhead	No. Potential conflicts are easily remedied by slowing down, acknowledging the other parties with an "hello" and acting with kindness. Perhaps making trails one-way for bicycle should be considered.	More posted maps and more prominently posted trail signs.

ID	How do you currently use the park?	What is your favorite place in the park that you would like to see preserved?	Which trailhead/access points do you typically use when visiting the park?	What would you like to do in the park that you can't do now, and what changes would enable you to do that?	Are there any groups or people you think we should engage with in the master planning process?	Are there barriers that currently keep you from using the park more than you do now?	Are there any specific facilities that you would like to see developed in the park? For example, restrooms, shelters, picnic areas, etc.	Do you see any conflicts between different park users? If so, what could be done to alleviate these conflicts?	What improvements could be made to the park that would make it more enjoyable for you or would result in you using the park more often?
65	Mountain biking and trail running	Derailed and Ranger mtb trails	Port Gamble Road trailhead		Landowners at former access points that are now closed			All users that I've met while running or riding have been very pleasant. I'm always worried I'll spook a horse but building the bike park should help separate bikes from horses.	
66	mountain biking and hiking	It used to be the forest near Maggies Rocks, that's gone, I like the large trees near Ewok.	Stottlemeyer entrance as well as the Stumps entrance.	Have more single use trails, or people oriented trails (bikes, hikers). Horses continue to do damage to new trails.	Younger riders (like the Mountain Vikes) represent the future of the park, it would be nice if someone would seek their input.	NO.		Horse owners and bikers. Many of the trails are created and maintained by the mountain bike community. There are some horse owners that continually use bike only trails like Ranger or DeRailed, causing damage and frustration. This group does not attend work parties to maintain or repair trails. Establishing single use trails could help to alleviate the issue.	
67	Yes	It's all nice…not sure what you mean by preserved…no trails? I'd like to have more features and routes everwhere.	Either bottom of derailed or by stumps	Jump lines :) more flow		I don't like horse shit or hoof holes …it gets boring after riding it more than once a week with current terrain	Restrooms would be nice but not really necessary…an amphitheater could be fun for events	If equestrians clean up the horse shit I'll have no issues	Overgrowth has been a problem this summer and had a couple wrecks because of covered stumps. A bit dangerous
68	MTN biking and trail running	All the purpose built MTB trails	All of them pretty regularly	More MTB progression. The trail difficulty is limited. It is a great place to get your feet wet but not a good place right now if you want to progress at the top end.				A little, making some more of the trails single direction would help	There is a big gap in trails in the middle. If you want to link together longer rides you have to transfer a long stretch of rod both north and south. It would be nice to see trails in the center of the park get flushed out.
69	I like doing gravel and easy xc-type mtb rides with my son at PG.	That lookout in the center of the park above that little flow trail.	Stotlemeyer or the Forest School trailhead.	I'd like to see more runs like the few blacks that are up on the north end of the park	I would love to see Leafline Trails involved. Kitsap needs more permanent bike-specific thru-trails, and a path through PG would help facilitate bike access to and from Port Gamble/Quimper and Central and South Kitsap.	Time	Camp toilets at the trailheads would be convenient, but it might be a pain to keep them maintained	I always feel super self conscious when I run into equestrians for fear of spooking the horses, and two-way singletrack makes me kind of nervous in general. I would love to see more one-way and dedicated use trails or areas in the park.	Only improvement I could think of would be making it closer to where I live in Bremerton, or vice versa.
70	Hike with dog	The whole park	Port gamble - both parking lots, & Stottlemeyer Rd	Walk in the forest without having to jump out of the way when bikes are flying down trails	Tribes	Only when the gate for the first parking entrance is closed AND the second, smaller parking lot is full from the Port Gamble side	No development. Would like to see non-native invasive removed and restoration of native plants	Bikes on narrow trails vs. hikers - maybe designate certain areas for biking so hikers can avoid them; have seen electric bikes in use here too	A sign/signs on leave no trace/trail etiquette as a friendly reminder

Forms(https://www.office.com/launch/forms?auth=2&from=FormsDomain)

Master Plan Alternatives Questionnaire

391	37:15	Active
Responses	Average time to complete	Status

1. Which recreation and education alternative do you like best?

Insights

Alternative A	165
Alternative B	89
Alternative C	137



2. Why do you like this alternative the best?

Insights

365

Responses

Latest Responses

"Adventure tree course and more trails."

"I actually like C better but I think B could be achievable with a bond is...

72 respondents (**20**%) answered **development** for this question.



3. Is there anything you would change about your preferred alternative to improve it further?

269 Responses

Insights

Latest Responses

"I would like to have the native plant facility as part of B. Also I STRON...

38 respondents (**14**%) answered **park** for this question.



4. Which recreation and education alternative do you like least?

Alternative A	162
Alternative B	16
Alternative C	213



5. Why do you like this alternative the least?

335 Responses

Insights

Latest Responses

"Too much development. Lets grow slowly and responsibly."

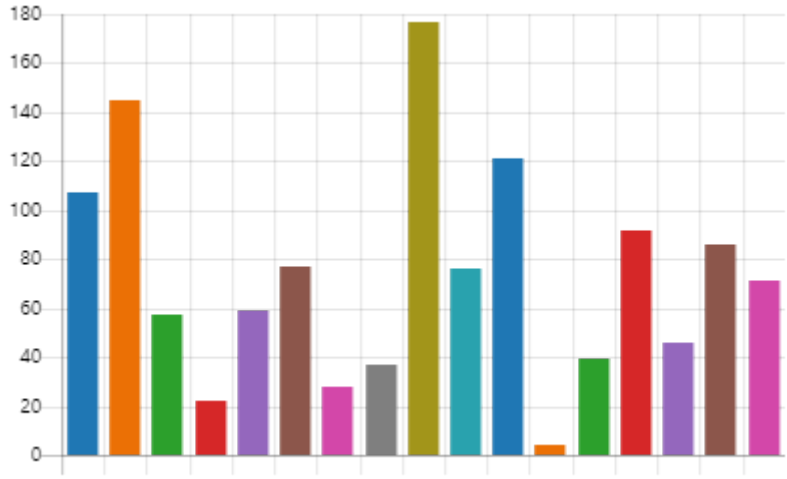
"Because of the focus on multi use trails as state above. When this hap...

71 respondents (**21**%) answered **development** for this question.



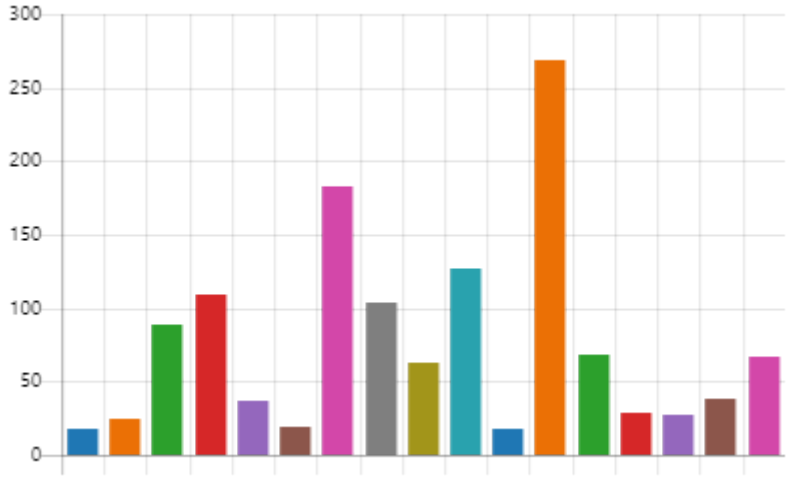
6. Which of the proposed recreation and education uses and facilities are **most important** to you? Please select from the following options (please select up to 3):

Water access	107
Wildlife viewing areas	145
Event staging area	57
Open-air amphitheater	22
Nature-based playground	59
Picnic area with shelter	77
Disc golf	28
Adventure tree course	37
Mountain Bike Ride Park	177
Camping	76
Trail rest areas	121
Food concessions	4
Research facility	39
Viewing platforms	92
Outdoor classroom	46
Native plant nursery	86
Environmental and cultural ed...	71



7. Which of the proposed recreation and education uses and facilities are **least important** to you? Please select from the following options (please select up to 3):

Water access	18
Wildlife viewing areas	24
Event staging area	88
Open-air amphitheater	109
Nature-based playground	37
Picnic area with shelter	19
Disc golf	183
Adventure tree course	104
Mountain Bike Ride Park	63
Camping	127
Trail rest areas	18
Food concessions	268
Research facility	68
Viewing platforms	28
Outdoor classroom	27
Native plant nursery	38
Environmental and cultural ed...	67



8. Do you see anything missing from the alternatives?

Insights

180

Responses

Latest Responses

"Dog park"

"While I am not keen on mountain biking at all given the skirmish we ...

"Children's play area that emphasized the natural wonders of the area"

63 respondents (**36**%) answered **No** for this question.



9. What trail type/classification would you use the most in the park?

Insights

Class 5: Paved, wide, shared-u...	20
Class 4: Gravel, wide, multi-us...	75
Class 3: Dirt, narrow, multi-us...	161
Class 2: Dirt, narrow, primitive	135



10. Do you support the concept of loop trails of varying distance and type (Class 3 and 4) within the park?

Yes	346
No	40



11. Potential user conflicts on trails can best be avoided by: (Choose one)

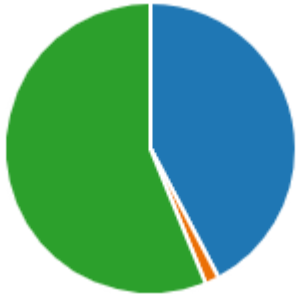
Creating more trails	56
Designating trails as single us...	185
Education and signage	135
Allowing certain uses on speci...	10



12. What do you see as the purpose of the park with regard to providing recreational benefit?

Insights

For local use and enjoyment	164
To attract visitors and tourism ...	6
Both	218



13. If it were on the ballot, would you vote for a property tax measure to support park maintenance and operations?

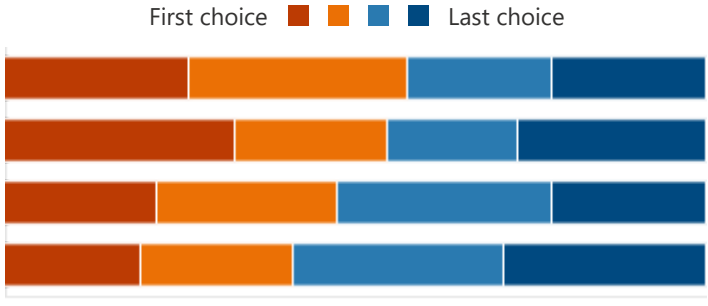
Insights

Yes	299
No	83



14. A successful forest management plan should have clear goals. The following represent some of the potential goals of forest management in PGFHP. Please rank these goals by clicking/touching the options below and moving them in order of your preference, with the top most option being the highest priority and the bottom most option being the lowest priority.

Rank	Options
1	Control of noxious weeds and ...
2	Wildfire risk reduction
3	Increasing the diversity of pla...
4	Increasing the diversity of tree...



15. The PGFHP was predominantly forested with a mix of old growth Douglas fir and Western Hemlock before it was first logged. The landscape of the park now includes a variety of habitats including hardwood forests, and open areas. Which of the following management strategies and future outcomes should be included in the PGFHP Master Plan?

Insights

Utilizing only limited thinning ...	87
Utilizing infrequent mowing, s...	30
Utilizing variable density thinn...	29
All of the above techniques an...	240



16. Over the next several decades, the PGFHP is likely to experience significant changes in the establishment, growth, and distribution of tree species as a result of increasing temperatures, and changes in soil moisture and the timing of rainfall. A rise in forest mortality is also expected due to increasing wildfire, insect outbreaks, and diseases. Should species that are native to the Pacific Northwest, but not the park be introduced in effort to make the park more resilient to these impacts of climate change?

Insights

Yes	325
No	58



3-2 APPENDIX

PUBLIC MEETING SUMMARY OF COMMENTS/QUESTIONS

March 25, 2021

Public Meeting #1 Breakout Session Summary

The following is a summary of the comments compiled from five breakout sessions that followed the main presentation of the master planning process at the first public meeting on 3/16/21. Upward of 120 community members participated in the breakout sessions. Comments are organized into four thematic categories, Nature, People, Economics, and Process, and by how often similar comments came up in discussion.

Nature

Frequently Mentioned

- Conservation and/or preservation of wildlife habitat and environmental services should be the priority of the Master Plan.
- Park visitation should be balanced against and limited by this priority.

Some Mentions

- The Master Plan should pursue strategies to reduce or eliminate future logging in the park.
- The Master Plan should also lay out criteria for healthy forest and shoreline ecosystems and detail how these will be monitored and maintained.

People

Frequently Mentioned

- The Master Plan needs to include strategies to accommodate and reduce conflict between different user groups.
- Access to the park for people of all abilities and mobilities is paramount. The park should feature facilities such as accessible parking lots and loop trails. New access points should be considered if necessary.
- The park needs better maps and signage to allow people of different abilities and in different user groups to choose appropriate facilities.

Some Mentions

- The Master Plan should address traffic impacts related to trailheads, especially on Stottlemeyer Road. There needs to be adequate parking, including for buses, horse trailers, and emergency vehicles.
- Park development should maintain shoreline access, views, and building massing for a unique user experience.

One Mention

- How does one get involved as a volunteer?
- The Master Plan should address how the park will be policed, especially in reference to rogue trail builders, homeless encampments, and illegal activities.

- Interest in facilities such as a disc golf course, tree adventure course, and camping infrastructure (one mention each).
- Concern that mountain biking will increase.
- Concern that mountain biking will be reduced.
- This park should serve a different set of user groups than other parks in the County system.

Economics

Frequently Mentioned

- Economic development should not be a priority of the Master Plan and may be at odds with the goals of the community in relation to the park.
- The Master Plan should not seek to increase visitation to the park.

Some Mentions

- Some areas of the park should remain economically undeveloped.
- The Master Plan should make clear how the park will affect and be affected by neighboring properties.

One Mention

- Parking lots should be developed to include power sources for food trucks, events, etc.
- Excitement about business uses of the park like kayak rentals, bike rentals including e-bikes, and other types of outdoor equipment rentals and concessions.

Process

Frequently Mentioned

- Collaboration and compromise between stakeholders is key to the planning process.
- Transparency is also essential: who is involved in decision making, how are priorities being generated, what are the costs and what are funding sources, what is the project timeline?
- Seek out precedents of parks and other public lands that have gone through a similar Master Planning process.

One Mention

- Why area we developing a Master Plan when the park serves users now?
- There seem to be no real opportunities for public input.
- How will integration into the County system affect park management, maintenance, staffing, and resources?
- How will the Master Planning process affect future phases of project implementation, e.g. permitting?

March 25, 2021

Public Meeting #1 Breakout Session Comments

The following are comments compiled from five breakout sessions that followed the main presentation of the master planning process at the first public meeting on 3/16/21. Upward of 120 community members participated in the breakout sessions. Comments are organized into four categories: Nature, People, Economics, and Process.

Nature

- Conservation was emphasized as a priority by several attendees.
- What are the differences between thinning to create healthy forest versus clear cutting?
- It seems wrong that park designation was not used to create stiffer environmental review standards, especially regarding logging permits.
- The driver of the project [to acquire the land] was to protect Bay and estuary for fish and wildlife. Concern for fishing industry and managing the watershed and streams that flow into the Bay.
- Need to leave park as natural as possible. The focus should be preservation and enhancement of habitat.
- We should work to stop the tree cutting by buying timber rights and working to create a healthy forest.
- More nature and fewer people.
- Some would like the park to remain undeveloped.
- Strike a balance between recreation and wildlife.
- What is the holding capacity of the land regarding wildlife? Are there plans to conduct a bioassay?
- Will thinning/clear cutting last forever?
- Why would we buy timber as opposed to new land?
- What considerations are being made to preserve what is there?
- Habitat may be disturbed by logging, users impact, and by economic development.
- Where do we set the bar for a healthy ecosystem? How will it be monitored?

People

- How does the inclusion focus relate to wheelchair hikers and handicap access?
- The development of tent sites and RV Parking should be thoughtful to minimize negative impacts like those to views on the shoreline.
- Concern expressed over closure of southern access road near Stottlemeyer. Parking needs and access clarification was emphasized by a few. Emergency access needs in this area was stressed also.
- What will STO access to/from Poulsbo look like?
- The park needs a better trail plan, e.g., a layout with loops, and clarity on user groups.
- A mountain bike advocate appreciates need for multi-use, is gaining understanding of needs of hikers and bird watchers. “We can make this work if we work together.”

- Concern that as the park regulations become more codified, cycling becomes more restricted and will be reduced.
- Different user groups can be accommodated alongside conservation.
- Be proactive about the large number of users and consider areas dedicated to different users.
- How does one get involved as a volunteer?
- Consider strategies to reduce conflict between different types of trail users, e.g directional trails, hikers only, equestrian only, etc.
- When will horse trailer parking be built? Can the parking lot on Stottlemeyer be developed soon?
- How will the speed limit on SR 104 be affected?
- A 60-car parking lot on Stottlemeyer is too big and will lead to increased traffic, speed, and road impacts.
- Concern over traffic safety from Stottlemeyer parking lot. There is a blind curve.
- Camping is very exciting as a bike-packing opportunity; bike-in campsites could be developed.
- Interest in a disc golf course.
- Interest in a tree adventure course.
- Develop bus access in parking lots to facilitate educational field trips.
- Are there maps available at the park? What signage is/will be available?
- Are there other access points/ trailheads being considered?
- Consider using QR codes for mapping and navigation within the park.
- Lots of folks do not think it is easy to find trails for a specific use, or that aren't steep, aren't muddy, or are wide enough.
- What is allowed near the water in terms of structures?
- The current use of PGFHP is very dissimilar to other parks. Is there a thought that the present demographic of the park users are different and use this specific park differently?
- A perimeter trail may also address accessibility needs for people with physical disabilities (wheelchair or other mobility support users).
- Concerned that bikes will be pushed into the park.
- Historically this has been a multi-use park and not a mountain bike-specific park.
- Access is important for all users, not just those physically fit enough to run or bike.
- No motor vehicles in the park.
- How will the park be policed? E.g., in reference rogue trail builders, homeless encampments, and illegal activities. This has been lax in the past.
- Concerned that the water trail access on the shoreline block be maintained, specifically the eroding shoreline and trail to the shoreline. Also, that if there are other access points that may be opened

Economics

- Disappointed with focus on economic development. Unfortunate that economic development carries more weight than it should.
- Not interested in selling or marketing the park.
- Prefer not to promote tourism.

- Balance economic development with undeveloped areas of the park.
- Is there any coordination with Rayonier on the development of its remaining lands adjacent to the park?
- Are there already plans for camping and/or yurts?
- How close will the ride park be to neighboring private property? How will it impact the neighbors?
- Considerations for parking lot development – power for food trucks, events, etc.
- This is a natural park and concessions seem to be very much the wrong direction for a situation like this.
- Excited about business uses of the park like kayak rentals, bike rentals including e-bikes, and other types of outdoor equipment rentals and concessions.

Process

- Is there an example park that has gone through a similar master planning process?
- There are complicated issues to solve that will require some compromise.
- Need to work together. Got this for with collaboration.
- Look at Tiger Mountain and DNR policies as examples.
- No real opportunities for public input.
- Provide information on costs to manage the park. People need to understand what cost is and how the County can pay for it. Share costs now so a realistic strategy can be built. People pay for gym memberships.; are they willing to pay for access to outdoors? How? Taxes, user fees, or other?
- Who is on the PG stewardship committee and the Master Plan steering committee and what is their role in maintenance/planning of the park?
- Were the park use statistics in the presentation taken from other parks or from this community?
- Why are we developing a Master Plan when the park serves users now?
- What is process to sort through ideas and generate priorities?
- How will integration into the County system affect park management, maintenance, staffing, and resources?
- Don't rely exclusively on surveys for use data; consider live counts of activity as well.
- Why is there only a 20-year horizon in the planning scenario?
- Will the plan provide funding sources and a timeline?
- Concern with the emphasis on economics in the Master Planning process.
- Will elements of the Master Plan, once approved by the commissioners, be streamlined for permitting for future implementation? (E.g., the volunteers working on the ride park are experiencing significant permitting timelines and challenges)
- Working together is how we got the acquisition funded. The park is big enough for all users to have space to do their thing.

PGFHP Master Planning Public Meeting #2 - Challenges & Opportunities 6/22/2021 17:57

Question Details

#	Question	Asker Name	Asker Email	Answer(s)
1	What is the Ride Park?	Martha Burke	mburke2007@aol.com	The Ride Park is the Mountain Bike Ride Park which will be a system of trails built in the northern section of the park.
2	How was this approved? Who approved it?	Martha Burke	mburke2007@aol.com	Nothing has yet been approved. These are opportunities that have been suggested that we're looking for feedback on this evening.
3	So the Ride Park has not yet been approved?	Martha Burke	mburke2007@aol.com	The Ride Park and the STO are two improvements that have been approved and are proceeding. The Ride Park was reviewed and approved by Kitsap County prior to the start of the Master Planning process.
4	How many people are attending this meeting?	Martha Burke	mburke2007@aol.com	We currently have 67 people in attendance.
5	Martha, approval for which?	Jonathan Phelps	jonphelps@evergreenmtb.org	
6	Fire and rescue plans? Is their a plan to Advocate for new fire station in Port Gamble Town to serve Port Gamble Town, Bay and Port Gamble Forest and all their visitors, in the town and at the park/ride park? Poulsbo Fire Chief is supportive of a new Fire Station in PG and should be contacted his active support.	john willett	johnwillett@embarqmail.com	We've begun discussions with North Kitsap Fire and Rescue regarding access and services in the park. The Master Plan will be reviewed with the Fire Dept.
7	all of these “opportunities” sound like destroying our existing environment.	Ace Haynes	ace_haynes@hotmail.com	
8	Where is the option for leave it alone?	Ace Haynes	ace_haynes@hotmail.com	Stay tuned! The options have been grouped by type in tonight's meeting. Conservation options are coming up soon.
9	How did the County approve the Ride Park?	Martha Burke	mburke2007@aol.com	there were specific funding sources for the Ride Park that allowed for the acquisition of that acreage during the community campaign. Actual construction is permitted through DCD.
10	Mountain bikes are very hard on trails and can result in erosion and general damage to the area where the trails are located. Who designed this trail?	Martha Burke	mburke2007@aol.com	The Ride Park trails are designed by Evergreen Mountain Bike Alliance. The STO will be designed by the design team hired by the Public Works Dept. All other trails wil be evaluated against developed trail standards, likely based off of existing standards.
11	B	Uriel Eisen	urieleisendesigns@gmail.com	
12	I don't believe the general public has a good grasp on what multi-use trails, without user hierarchy, will mean for the park trails into the future...it will be a problem as the population grows and the conflicts occur. Take a look at the large regional parks in other more developed counties - they have finally learned the importance of establishing hierarchy. No question, just a significant concern this plan is relying too heavily on public input regarding trails and not enough on knowledgable comprehensive trail planning.	Anonymous Attendee		
13	WHY AM I UNABLE TO VOTE IN THE POLLING EVEN THOUGH I AM LOGGRED INTO IT AND CAN DEE RESULTS. FRUSTRATED THAT MY VOICE IS NOT HEARD.	Paul Stevick	paulstevick@hotmail.com	Paul- the text option is only typing in the letters of your choices by letter seperated by a comma. On the browser it is simpler- just clicking the letter you are choosing- please text me , Judy, in the chat if I have missed the mark
14	These organizations want to encourage such trails. I don't think they understand or design to minimize environmental effects. How are these other effects to be taken into account?	Martha Burke	mburke2007@aol.com	
15	David, Good to hear! As you may know, the Kitsap Fire Marshal, the only fire offical listed in the Port Gamble Town Master Plan, is not the same and has different responsiblities. John	john willett	johnwillett@embarqmail.com	
16	I logged into the polling but was asked to join and provide a password. I could see the polling but could not participate. Call me one frustrated ebiker.	Paul Stevick	paulstevick@hotmail.com	
17	Is there a plan to reach out to a more diverse group of people to poll park usage?	Jonathan Chadburn	longlostjon26@gmail.com	Absolutely. This is not meant to be comprehensive, rather to get a sample of the community preferences. We'll also continue to post polling on the web page, soliciting specific input from stakeholder and partner organizations, and we're working with the Human Services Dept. to reach as broad an audience in the community as possible.
18	Will there be studies conducted to determine what percentage of trails people would like to have be single-use vs. Multi-use? Hikers will express interest in hiking trails, equestrians will express interest in equestrian trails, and bikers will express interest in biking trails; but it is simultaneously possible that all are ok with multi-use trails.	Maggie Burke	mgkburke@gmail.com	
19	I am on a computer clicking on the letters but that produces no results. I can see the results but not participate.	Paul Stevick	paulstevick@hotmail.com	Paul, if you're able, please try to use the text function. Otherwise, we'll work on providing these polls for use after tonight.
20	All of the natural resource programs are important!!!!	Carol Price	carol9price@comcast.net	
21	It really seems like most of the “uses” directly conflict with the environmental protection goals	Dan L	dl483752@gmail.com	

22	Did you see my question?	Martha Burke	mburke2007@aol.com	I have a few questions which I'm holding on responding to until I can work with the team to provide a proper response. All questions will be answered following this meeting, that we're not able to answer live.
23	Do the groups holding bike races in the park pay an event fee?	Rebecca Pirtle	rpirtle@co.kitsap.wa.us	live answered
24	It might have been interesting to convey some idea of what percentage of the total land area might be needed for Options that include on-site revenue generation. I think people have a misguided sense that the majority of the park would be damaged by this and it could be very small...	Connie Reckord	connier@macleodreckord.com	
25	See my comments in the chat regarding funding. I don't think you have adequately discussed the option of providing services outside the park through private ventures.	Anonymous Attendee		
26	Would fees be allocated specifically to Port Gamble or be used to access all Kitsap County Parks?	Stephanie Ruddell	stephanie.j.ruddell@gmail.com	
27	I think the park would be a big attraction and vendors would benefit tremendously. You need to factor that in as an option.	Anonymous Attendee		
28	where will the video be posted?	Ace Haynes	ace_haynes@hotmail.com	
29	Question to the Participants: Would you support a Kitsap County Metropolitan Parks District where Parks have a seperate tax status and you are taxed seperately each year for supporting Kitsap County Parks, which will relieve the County Commissioners from having to decide how to fund and support parks each year.	john willett	johnwillett@embarqmail.com	
30	I'm a big fan of the STO and the Cross State trail prospect (Great American Rail Trail). I'd like to see access trails and loops that use the STO as a centerpiece.	Jeff Chapman	bbbranch@olympus.net	

October 22, 2021

Public Meeting #3 Breakout Session Comments

The following are questions and comments compiled from the breakout sessions that followed the main presentation of the master planning process at the third public meeting on September 29, 2021. Comments are organized into five categories: Trails, Spatial Plans, Cost & Funding, Forest Restoration, and Miscellaneous.

Trails

- Trails, especially, those in the Ride Park, may be too close to private property. There is general concern that trails may impact adjacent property owners.
- Trail connections with Jefferson County applauded.
- The STO should be connected all the way to the bridge.
- Trails should be sited with an awareness of sensitive stream protection.
- Think about trails as transportation making connections to and from Kingston. These may be used by bikepackers. Address the rideability of Hwy 104, and possibly create a rideable segment of the Shoreline Trail which bikers could use instead of riding Hwy 104.
- Make a safer crossing of Hwy 104 at Bayview Trailhead.
- How was the trail plan developed? Which trails are slated for removal?
- From the plans, it looks like the STO divides the park in half. Will this fragment wildlife corridors?
- Will the STO's paved surface become slippery when wet and/or mossy?
- Consider using "small gravel" on Class 4 Trails as this is a friendlier surface for users with mobility challenges.
- Keep hiking, biking and equestrian as the main trail uses.
- Not all the logging roads would need to be maintained.
- Concern was expressed that the current trail plan doesn't adequately address user needs.
- Will trail use restrictions or limitations be recommended (and importantly) enforced?

Spatial Plans

- A key focus of the Master Plan should be how to make current allowed uses more compatible to minimize conflict between user groups.
- Make sure that there aren't redundancies in event spaces between the park and Port Gamble town.
- Is there a possible spot for a sea kayaking campground?
- There is a view opportunity by Millie's Trail. The steep slopes might provide a nice view opportunity on the southwest edge of the trail.

- The wetland on the southcentral end of the property should be left alone for wildlife.
- What acreages would each alternative cover?
- It appears that some of the Ride Park is in critical areas due to steep slopes. How were critical areas taken into account with this ride park?
- Considering ADA accessibility, clustering facilities will enable access by more diverse populations. Access by users for therapeutic purposes (e.g. forest therapy) would be improved by clustering.

Cost & Financing

- Opposing ideas expressed, with some advocating for the importance of considering revenue generation, and others of the opinion that revenue should not be a concern or driver for the Master Plan,
- Keeping the activities simple and the cost low (ideally free) is important. This was the initial idea and the County has does not have the infrastructure to support extensive development.
- Kitsap County doesn't have the infrastructure to support the proposed uses or visitors coming via the STO. The County should invest in better infrastructure for residents to access the park (e.g. bike lanes) before investing in more infrastructure at the park for visitors.
- Is there a net revenue/economic benefit from the proposed activities? There is a need to identify a long term and sustainable funding strategy.
- It is important to think about revenue sources that will be needed to supplement parks budget.
- The Ride Park should pay for more of their share of the space. This is a specialized use for a certain group of users that is using up a big portion of the park.
- Using concessionaires may attract too many people into the park.
- Working together with Jefferson County would be a good way to leverage funding for regional trails.
- Some attendees were surprised by overall costs and would like a further breakdown of capital costs.
- What level of analysis has been done relative to uses and financial risks between county and concessionaire? Who pays capital costs?
- Does the cost projection include the costs for the STO? More detail on costs and revenue assumptions is needed.
- What is the percent cost recovery for the County?
- Has there been any consideration for fundraising by naming rights for different trails or parts of the park?
- High end yurts and zipline on the west side of the park would be a good money-making effort. These would attract Seattle weekend visitors.

Forest Restoration

- Some areas are marked as having high fuel loads but also recommended for thinning. Presumably Rayonier still has timber harvest rights, but those areas did not align with the areas recommended to buy. Who would take on the thinning? Would the County want to take something on that they don't have the timber rights to? Or would Rayonier do that anyway?
- What is plan for all the giant waste piles that have been by-product of the clear cutting? Will they be left to degrade? Could the material be made available?
- How can we plan for the fuel load when we don't have an idea of what has been logged or what the plans are for Rayonier for the next 20 years?
- What is the plan for Rayonier to continue their logging?
- What planning has been done to transition replanting away from Rayonier's agricultural model toward a more natural forest condition?
- Does the master plan include thoughts around protection from forest fires and how forests are spatially planned?
- Concern expressed about having a home that borders the property due to fire risk.
- How big does a fire break need to be?
- Are there plans to clean up the recently logged area between G1200 and G1000 where The Hood trail was?
- How has the forest management your plan taken climate change into account?
- The views from the ridgetop are predominantly available because of past clearings. Once those trees recover, the views will go away. What plans are there to preserve views from the "spine" of the park by allocating small pockets for meadows?
- How do we manage scotch broom?
- How will the plan prioritize and phase forest restoration work (thinning, etc.) especially as this may end up in competition with the capital improvement projects?
- Has does the county feel about their restoration thinning programs at Coulter Creek and Newberry Hill Parks? Are biologists ok that enough large woody debris left after logging?
- Is there a schedule for the harvest of the remaining timber tracts? How does this mesh with the various alternatives?
- How big does a fire break need to be?

Miscellaneous

- What input has the Master Planning team received from underserved parts of the community?

- There needs to be messaging to inform users of proper conduct in the park. Currently, there are improper uses occurring such as memorials and graffiti.
- Would a zipline be worked through the county or concessionaire?
- Continue talks with Port Gamble town to make sure that uses aren't duplicated and work together.
- Some participants believe volunteers can manage the park.
- Excited about the idea of camping as a way for people from Seattle to visit for a weekend.
- What's timeline for finalizing a plan?
- Is there a questionnaire/survey for public to comment on the three options?
- Look at other counties and municipalities that manage campgrounds. Maricopa AZ, Bainbridge Faye Bainbridge, Dungeness Recreation Area, and Snohomish County were suggested examples.
- Has Fish and Wildlife agencies been involved in these plans? I love to see bear, deer, bobcat, etc. and I would hate to see their areas become too public.
- Also, I understand the need for funding, but it feels like we're focusing on bringing people in here from other places even though it's the Kitsap County residents that have gone through the process of purchasing this. We want to preserve this park for the county residents.
- Will there be a paid park ranger, or such involved for campgrounds?
- Preference expressed for minimal development.
- Concern expressed about campgrounds and potential use by people experiencing homelessness.

FAQs

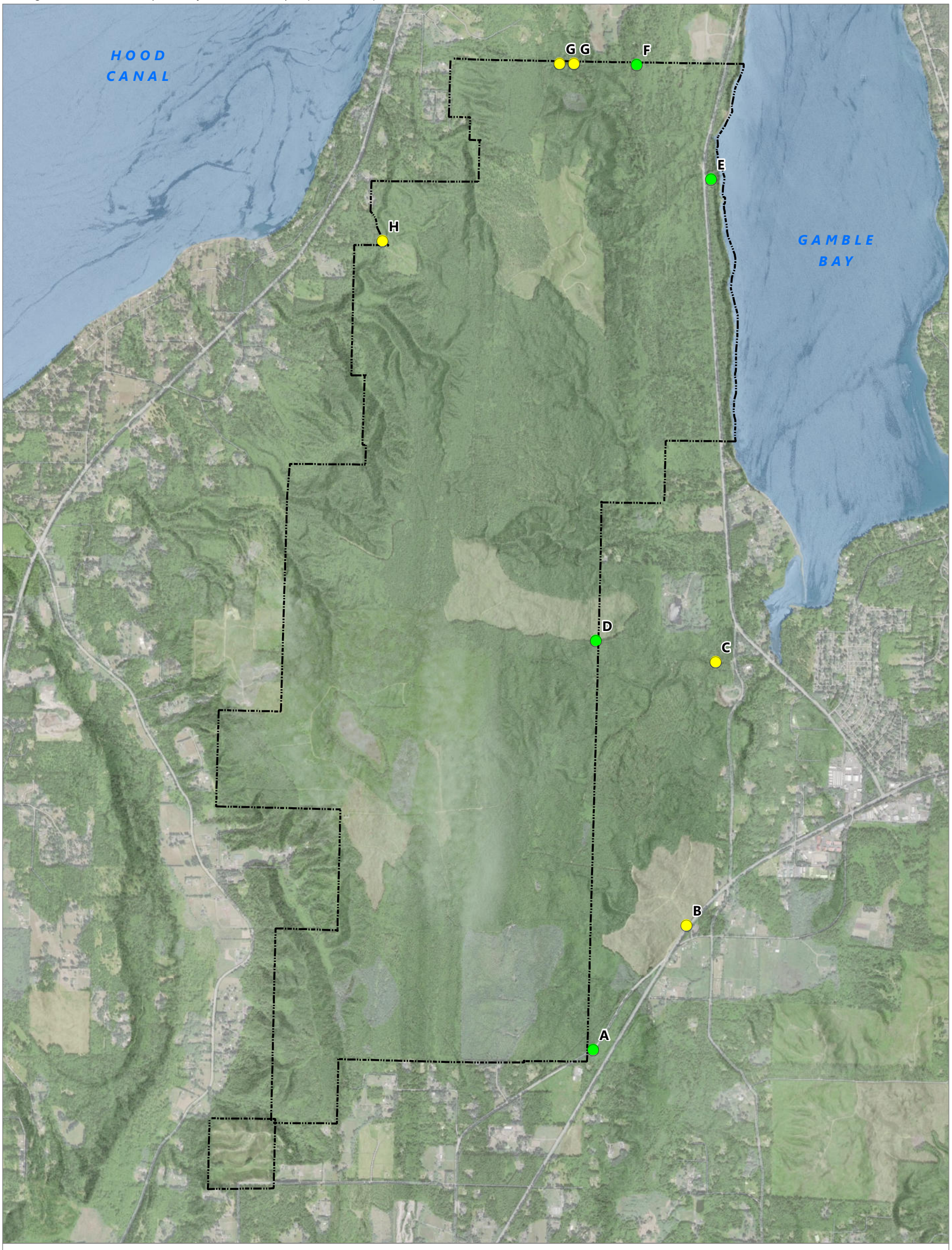
- What is the plan for Rayonier to continue their logging? Is there a schedule for the harvest of the remaining timber tracts?
- How will the plan prioritize and phase forest restoration work? What planning has been done to create more natural forest conditions?
- Will there be paid staff? Who will run park operations and enforce rules?
- How will development, including trails and facilities like the STO, impact wildlife in the park?

3-3 APPENDIX

SITE INVENTORY & SUITABILITY MAPS (FULL SIZE)

Appendix
Site Inventory & Suitability Mapping

DRAFT



LEGEND:

Park Boundary (SC)

Access Point Location (SC)

Existing Access

Potential Access

NOTES:

Data Sources:
SC: Stewardship Committee

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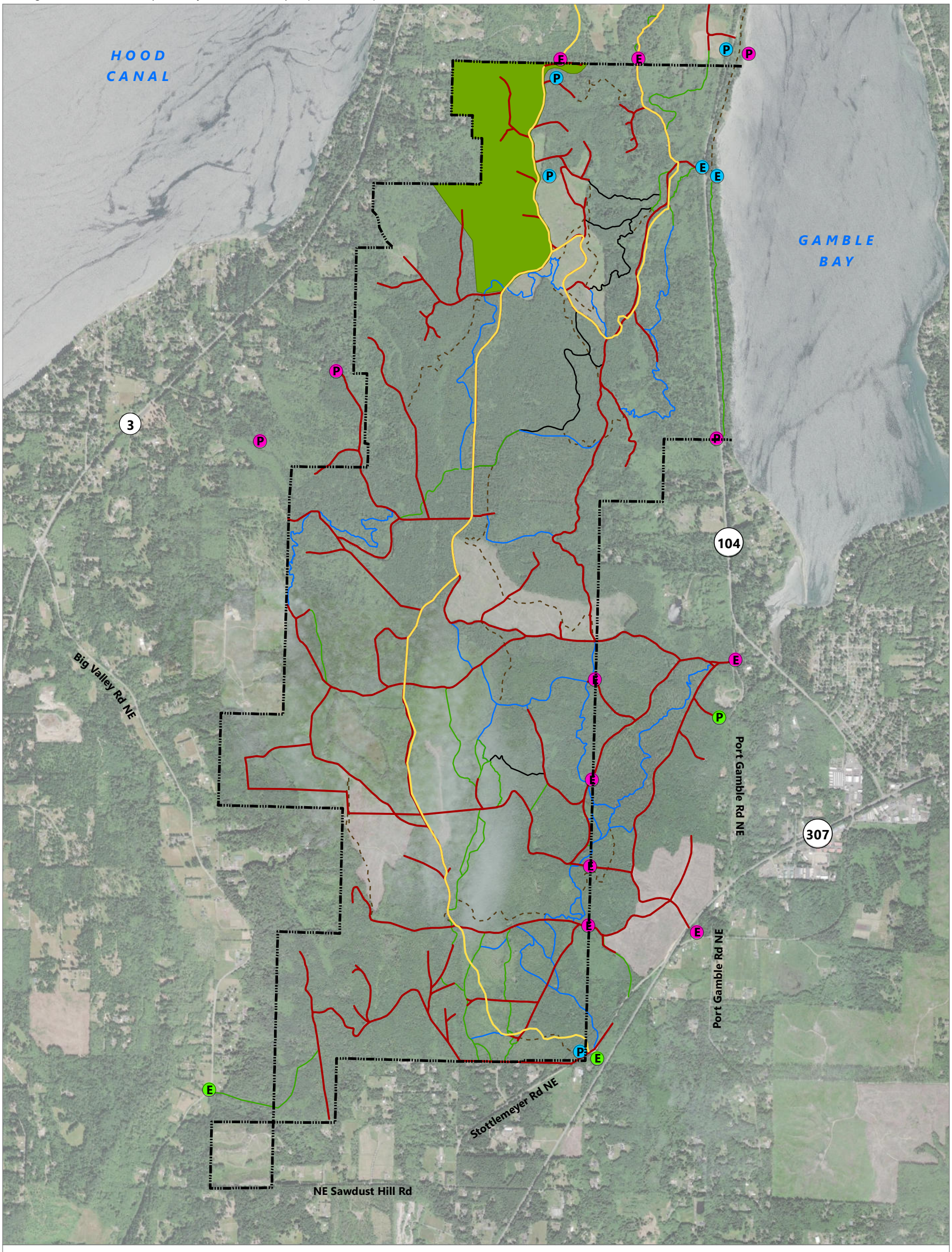
ANCHOR QEA

KITSAP COUNTY 18 57 WASHINGTON

KITSAP PUBLIC FACILITIES DISTRICT

Figure 1
Access Points
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Access Only (no parking) (SC)
- Small Trailhead (minor roadside parking) (SC)
- Large Trailhead (with designated parking lot) (SC)
- Mountain Bike Ride Park (SC)
- Sound to Olympics Trail (PLANNED) (SC)
- Trails easy (SC)
- Trails Intermediate (SC)
- Trails advanced (SC)
- Trails proposed (SC)
- Fire Roads (County)

NOTES:

E: Existing Access
P: Potential Access

Data Sources:
SC: Stewardship Committee
C: Kitsap County

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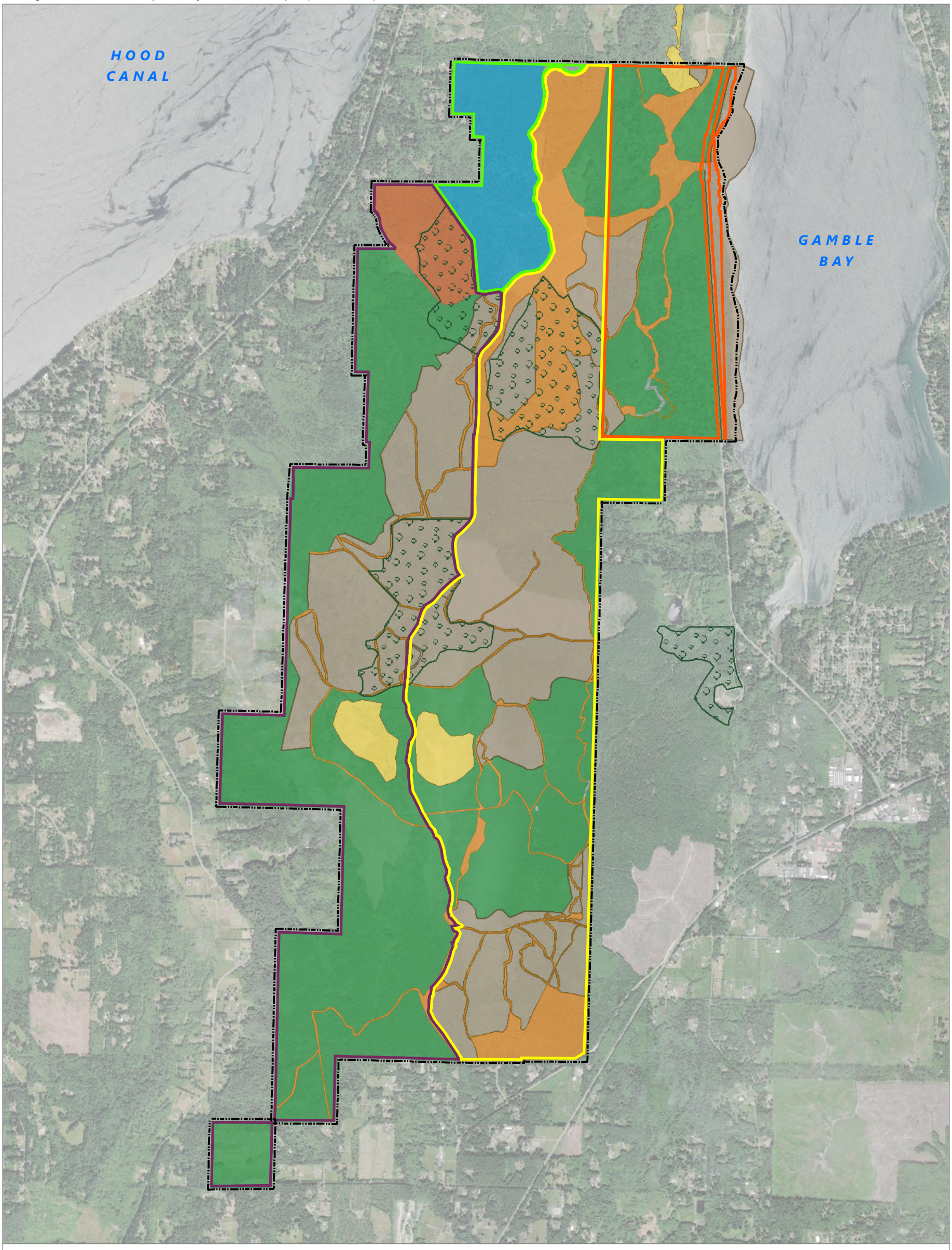
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KITSAP PUBLIC FACILITIES DISTRICT

Figure 2
Recreation and Transportation Features
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Recreation Undetermined (SC)
- Conservation (SC)
- Logging Active (SC)
- Natural Area (SC)
- Passive (SC)
- Recreation Active (SC)
- Recreation Specialized (SC)

Purchase Agreement Parcels (C)

- Eastern Forest Block
- Ride Park Kitsap County
- Shoreline Block
- Western Forest Block

NOTES:

Data Sources:
SC: Stewardship Committee
C: Kitsap County

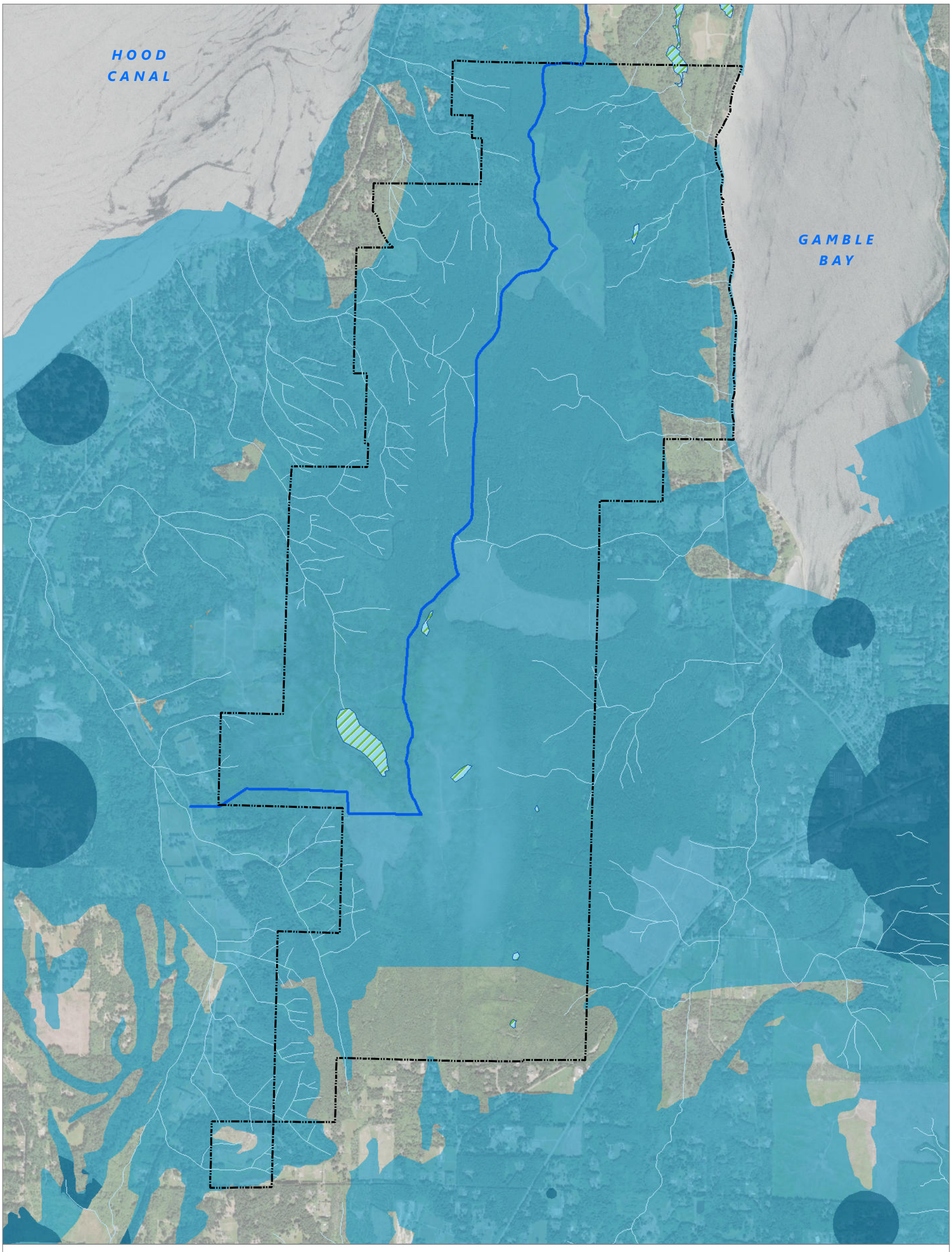
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ANCHOR QEA

KITSAP PUBLIC FACILITIES DISTRICT

Figure 3
Land Classification
Port Gamble Forest Heritage Park



LEGEND:

- Rivers and Streams (WADNR)
- Water Main Line (PUD)
- Park Boundary Polygon (SC)
- Wetlands (SC)
- County Critical Aquifer Recharge Areas Category 1 (PUD)
- County Critical Aquifer Recharge Areas Category 2 (C)

NOTES:

Data Sources:
SC: Stewardship Committee
C: Kitsap County
PUD: Kitsap County Public Utilities District
WADNR: Washinton Department of Natural Resources

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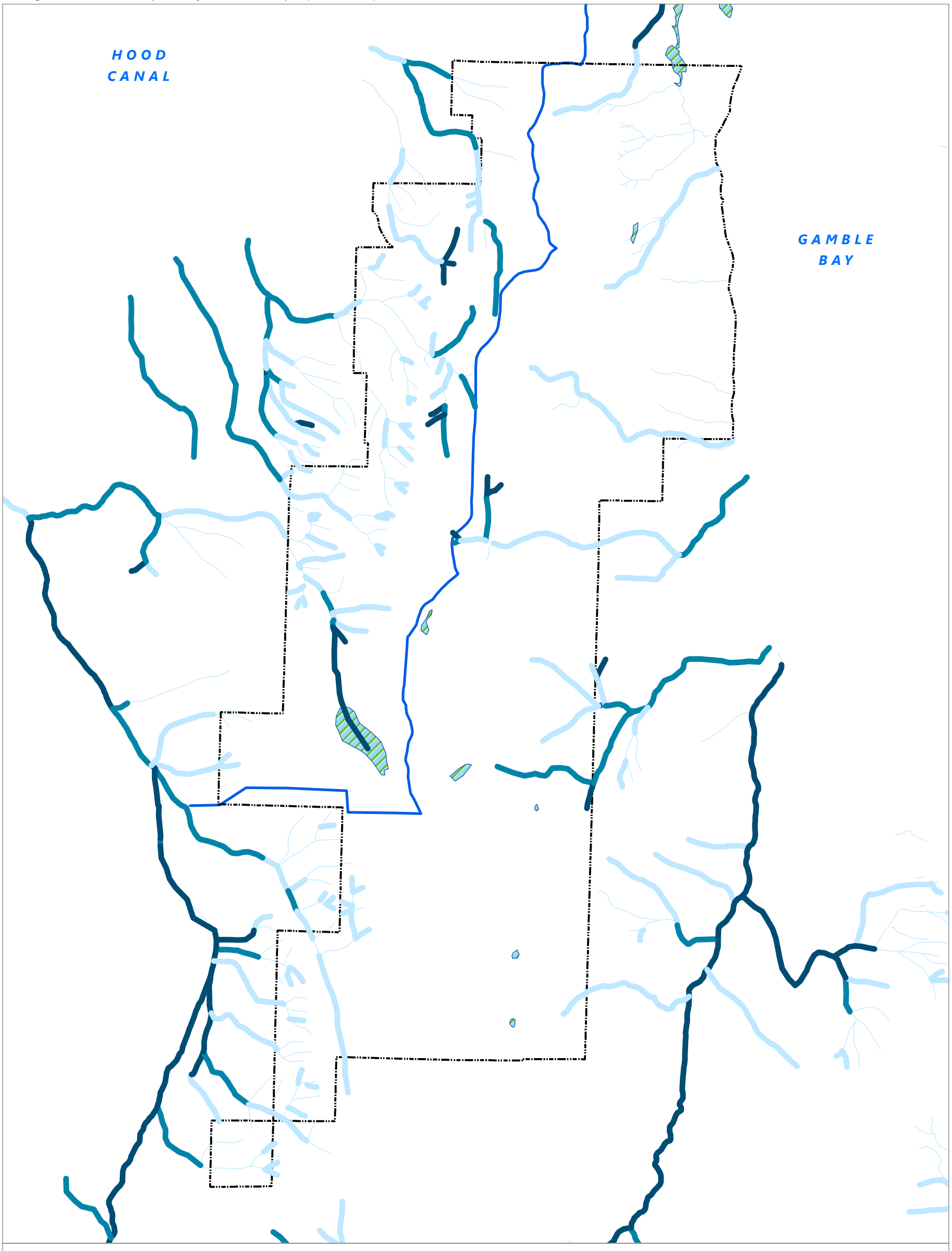
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KITSAP COUNTY 18 57 WASHINGTON

KITSAP PUBLIC FACILITIES DISTRICT

Figure 4
Hydrology
Port Gamble Forest Heritage Park



LEGEND:

- Rivers and Streams (WADNR)
- Water Main Line (C)
- Park Boundary Polygon (SC)
- Wetlands (SC)

Beaver Habitat Suitability (UW)

- Good
- Better
- Best

NOTES:

Data Sources:
SC: Stewardship Committee
C: County
WADNR: Washinton Department of Natural Resources
UW: University of Washington

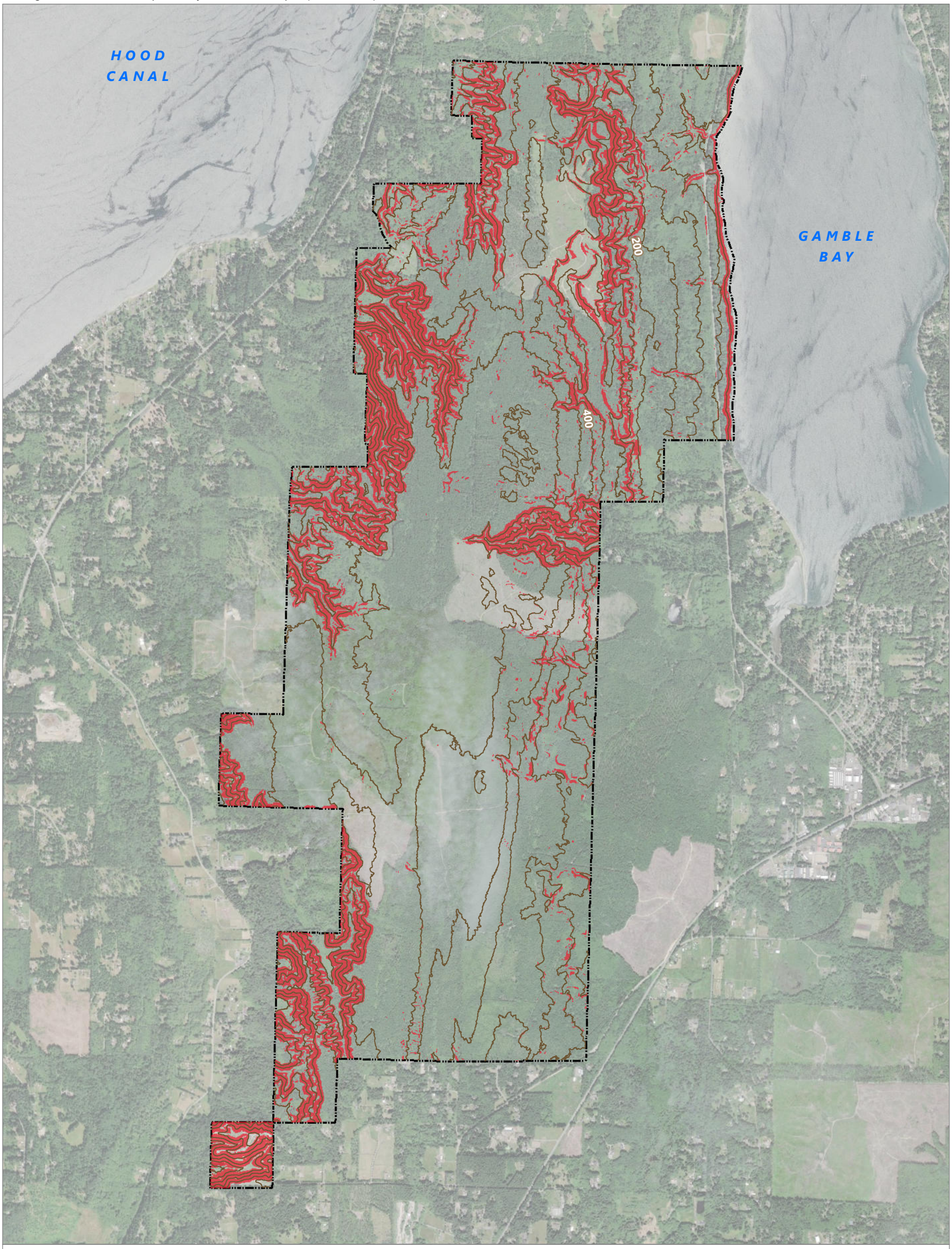
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ANCHOR QEA

Figure 9
Beaver Habitat
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Park Boundary Polygon (SC)
- 40-foot Contour (PSLC)
- Steep Slope (>15%) (PSLC)

NOTES:

Data Sources:
SC: Stewardship Committee
PSLC: Puget Sound Lidar Consortium

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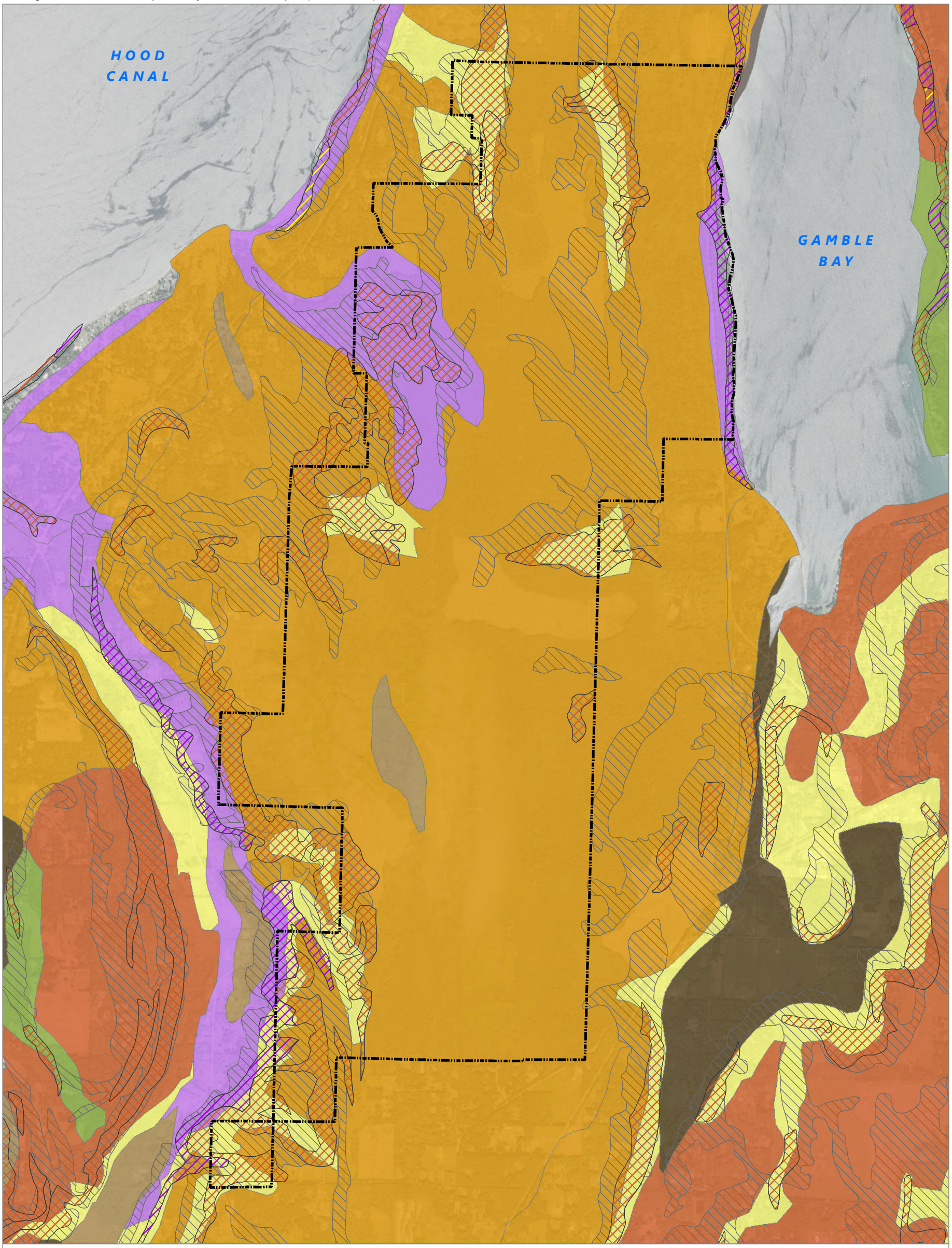
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KITSAP COUNTY 18 57 WASHINGTON

KITSAP PUBLIC FACILITIES DISTRICT

Figure 5
Topography
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Park Boundary Polygon (SC)
- Geologic Hazard Area (C)

Soil Stability from Deeter Soil Survey (C)

- Intermediate
- Unstable
- Recent or Historicall Active Landslides

Surface Geology Type (C)

- Advanced Outwash
- Gravels
- High Slope
- Lacustrine
- Peat
- Till
- Undifferentiated
- Unknown Type

NOTES:

Data Sources:
SC: Stewardship Committee
C: Kitsap County

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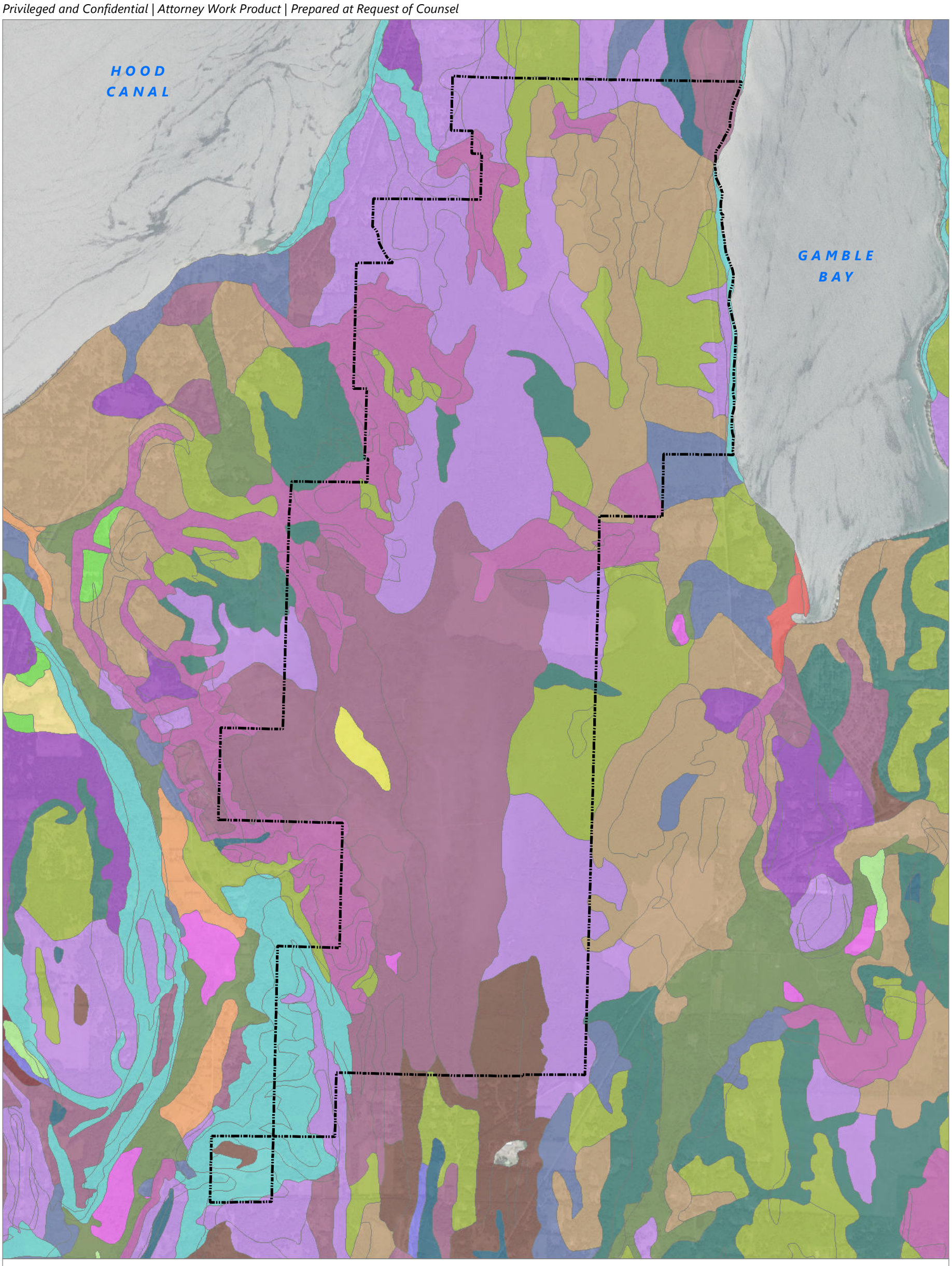
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KITSAP PUBLIC FACILITIES DISTRICT

Figure 6
Geology
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Park Boundary Polygon (SC)

Soil Unit (C)

- BELFAST LOAM
- BELLINGHAM SILTY CLAY LOAM
- DISTRIC XERORTHENTS
- INDIANOLA LOAMY SAND
- INDIANOLA-KITSAP COMPLEX
- KAPOWSIN GRAVELLY LOAM
- KAPOWSIN VARIANT GRAVELLY CLAY LOAM
- KITSAP SILT LOAM
- MCKENNA GRAVELLY LOAM
- MUKILTEO PEAT
- NEILTON GRAVELLY LOAMY SAND
- NORMA FINE SANDY LOAM
- PITS
- POULSBO GRAVELLY SANDY LOAM
- POULSBO-RAGNAR COMPLEX
- RAGNAR FINE SANDY LOAM
- RAGNAR-POULSBO COMPLEX
- SEMIAHMOO MUCK
- SHALCAR MUCK
- SINCLAIR VERY GRAVELLY SANDY LOAM
- TACOMA SILT LOAM

NOTES:

Data Sources:
SC: Stewardship Committee
C: Kitsap County

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Feet

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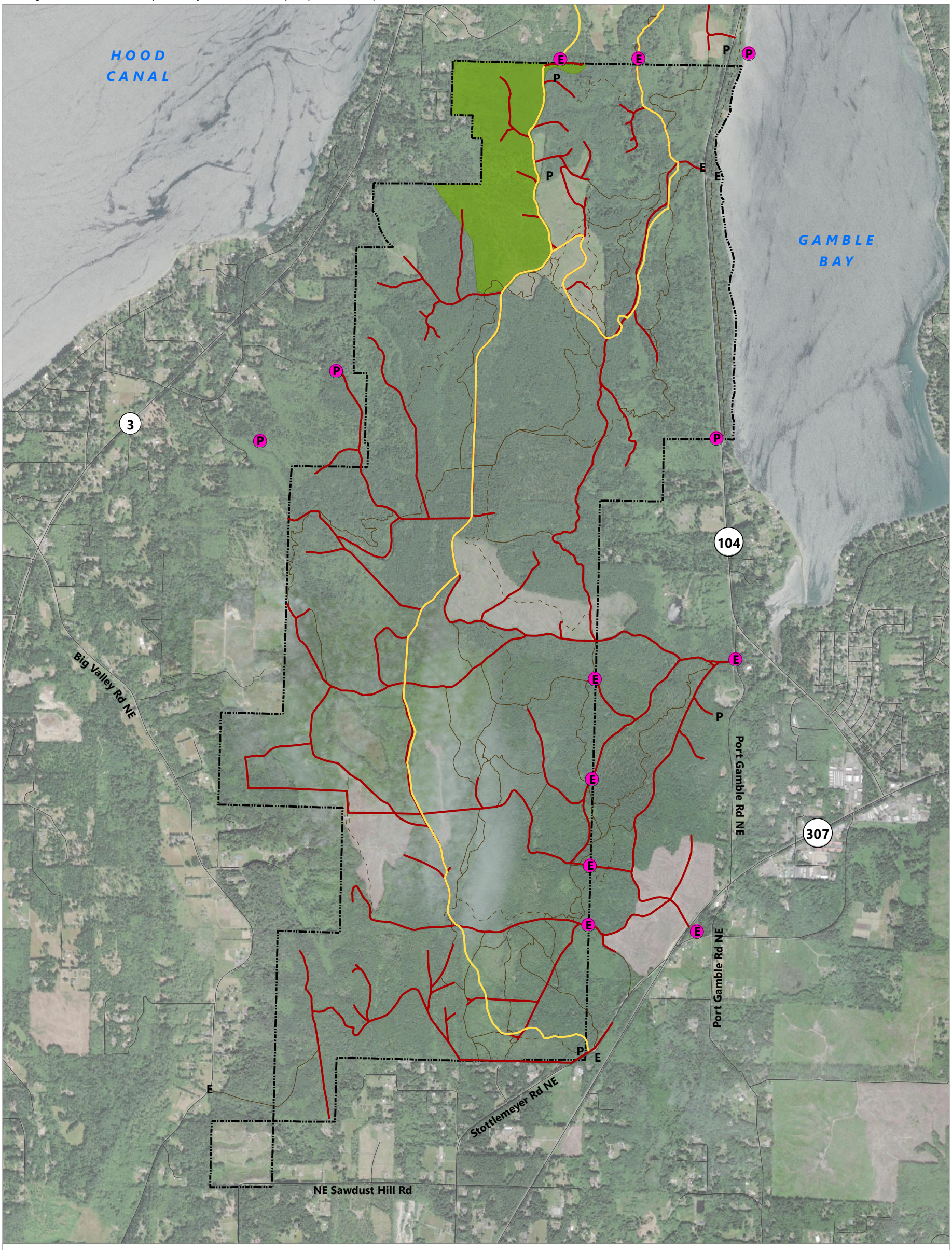
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KITSAP PUBLIC FACILITIES DISTRICT

Figure 7
Soil Type
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Access Only (no parking) (SC)
- Mountain Bike Ride Park (SC)
- Park Boundary Polygon (SC)
- Sound to Olympics Trail (PLANNED) (SC)
- Trails (SC)
- Trails proposed (SC)
- Fire Roads (C)

NOTES:

E: Existing Access
P: Potential Access

Data Sources:
SC: Stewardship Committee
C: Kitsap County

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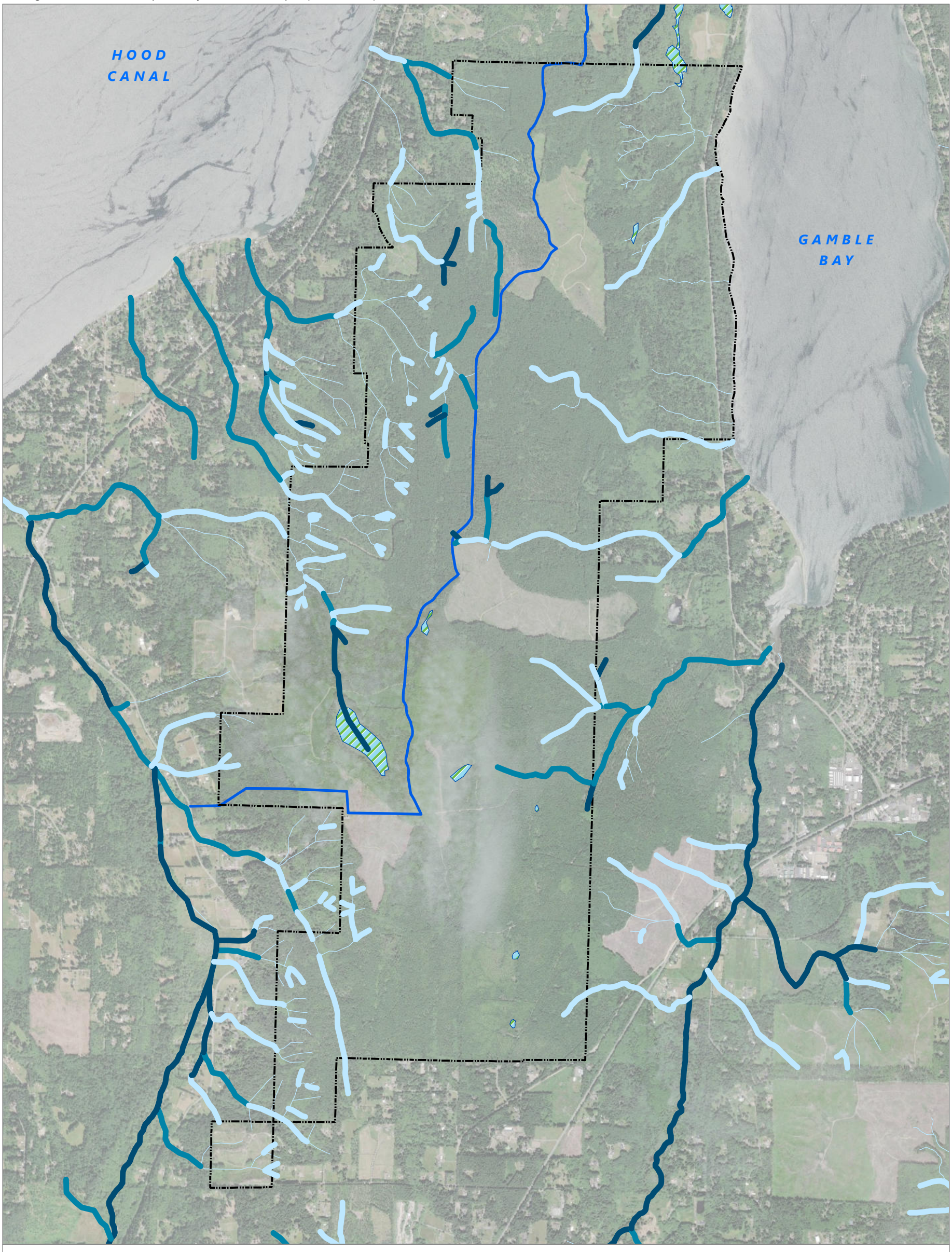
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KITSAP PUBLIC FACILITIES DISTRICT

Figure 8
Existing Site Plan with Planned Improvements
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Rivers and Streams (WADNR)
- Water Main Line (C)
- Park Boundary Polygon (SC)
- Wetlands (SC)

Beaver Habitat Suitability (UW)

- Good
- Better
- Best

NOTES:

Data Sources:
SC: Stewardship Committee
C: County
WADNR: Washinton Department of Natural Resources
UW: University of Washington

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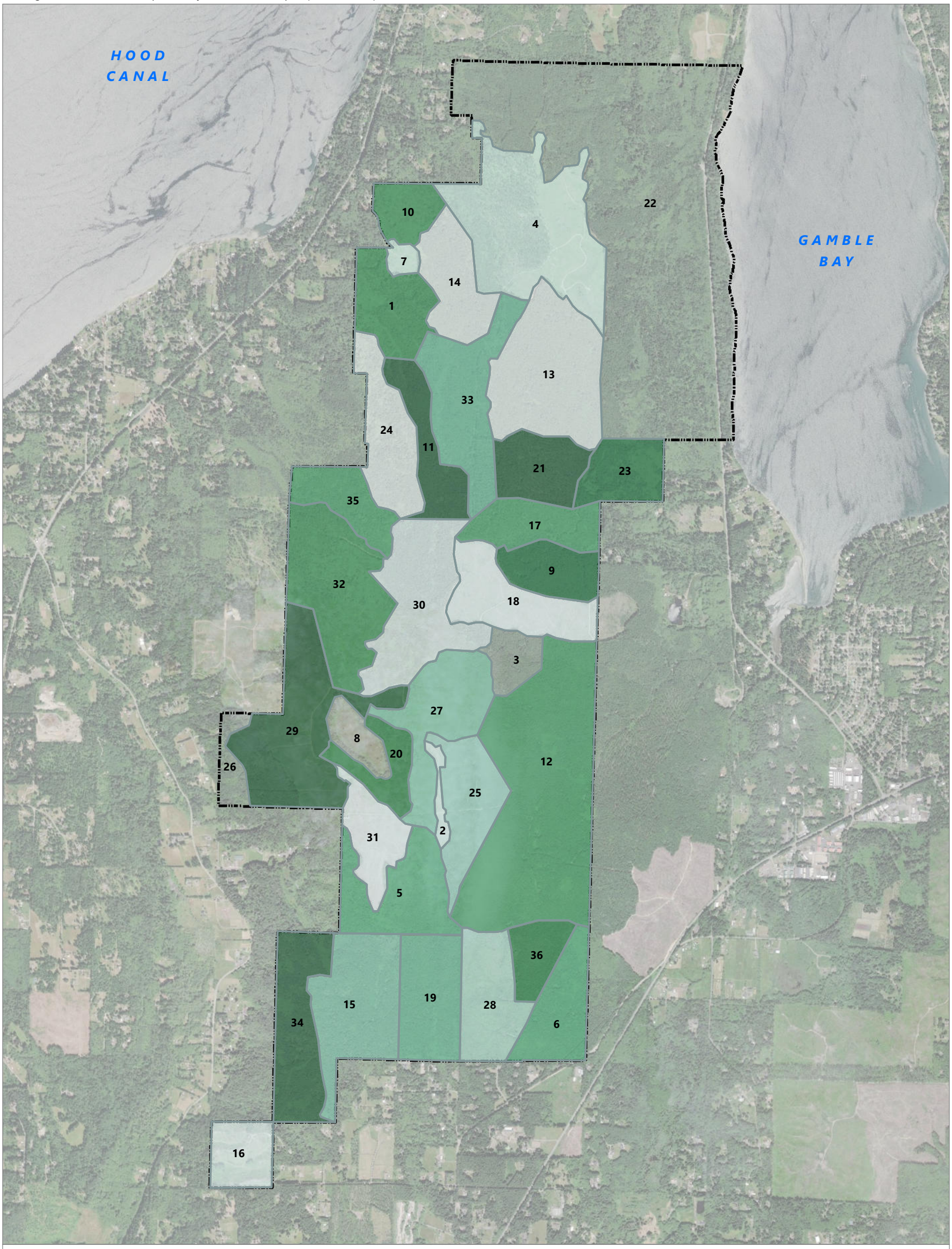
ANCHOR QEA

KITSAP COUNTY WASHINGTON 18 57

KITSAP PUBLIC FACILITIES DISTRICT

Figure 9
Beaver Habitat
Port Gamble Forest Heritage Park

DRAFT



LEGEND:

- Park Boundary Polygon (SC)

Tree Stands by Harvest Date (SC)

- 1981
- 1982
- 1985
- 1987
- 1988
- 1990
- 1991
- 1993
- 2002
- 2005
- 2018
- 2019
- 2020
- Approved

NOTES:

Data Sources:
SC: Stewardship Committee

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ANCHOR QEA

KITSAP COUNTY 18 57 WASHINGTON

KITSAP PUBLIC FACILITIES DISTRICT

Figure 10
Forest Stands
Port Gamble Forest Heritage Park

INITIAL SUITABILITY ANALYSIS

Existing Parking

Proposed Parking

Fire Roads

DEVELOPMENT SUITABILITY

Distance from Parking

Closest to Parking

Up to 1 Mile from Parking

Areas Unsuitable for Development

Within 100 feet of Wetlands
Within 100 feet of Streams
Within 100 feet of Shorelines
Slopes Greater Than 15%

DEED RESTRICTIONS

Park Development Restricted

Western Forest Block

Shoreline Block

Park Development Allowed

Eastern Forest Block

Ride Park Kitsap County

Suitability for the development of park buildings and infrastructure was determined by several factors. These include the proximity to existing or proposed parking and to existing utilities. Areas with steep slopes and areas within 100 feet of shorelines, streams and wetlands were considered to be unsuitable for development. Deed restrictions limit the types of development allowed on the Eastern Forest Block and Shoreline Block.

GAMBLE BAY

3

104

307

Big Valley Rd NE

Port Gamble Rd NE

Sottlemeyer Rd NE

0 0.25 0.5 1 MI

NORTH

SUITABILITY FOR DEVELOPMENT
PORT GAMBLE AREA

10 Acre Forested Site

10 Acre Forested Site

7 Acre Forested Site

8 Acre Forested Site

10 Acre Forested Site

15 Acre Forested Site

5 Acre Forested Site

20 Acre Cleared Site

10 Acre Forested Site

Existing Parking

Proposed Parking

Park Boundary

Logging Road

Trails

Approved STO Alignment

Easy Multiuse Trail

Moderate Multiuse Trail

Difficult Multiuse Trail

Ride Park

SUITABLE SITES

Sites Suitable for Development

Very Suitable Site in Clearing

Suitable Site in Forest

Very Suitable Site in Forest

To be considered suitable a site must be contiguous and meet the following criteria:
The site is close to existing of proposed parking.
The site is generally less than 15% slope.
The site is at least 100 feet from streams, wetlands and shorelines.
The site is not bisected by trails.

0 0.1 0.2 0.4 MI

NORTH

SUITABILITY FOR DEVELOPMENT
STOTTLEMEYER AREA

Existing Parking
Proposed Parking
Park Boundary
Logging Road

Trails

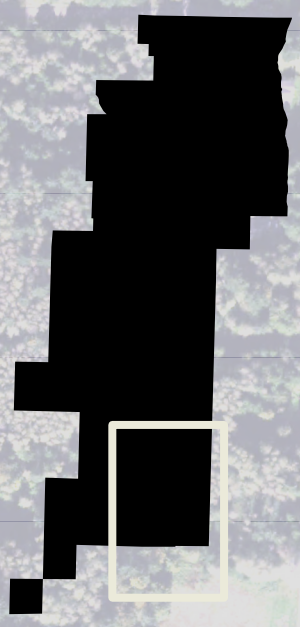
Approved STO Alignment
Easy Multiuse Trail
Moderate Multiuse Trail

SUITABLE SITES

Sites Suitable for Development

Suitable Site in Forest
Very Suitable Site in Forest

30 Acre Forested Site
15 Acre Forested Site
7 Acre Forested Site
5 Acre Forested Site
10 Acre Forested Site



To be considered suitable a site must be contiguous and meet the following criteria:
The site is close to existing of proposed parking.
The site is generally less than 15% slope.
The site is at least 100 feet from streams, wetlands and shorelines.
The site is not bisected by trails.

0 0.06 0.13 0.25 MI

NORTH

3-4

APPENDIX

SITE RECONNAISSANCE MEMO &
FOREST STAND ASSESSMENT TABLE

1201 3rd Avenue, Suite 2600
Seattle, Washington 98101
206.287.9130

ANCHOR QEA

Memorandum

November 12, 2021

To: Jeff Bouma and Sandy Fischer, Fischer Bouma Partnership

From: John Small and Julie Fox, Anchor QEA

Cc: Ann Costanza, Anchor QEA

Re: Port Gamble Forest Heritage Park Field Reconnaissance Summary

The purpose of this memorandum is to provide information on the observations and information collected during field reconnaissance of the Port Gamble Forest Heritage Park (PGFHP) in May 2021. The field reconnaissance effort was conducted to verify site inventory information that was collected as part of Phase I of the development of the PGFHP Master Plan. This refinement to the inventory informed analysis of specific areas identified for improvements in the preliminary alternatives under consideration for the Master Plan.

Field Reconnaissance Methodology

Prior to the field effort, biologists from Anchor QEA reviewed maps of PGFHP soils, geology, streams, wetlands, and topography. Aerial imagery dating back decades was also reviewed to better understand timber harvest patterns and techniques.

In May 2021, two senior biologists from Anchor QEA conducted a rapid inventory of PGFHP. The biologists accessed the interior of the park by truck and carried specialized geo-referenced mapping tablets that allowed them to collect spatial data as well as take photographs and field notes.

A key focus of the reconnaissance effort was the condition of 36 individual forest stands in PGFHP (Figure 1). Maps previously generated by the PGFHP Stewardship Council had designated these 36 forest stands as historical harvest units with relatively homogenous conditions. Observations were recorded from multiple locations in and around each stand. Photographs were taken to record conditions seen from the ground.

Results

Information from the field reconnaissance is provided as a Forest Management Matrix in Table 1. This includes the location (by Stand ID), the size of the stand in acres, the length of the stand perimeter, and a brief description of the field team's observations. These descriptions provide information on the most common conditions observed in each stand. However, the forest stands are large areas covering tens to hundreds of acres, and it is likely that specific locations within a stand could vary from the descriptions provided in the table.

Table 1 also includes a condition assessment and management strategy for each forest stand. These are based on the earlier PGFHP Forest Stewardship Plan developed for the shoreline block. The techniques recommended in that document were also used to make recommendations for the rest of the PGFHP. Due to the more detailed analysis that went into development of the PGFHP Forest Stewardship Plan, the entire shoreline block was considered as a single stand in this inventory (Map ID 22).

Forest Stand Characterization

Based on the data collected during the reconnaissance and the background research described earlier, Anchor QEA biologists further characterized the conditions of each forest stand with respect to dominant and subdominant tree species, as well as four physical conditions to support future management decisions for forest health and Master Plan priorities. The assessment of these four physical conditions provided is summarized in Table 2 and described further in the following paragraphs.

Presence of Wildfire Fuels

Within dense, even-aged stands like many within PGFHP, many mature trees and lower branches die but remain in place. As this material dries out over time, it becomes more combustible and can increase the intensity of wildfire. Each stand was rated as a high, moderate, or low priority for fuel reduction management actions.

Canopy Density (Crowding)

The PGFHP Forest Stewardship Plan contains an explanation of the benefits of variable density, restoration thinning of dense, even-aged stands. Many of the stands in the park would benefit from this technique. The removal of up to 50% of canopy height trees, particularly Douglas fir, will help to diversify forest composition and accelerate the development of a healthy, multi-layered forest ecosystem. Each stand was rated as very high, high, moderate, or low density.

Presence of Invasive Vegetation

Scot's broom and Himalayan blackberry were the most commonly encountered invasive species during the reconnaissance. Scot's broom in particular is an aggressive species that quickly colonizes recently harvested areas. Each stand was rated as a very high, high, moderate, or low priority for presence of invasive species, with recently harvested areas having the highest amounts.

Plant Diversity

Planting native species that are not regenerating on their own can be effective in diversifying the forest composition in terms of both species and age (size). Stands with least observed species diversity, as well as stands where natural regeneration appeared to be less than expected, were

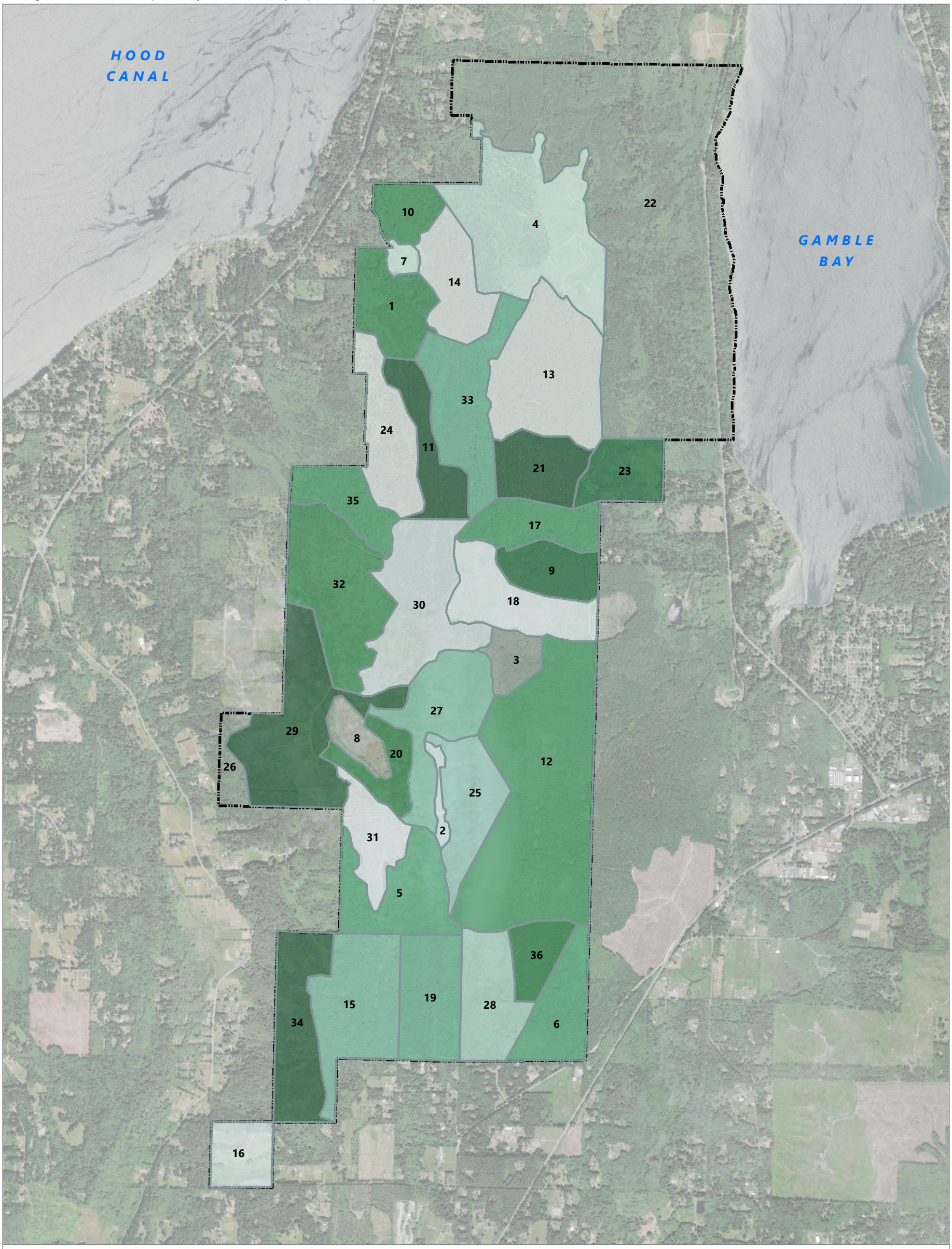
identified as low for plant diversity. Each stand was rated as a very high, high, moderate, or low diversity condition.

Selected Photographs

Photographs are provided in Attachment A that provide a visual representation of the forest stand conditions described in this memorandum.

Tables and Figures

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LEGEND:

- Park Boundary Polygon (SC)

Tree Stands by Harvest Date (SC)

- 1981
- 1982
- 1985
- 1987
- 1988
- 1990
- 1991
- 1993
- 2002
- 2005
- 2018
- 2019
- 2020
- Approved

NOTES:

Data Sources:
SC: Stewardship Committee

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ANCHOR QEA

KITSAP COUNTY WASHINGTON 18 57

KITSAP PUBLIC FACILITIES DISTRICT

Figure 1
Forest Stands
Port Gamble Forest Heritage Park

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
1	1987	66	7800	This is a dense, even-aged stand with 30- to 32-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density thinning of up to 50% of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
2	2018	10	5300	This stand is long and narrow and it was harvested in 2018. The stumps that remain are a mix of conifers and deciduous species. The stand appears to include a wetland with surface hydrology visible and wetland herbaceous plants like soft rush and slough sedge dominating the wettest areas. There is some regeneration of western red cedars and some red alders near the edge of the harvested area. This area will likely become a scrub-shrub and emergent wetland through natural regeneration.	This area could be planted to add a wetland forest element outside of the wettest areas. Quaking aspen, Pacific willow, western red cedar, and Sitka spruce could be planted to establish a mixed forest canopy that will allow for a diverse understory of wetland shrubs and herbaceous species, and minimize the risk from invasive species.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
3	<Null>	29	4800	This is a dense, even-aged stand with 20- to 25-year-old Douglas fir and a few hemlocks and cedars that range in height from 40 to 50 feet. The canopy is partially closed with little to no regeneration of trees in the understory. The shrub layer is moderate at about 40% cover, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred and trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density restoration thinning of canopy height Douglas fir trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
4	2018	191	18100	This parcel was 75% clear-cut in 2018 and the harvest area was replanted in primarily Douglas fir on 15- to 20-foot spacing. The northeast 25% of the parcel is a recently thinned (3 to 5 years ago) stand of Douglas firs that are approximately 30 to 35 years old and 70 to 75 feet tall. The stand has a 40% open canopy with natural regeneration of hemlock in the understory. The shrub and herbaceous layer is dense with many evergreen shrubs and ferns. The fuel load is low due to the recent thinning, and the remaining larger Douglas fir trees are healthy.	The stand contains larger high-value trees and will likely be harvested soon. If not harvested, this stand will continue to mature and form a subcanopy of mixed conifers that will create a multi-layered healthy forest.
5	1990	85	12200	The canopy of this stand is closed and there is little to no regeneration of understory trees. The shrub layer is dense with evergreen and deciduous species, but there is little to no herbaceous layer other than a few sword ferns. The stand has been hand thinned, resulting in a moderate fuel load within the shrub layer.	This stand could use additional restoration thinning of canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
6	1990	64	8100	This is a dense red alder stand with 30- to 32-year-old trees that are 50 to 60 feet tall. The alder stand also contains scattered western red cedars that are 20 to 30 feet tall. The understory and shrub layer is dense with elderberry, salmonberry, and sword fern.	The cedars will continue to mature and more conifers will likely regenerate under the deciduous canopy of alders. This stand should be left to naturally develop, with routine monitoring to see if invasive species from nearby clear-cuts remain controlled.
7	2018	10	2800	This stand has open views of the Olympic Mountains. This small circular stand was clear-cut in 2018 and the harvest area was replanted in primarily Douglas fir. Several large slash piles within the parcel were left as habitat features. The shrub and herbaceous layer is very dense with many deciduous and evergreen shrubs with some ferns.	Some Scot's broom has begun to colonize the parcel and should be controlled to minimize the spread.
8	<Null>	27	4800	This stand contains a large wetland with some bog characteristics. It has a central emergent community that transitions to a scrub-shrub community with a ring of alder and cedar trees on the fringes of the wetland. The forested portions are dominated by 25- to 30-year-old alders with a sparse understory of cedar. The shrub layer is dense with elderberry, salmonberry, Himalayan blackberry, and Douglas spirea.	The Himalayan blackberry should be removed and the area monitored. This area should be conserved and left to naturally develop the mixed alder and conifer forest ringing the large wetland.
9	1982	48	6100	This is a dense, even-aged stand with 38- to 40-year-old Douglas firs that range in height from 70 to 80 feet. The canopy is mostly closed with some regeneration of understory western hemlock. The shrub layer is moderate with evergreen and deciduous species, but there is little to no herbaceous layer other than a few sword ferns. The stand has been hand thinned, which has created a moderate fuel load within the shrub layer.	This stand could use another 25% thinning of canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
10	1987	35	4900	This is a dense, even-aged stand with 30- to 33-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns, or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density restoration thinning of up to 50% of canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
11	1981	56	10100	This is a dense, even-aged stand with 38- to 40-year-old Douglas firs that range in height from 75 to 80 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns. The stand has been self thinning and creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
12	1988	295	17500	This is a moderately dense, even-aged stand with 30- to 33-year-old Douglas fir, hemlocks, and cedars that range in height from 45 to 60 feet. The canopy is partially closed with some regeneration of trees in the understory. The shrub layer is moderate at about 60%, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from restoration thinning of up to 25% of canopy Douglas fir trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand. This stand has a high value for recreation and education due to the tree diversity, age of the stand, and size of the stand, and it is a high priority for conservation.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
13	Approved	144	10700	This stand was being actively harvested at the time of the inventory.	Slash piles should be chipped and spread. The clear-cut should be replanted in a mix of conifers and deciduous species based on the existing topography, soils, and hydrology. Invasive species should be controlled and the site monitored for colonization by invasives.
14	Approved	67	8100	The is a dense, even-aged stand with 35- to 40-year-old Douglas firs that range in height from 70 to 80 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse at 20%, and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	
15	1993	111	11500	This is a dense, even-aged stand with 25- to 28-year-old Douglas firs that range in height from 50 to 60 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is moderate at 50%, and there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 50% of Douglas fir on the ridges to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
16	2019	42	5400	Several large slash piles were left within this parcel as habitat features. The shrub and herbaceous layer is moderate, with primarily Scot's broom colonizing the parcel that should be controlled.	The parcel should be replanted in a mix of conifers and deciduous species (if it has not yet been planted). There are steep narrow drainages to the west that may contain perennial, intermittent, or ephemeral streams.
17	1988	57	7800	The canopy of this stand is closed with little to no regeneration of understory trees. The shrub layer is sparse at 20% cover, and there is little to no herbaceous layer other than a few sword ferns. The stand appears to have been hand thinned, which has created a moderate fuel load within the shrub layer.	This stand would benefit from additional thinning of canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
18	2019	82	9900	This parcel was clear-cut in 2019 and the harvest area replanted in primarily Douglas fir on a 15- to 20-foot spacing. There are several large slash piles left as habitat features.	The shrub and herbaceous layer is low, with primarily Scot's broom colonizing the parcel that should be controlled.
19	1991	80	7900	Red alders in this stand are self thinning due to conifer competition. It is a moderately dense, even-aged stand with 30-year-old Douglas firs, hemlocks, cedars, and alders that range in height from 45 to 60 feet. The canopy is partially closed with some regeneration of trees in the understory where alders are being selected against. The shrub layer is moderate at about 60%, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where alders have thinned or trees have been wind-thrown. The stand has started to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead snags of smaller sizes.	This stand could use a 10% to 25% thinning of canopy Douglas fir trees to help promote natural regeneration of trees in the understory, reduce fuel loads, and allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
20	1985	37	8800	This is a moderately dense red alder and big-leaf maple stand with 30- to 35-year-old trees that are 50 to 60 feet tall. It has scattered western red cedars, hemlocks, and Douglas firs in the understory that are 35 to 40 feet tall. The shrub layer is dense (60%) with elderberry, salmonberry, and Himalayan blackberry. The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alder and maple.	This stand should be left to naturally develop, with removal of invasive species and monitoring to see if invasives from nearby clear-cuts remain controlled.
21	1981	60	6700	This is a dense red alder and Douglas fir stand with 30-year-old trees that are 50 to 60 feet tall. The alders are beginning to lean and be selected against due to shading and competition from the Douglas fir. The understory and shrub layer is moderate with cedar, elderberry, and sword fern.	The cedars will continue to mature under the canopy of alders and Douglas firs. This stand should be left to naturally develop, with routine monitoring to see if invasives from nearby clear-cuts remain controlled.
22	<Null>	632	30200	This stand is very large and has several different-aged stands with varying densities of trees and tree diversity.	The dense areas of Douglas fir stands would benefit from variable density restoration thinning up to 50% to reduce fuel loads and increase the health of the canopy, subcanopy, and shrub layer. The mixed coniferous and deciduous stands should be monitored to assess health, fuel load, and invasives. Wetlands and streams within this parcel should be avoided and buffers should be established to protect habitats and water quality.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
23	1982	51	6200	This is a dense red alder and Douglas fir mixed forest stand with 35- to 38-year-old trees that are 50 to 75 feet tall. The alders are beginning to lean and be selected against due to shading and competition from the Douglas fir. The understory and shrub layer is moderate with cedar, salal, elderberry, and sword fern.	The cedars will continue to mature under the canopy of alders and Douglas firs. This stand should be left to naturally develop, with routine monitoring to see if invasives from nearby clear-cuts remain controlled.
24	Approved	75	9900	This is a dense, even-aged stand with 35- to 40-year-old Douglas firs that range in height from 70 to 80 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is low at 20% but there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	
25	2002	72	10000	This is a stand of mostly Douglas firs that range in height from 35 to 40 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 50% of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
26	<Null>	21	5700	This is a stand of Douglas firs that range in height from 60 to 70 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is low at 20%, but there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 50% of canopy height Douglas fir on the ridges to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. There are steep valleys and mapped streams that should be conserved.
27	1993	94	12600	This is a dense red alder stand with 25- to 28-year-old trees that are 50 to 60 feet tall. The alder stand has scattered western red cedars and hemlocks in the understory that are 20 to 30 feet tall. The shrub layer is dense with elderberry and salmonberry.	The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alders as the stand matures. This stand appears to have wetland inclusions and should be left to naturally develop, with established buffers to protect wetlands and water quality. Routine monitoring should be conducted to see if invasives from nearby clear-cuts remain controlled.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
28	2005	75	8200	This is a moderately dense and young, even-aged stand with 15-year-old Douglas fir, hemlock, cedar, and white pine that range in height from 45 to 60 feet. Some mature pine and Douglas fir trees were retained after the 2005 harvest. The canopy is partially closed, with regeneration of Douglas fir and white pine trees in the understory. The shrub layer is moderate at about 40% cover, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where trees have thinned. The stand is just starting to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density thinning of up to 25% of canopy height Douglas fir trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand. This parcel has a high value for recreation and education due to the tree diversity, young age of the stand, and size of the stand. This parcel should be targeted for conservation.
29	1981	147	16700	This is a dense, even-aged stand with 30-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse, and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density thinning of up to 50% of canopy height Douglas fir trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.
30	2020	127	13700	This stand was clear-cut in 2020 and the harvest area was replanted in Douglas fir on a 15- to 20-foot spacing. Several large slash piles were left within the stand as habitat features.	The shrub and herbaceous layer is moderate, with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread. The parcel may contain a wetland, which should be replanted with wetland species; a buffer of deciduous and coniferous trees should be established to protect water quality and habitat.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
31	2019	51	8200	This stand was clear-cut in 2019 and the harvest area was replanted in Douglas fir on a 15- to 20-foot spacing. Several large slash piles were left within the parcel as habitat features.	The shrub and herbaceous layer is moderate, with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread.
32	1987	130	11800	This is a moderately dense stand of red alder and big-leaf maple, with 30- to 35-year-old trees that are 50 to 60 feet tall. The alder and maple stand has scattered western red cedars and hemlocks in the understory that are 35 to 40 feet tall. The shrub layer is dense (60%) with elderberry, salmonberry, holly, and Himalayan blackberry.	The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alder and maple. This stand should be left to naturally develop, with removal of invasive species and monitoring to see if invasives from nearby clear-cuts remain controlled.
33	1991	107	12900	This is a dense, even-aged stand with 30-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns, or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 50% of the canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, removal of only Douglas fir trees would help promote a more diverse and mixed species stand.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
34	1981	89	11300	This is a dense, even-aged stand with 40-year-old Douglas firs that range in height from 75 to 80 feet. The canopy is closed with no regeneration of understory trees. Small patches of mature alder are present within the Douglas fir forest. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns, or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 50% of the canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning only Douglas fir trees should be removed to help promote a more diverse and mixed species stand.
35	1988	50	7300	This is a dense, even-aged stand with 30- to 32-year-old Douglas firs that range in height from 60 to 70 feet, and 30- to 32-year-old big-leaf maples and red alders mixed within the Douglas firs. The canopy is mostly closed with limited regeneration of understory trees. The shrub layer is low at 30%, but there are sword ferns and herbaceous species under the maples and alders that allow more light to the forest floor. The stand has started to self thin against alders and small Douglas firs, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes.	This stand would benefit from variable density, restoration thinning of up to 25% of the canopy trees to help promote natural regeneration of trees in the understory, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning only Douglas fir trees should be removed to help promote a more diverse and mixed species stand. Any steep valleys and mapped streams should be avoided during thinning, and a buffer should be established around streams.

Table 1
Forest Management Matrix

Stand ID	Year of Last Harvest	Area (acres)	Perimeter (feet)	Forest Stand Description	Forest Stand Assessment and Management Strategy
36	1985	37	5400	This is a thin to moderately dense, even-aged stand with 30- to 35-year-old Douglas fir, hemlock, and cedar that range in height from 50 to 70 feet. The canopy is partially closed with some regeneration of trees in the understory. The shrub layer is dense at about 75%, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred or trees have been wind-thrown. The stand has been hand thinned but fuel loads appear to be low.	This stand does not require thinning now. In 15 to 20 years the possible thinning of canopy Douglas fir trees could help promote more natural regeneration of trees in the understory and allow for more light to help establish a diverse shrub and herbaceous layer. This parcel has a high value for recreation and education due to the tree diversity, age of the stand, size of the stand, and location in the core of the park, making it a higher priority for conservation.

Table 2
Forest Stand Characterization

Forest Stand ID	Year of Last Harvest	Dominant Species and General Character of Canopy	Subdominant Species	Presence of Wildfire Fuels	Canopy Density (Crowding)	Presence of Invasive Vegetation	Plant Diversity
1	1987	Dense Douglas fir	Sword fern, red huckleberry sparse	High	Very High	Low	Low
2	2018	No canopy	Soft rush, slough sedge, mint species	Low	Low	Low	Low
3	<Null>	Dense Douglas fir	English holly, salal, red huckleberry, evergreen huckleberry, sword fern, 40%	Low	Low	Low	High
4	2018	No canopy due to recent clear-cut	Regenerating shrubs and replanted Douglas fir at 35%. Douglas fir plantings on 20-foot spacing. Shrubs: salal, evergreen huckleberry, red huckleberry	Moderate	Low	Low	High
5	1990	Dense Douglas fir	Dense understory of evergreen huckleberry, salal, sword fern, red huckleberry at 75%	Moderate	High	Low	High
6	1990	Red alder with some western red cedar	Dense with salmonberry, red elderberry, and sword fern	Moderate	Low	Low	High
7	2018	No canopy due to recent clear-cut	Dense shrubs: trailing blackberry, salmonberry, thimbleberry, sword fern, red elderberry. Regeneration of big-leaf maple from stumps throughout harvest area	Low	Low	Moderate	Moderate
8	<Null>	Red alder and western red cedar in wetland edges	Dense red elderberry, salmonberry, Douglas spirea, willow	Low	Low	Moderate	High
9	1982	Dense Douglas fir with some western hemlock	Evergreen huckleberry, salal, red huckleberry	Moderate	High	Low	High
10	1987	Dense Douglas fir	Sword fern, red huckleberry sparse	Moderate	High	Low	Low

Table 2
Forest Stand Characterization

Forest Stand ID	Year of Last Harvest	Dominant Species and General Character of Canopy	Subdominant Species	Presence of Wildfire Fuels	Canopy Density (Crowding)	Presence of Invasive Vegetation	Plant Diversity
11	1981	Dense Douglas fir	Sword fern, red huckleberry, salal, evergreen huckleberry sparse	Moderate	High	Low	Low
12	1988	Mixed conifers: Douglas fir, western hemlock, western red cedar	60% understory of salal, red huckleberry, sword fern, evergreen huckleberry	Low	Low	Low	High
13	Approved	Active harvest	0	Low	Low	High	Low
14	Approved	Dense Douglas fir	20% salal, sword fern, evergreen huckleberry	Low	Low	High	Low
15	1993	Dense Douglas fir with red alder and big-leaf maple in valleys	Sword fern, red huckleberry, salal, evergreen huckleberry moderate	Moderate	High	Low	Moderate
16	2019	Recent clear-cut	Scot's broom at 40%	Low	Low	Very High	Very Low
17	1988	Dense Douglas fir	Sword fern, red huckleberry sparse (20%)	Moderate	Very High	Low	Low
18	2019	No canopy, recent clear-cut	20% to 40% Scot's broom	Low	Low	Very High	Very Low
19	1991	Mixed conifers: Douglas fir, western hemlock, western red cedar, and red alder	Salmonberry, evergreen huckleberry, salal, sword fern	Moderate	Moderate	Low	High
20	1985	Red alder and big-leaf maple with 25% mixed conifers	Himalayan blackberry, red huckleberry, red elderberry, at 60%	Moderate	Low	High	High
21	1981	Red alder and Douglas fir mixed forest	Western red cedar, red elderberry, evergreen huckleberry	Low	Moderate	Low	High
22	<Null>	Mixed (western hemlock, western red cedar, Douglas fir, red alder, big-leaf maple, sword fern)	Red elderberry, salmonberry, stinging nettle	Moderate	Moderate	Moderate	Moderate
23	1982	Red alder and Douglas fir mixed forest	Salal, sword fern, red huckleberry (50%)	Moderate	Moderate	Moderate	Moderate

Table 2
Forest Stand Characterization

Forest Stand ID	Year of Last Harvest	Dominant Species and General Character of Canopy	Subdominant Species	Presence of Wildfire Fuels	Canopy Density (Crowding)	Presence of Invasive Vegetation	Plant Diversity
24	Approved	Dense Douglas fir on ridges, red alder and big-leaf maple in drainages	Dense sword fern	Low	Low	High	Low
25	2002	Very dense Douglas fir	Limited access	High	Very High	Moderate	Low
26	<Null>	Douglas fir on ridges with red alder and big-leaf maple in valleys	Limited access	Moderate	Very High	Moderate	Low
27	1993	Dense red alder	Thick salmonberry with young mixed conifers	Moderate	Moderate	Moderate	High
28	2005	Young western hemlock, Douglas fir, and western white pine	Salal, evergreen huckleberry, and bracken fern	Moderate	High	Moderate	Low
29	1981	Dense Douglas fir	Evergreen huckleberry, salal, sword fern	Moderate	High	Low	Low
30	2020	No canopy, recent clear-cut	0	Low	Low	High	Low
31	2019	No canopy, recent clear-cut	Some evergreen huckleberry and salal, 10%	Low	Low	Very High	Very Low
32	1987	75% red alder and big-leaf maple with 25% Douglas fir and western hemlock	Red elderberry, Himalayan blackberry, English holly, sword fern	Moderate	Moderate	Low	High
33	1991	Dense Douglas fir	Evergreen huckleberry, salal, sword fern at 20%	Moderate	High	Low	Moderate
34	1981	Very dense Douglas fir with patches of red alder	0	High	High	Low	Moderate
35	1988	50% red alder and big-leaf maple with 50% Douglas fir and western hemlock	Red elderberry, Himalayan blackberry, English holly, sword fern	Moderate	High	Moderate	High
36	1985	Mixed conifers that are thin to moderate	Dense shrubs	Moderate	Low	Low	High

Attachment A
PGFHP Field Reconnaissance – Selected Photographs

Photograph 1. Forest Stand ID 5 – Closed Canopy



An example of a stand of Douglas fir with a closed canopy, resulting in little to no regeneration of understory trees. The shrub layer is dense with evergreen and deciduous species, but the herbaceous layer is sparse (other than a few sword ferns). The dense understory and a large amount of dead lower branches create a moderate to high fuel load.

Photograph 2. Forest Stand ID 18 – Recent Harvest



An example of a recently harvested stand with some remaining native shrubs (salal). Scot's broom has begun establishing and, if left unchecked, could form a monoculture. The few remaining trees are extremely vulnerable to windthrow.

Photograph 3. Forest Stand ID 32 – Even-Aged Forest



An example of an even-aged stand of red alders interspersed with conifers. This stand has a robust understory of native and invasive shrubs.

Photograph 4. Forest Stand ID 7 – Recent Harvest with Viewshed



An example of a recently harvested stand with outstanding views to the west. Young trees in the middle ground will block the view within about 5 years.

Photograph 5. Forest Stand ID 9 – Recent Forest Thinning



An example of a dense, 40-year-old stand of Douglas fir with limited understory. Thinned trees left in place have temporarily increased the wildfire fuel load**.**

Photograph 6. Forest Stand ID 20 – Dense, Mixed Species Forest



A moderately dense red alder and big-leaf maple stand with 30- to 35-year-old trees that are 50 to 60 feet tall. It has scattered western red cedars, hemlocks, and Douglas firs in the understory that are 35 to 40 feet tall. The shrub layer is dense and composed largely of red elderberry, salmonberry, and Himalayan blackberry

Photograph 7. Forest Stand ID 23 – Mixed Forest in Transition to Conifers



An example of a mixed stand of red alder and Douglas fir. As the red alders die, sunlight will reach the forest floor, stimulating the growth of new trees and understory vegetation and eventually creating a diverse mix of tree species and sizes.

Photograph 8. Stand ID 25 – Dense Douglas Fir Forest Crowding Out Other Vegetation



A stand of mostly Douglas firs ranging in height from 35 to 40 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse. There is little to no herbaceous layer other than a few sword ferns, or in gaps where storm damage has occurred or trees have been wind-thrown.

Photograph 9. Stand ID 27 – Dense Red Alder Forest with Robust Understory



A dense red alder stand with 25- to 28-year-old trees that are 50 to 60 feet tall. The alder stand has scattered western red cedars and hemlocks in the understory that are 20 to 30 feet tall. The shrub layer is dense with red elderberry and salmonberry.

Photograph 10. Stand ID 30 – Immediately Post-Harvest



An example of conditions less than 1 year after harvest. Large slash piles have been left. There is very little native understory vegetation, and invasive vegetation (other than a few herbaceous species) has not yet established.

3-5 APPENDIX

MAPPING SOURCES

Appendix
Mapping Data Sources

Table A-1
GIS Data Sources Used in Mapping

Category	Data Layers	Data Type[1]	Data Source
Land Use Planning	Existing PGFHP Access Points and Parking Locations	Point	PGFHP Stewardship Committee and Kitsap County
	Potential PGFHP Access Points and Parking Locations	Point	PGFHP Stewardship Committee and Kitsap County
	Trailhead Locations Without Parking	Point	PGFHP Stewardship Committee
	Forest Stands Including Most Recent Year Harvested	Polygon	PGFHP Steering Committee, with data from Rayonier, Inc.
	Mountain Bike Ride Park	Polygon	PGFHP Stewardship Committee
	Land Use	Polygon	Kitsap County GIS
	Zoning	Polygon	Kitsap County GIS
Trail Network	Existing Trails and Fire Roads	Line	PGFHP Stewardship Committee/ Fischer Bouma Partnership
	Proposed Trails and Fire Roads	Line	PGFHP Stewardship Committee/ Fischer Bouma Partnership
	Trails and Fire Roads Proposed for Decommissioning	Line	PGFHP Stewardship Committee/ Fischer Bouma Partnership
Property/ Ownership	Parcels	Polygon	Kitsap County GIS
	Acquisition Tracts/Deed Restrictions	Polygon	PGFHP Stewardship Committee From Aggregations of Kitsap County Parcels
Topography	Elevation	Raster	Puget Sound Lidar Consortium (PSLC)
	Contour Lines	Line	Contours derived by Anchor QEA based on PSLC LiDAR Grid Data

Category	Data Layers	Data Type[1]	Data Origin
Utilities	Electrical Service	Line	Kitsap County
	Water Service	Line	Kitsap County
Soils and Geology	Surficial Geology	Polygon	Kitsap County
	Soil Stability	Polygon	Kitsap County, with data from Deeter (1979)
	Soils	Polygon	Natural Resources Conservation Service
Kitsap County Critical Areas	Geologic Hazard Areas	Polygon	Kitsap County
	Streams and Fish Use	Line	Kitsap County and the Wild Fish Conservancy of Washington
	Priority Habitats and Species	Point, Line, Polygon	WDFW Priority Habitats and Species
	Beaver Habitat Potential	Line	"Beaver Habitat Network Project Overview," University of Washington, June 2021
	Wetlands,	Polygon	Kitsap County, with data from U.S. Fish and Wildlife Service National Wetland Inventory mapping
	Critical Aquifer Recharge Areas - Category 1 and 2	Polygon	Kitsap County, with data from Kitsap Public Utilities District (KPUD); Wellhead Protection Zones from KPUD; Washington Department of Health Group A Hydrologic Soils derived from soils survey data

Note:

1. GIS data are typically represented as points, lines, polygons, or rasters (rasters include aerial and satellite imagery and other data based on pixels or cells). Tabular data can also be used when they can be linked to a spatial dataset by one or more common fields.

3-6 APPENDIX

RESTORATION ANALYSIS MAPS

CONSERVATION PRIORITY BY FOREST TRACT

- Existing Parking
- Proposed Parking
- Fire Roads
- Timber Tracts

Conservation Priority

- Low / Recently Harvested
- Very High
- Preserve / Sensitive

Conservation priority was assessed in the context of a management strategy and was determined through a review of the current conditions of each timber tract, the current trajectory of that tract and the likelihood that it will mature as a diverse, resilient forest without management efforts. Preservation priority was given to tracts which appear to be in generally healthy condition and which also contain sensitive areas (e.g. streams, wetlands and steep slopes) that would make harvest or management more difficult.

A detailed Study of the original parcel was conducted by Kitsap County in 2016. See link for details

3

104

307

GAMBLE BAY

Big Valley Rd NE

Port Gamble Rd NE

Sottlemeyer Rd NE

0 0.25 0.5 1 MI

NORTH

WILDFIRE FUEL LOADS

- Existing Parking
- Proposed Parking
- Fire Roads
- Timber Tracts

Fuel Load

- Moderate
- High

Wildfire fuel loads were assessed qualitatively on a forest tract basis. Tracts in the high category are characterized by standing dead trees, stands with many dead branches on the lower stem (AKA ladder fuels) and tracts with tightly spaced trees.

A detailed Study of the original parcel was conducted by Kitsap County in 2016. See link for details

3
104
307
GAMBLE BAY
Big Valley Rd NE
Port Gamble Rd NE
Sottlemeyer Rd NE

0 0.25 0.5 1 MI

NORTH

INVASIVE VEGETATION CONTROL PRIORITY

- Existing Parking
- Proposed Parking
- Fire Roads
- Timber Tracts

Priority for Invasive Control

- High
- Very High

The priority for invasive vegetation control was based on observed densities of invasive species present as well as the potential for infestation from adjacent tracts, particularly from recent clear cuts.

A detailed Study of the original parcel was conducted by Kitsap County in 2016. See link for details

3
104
307
GAMBLE BAY
Big Valley Rd NE
Port Gamble Rd NE
Sottlemeyer Rd NE

0 0.25 0.5 1 MI

NORTH

PRIORITY AREAS FOR THE ESTABLISHMENT OF ADDITIONAL NATIVE PLANTS

- Existing Parking
- Proposed Parking
- Fire Roads
- Timber Tracts

Priority for Planting Additional Species

- High
- Very High

Timber tracts that have been recently cut or that contain mostly evenly aged stands of Douglas fir were identified. These stands (and clear cuts) lack both structural and species diversity. Planting additional species as part of the management regime will help to develop more diverse and resilient forests.

A detailed Study of the original parcel was conducted by Kitsap County in 2016. See link for details

GAMBLE BAY

104

307

Big Valley Rd NE

Port Gamble Rd NE

Sottlemeyer Rd NE

0 0.25 0.5 1 MI

NORTH

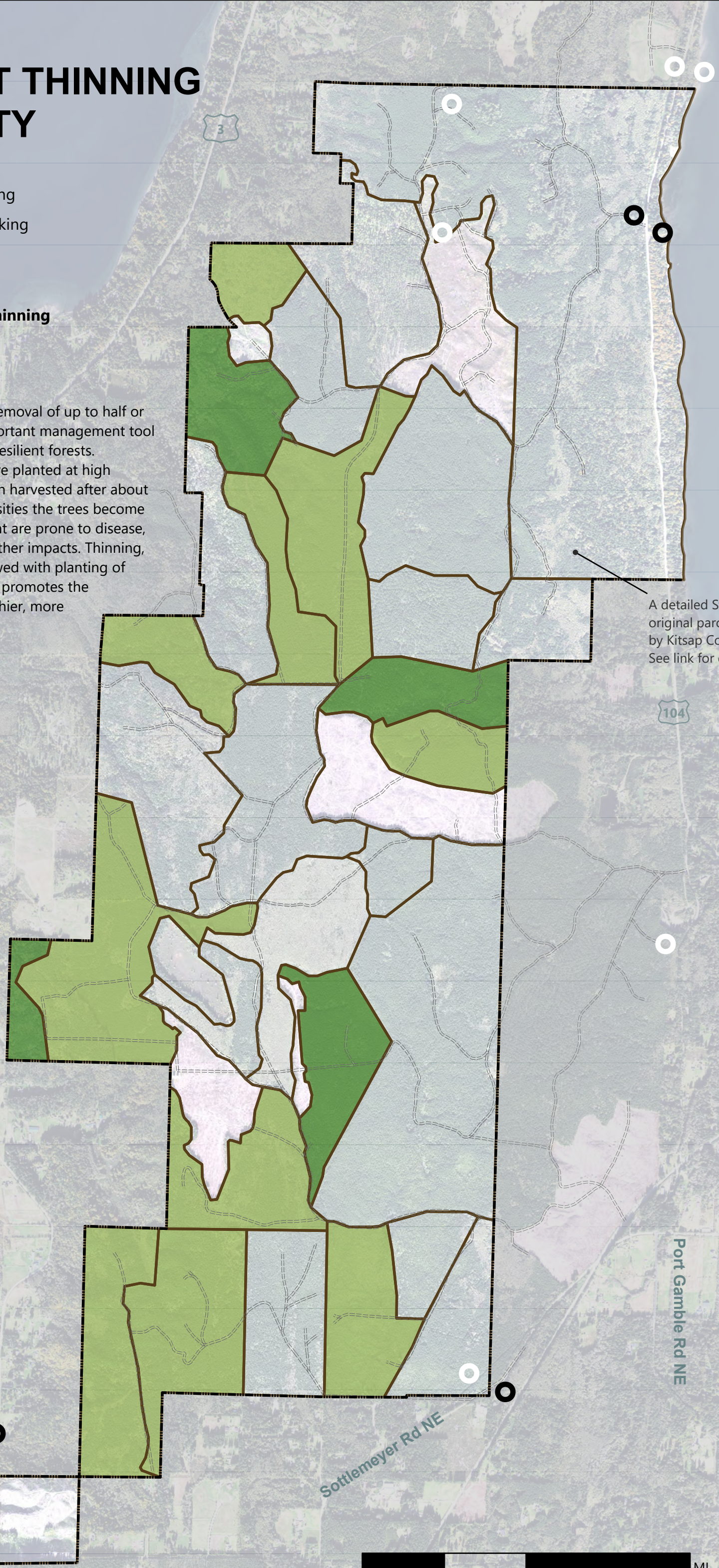
FOREST THINNING PRIORITY

- Existing Parking
- Proposed Parking
- Fire Roads
- Timber Tracts

Priority for Tree Thinning

- High
- Very High

Forest thinning (the removal of up to half or more trees) is an important management tool for building healthy, resilient forests. Commercial forests are planted at high densities, and are then harvested after about 40 years. At high densities the trees become crowded in stands that are prone to disease, windthrow, fire and other impacts. Thinning, which is usually followed with planting of more diverse species, promotes the development of healthier, more resilient forests.



3-7

APPENDIX

PGFHP RESOURCE STEWARDSHIP & RECREATIONAL ACCESS PLAN EXECUTIVE SUMMARY, FULL PLAN (2015), & 2018 DRAFT LANDSCAPE CLASSIFICATION MAP

KITSAP COUNTY PARKS PORT GAMBLE FOREST HERITAGE PARK

RESOURCE STEWARDSHIP & RECREATIONAL ACCESS PLAN EXECUTIVE SUMMARY



We are the stewards of the Forest and the Shore! Our goal is to protect and enhance these forested uplands, shorelands and tidelands, where native plants and wildlife can flourish for generations. Our goal is to provide for public enjoyment and recreation opportunities, in a manner that respects those inherent resources and values.

STEWARDSHIP GUIDING PRINCIPLES

PROTECT, RESTORE AND ENHANCE NATURAL RESOURCES:

1. Protect, restore and enhance Natural Resources; sensitive natural areas, plant species and wildlife habitat
2. Work toward a forest restoration regime for forest health and habitat diversity; create a forest with varied tree age and species, and suitable for diverse wildlife habitat
3. Protect the aquifer recharge function
4. Protect and enhance shoreline habitat; including shellfish and forage fish
5. Protect the water quality of Port Gamble Bay through management of shoreline and uplands
6. Understand the importance of the Pacific flyway (avian "highway") and this landscape's key role
7. Plan for stewardship and public use as part of the large-scale surrounding landscape

RESPECT HISTORICAL AND FUTURE CULTURAL INTEGRITY:

1. Preserve cultural and historical aspects of the lands and shore, inclusive of all Tribes; recognize and protect populations of medicinal plants and other culturally significant flora
2. Preserve and enhance the State Scenic Highway 104 viewshed along the Heritage Forest alignment

PROMOTE RESPONSIBLE RECREATION AND PUBLIC USE OF THE PARK:

1. Meet recreational needs of the Region
2. Develop a cohesive trail system; create trail loops, trails close-in, and extensive travel trails
3. Develop safe public access points and trailhead parking
4. Plan for connecting corridors for recreation trails [Sound to Olympics) and wildlife travel
5. Recognize and planning for "water trails" as part of Kitsap Peninsula Water trail system
6. Explore land adjacent to the Shoreline Block which is intended for a mountain bike ride center, and work to integrate this activity area with park's natural resources protection
7. Engage all users/activities to get them excited about nature-education and conservation through recreation

RESOURCE MANAGEMENT LANDSCAPE CLASSIFICATIONS

This plan includes a Landscape Classifications Map that recognizes outstanding and sensitive resource areas, and outlines areas where recreational activities are considered compatible.

NA = NATURAL AREA

Acceptable Land use: Let natural processes prevail. Observe and monitor health. Ecosystem restoration activities only.
Allowable Activities: Authorized access by permit. Management activities to promote health and longevity; ex. invasive species control.
No developed recreational access or use.

C = CONSERVATION AREA

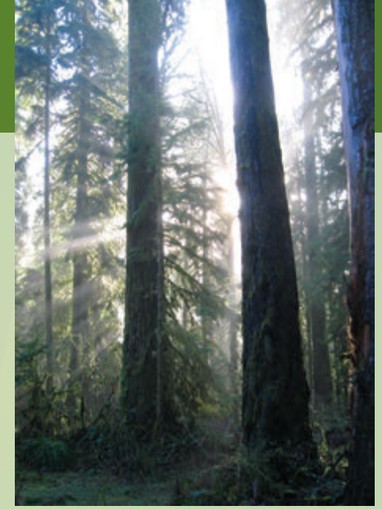
Acceptable Land use: Prescriptive habitat restoration. Monitor ecosystem health, invasive species management and control.
Allowable Activities: Prohibited organized large group activities. NO pets, livestock, bicycles. Educational and interpretive activities which have minimal resource intrusion and impact. Limited recreational harvest activities and those which sustain and complement resource health and diversity; ex. shellfish, berries, brush picking.

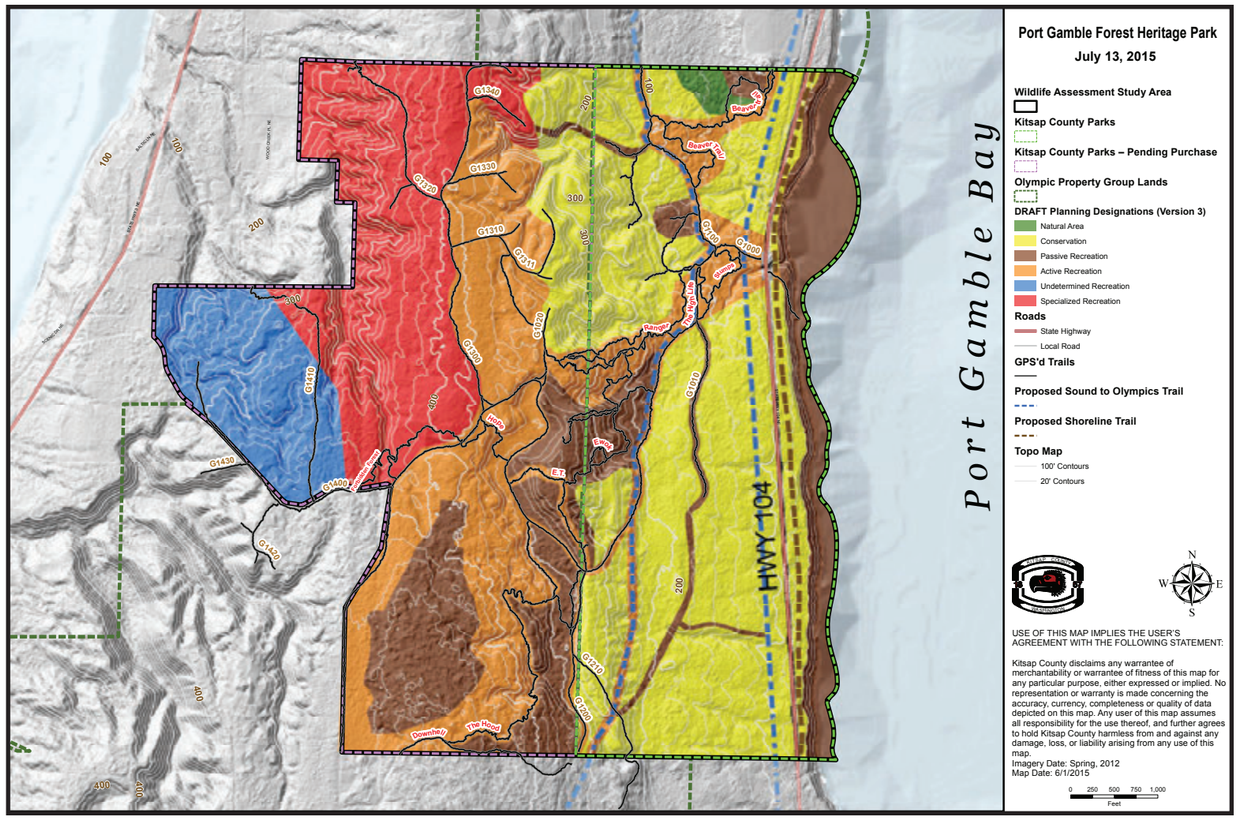
PR = PASSIVE RECREATION

Acceptable Land use: Manage landscape for recreational safety and limited impact use. Determine a carrying-capacity for trail access and use.
Allowable Activities: Some recreational harvest of traditional vegetation, low impact trails, manage "hazard trees" in concentrated areas, some conditional commercial harvest for stand maintenance. NO large recreational events. View points. Public amenities; ex. restrooms, interpretive and educational activities. Conditional use: Leashed dog walking may be permitted, depending on resource protection requirements.













AR = ACTIVE RECREATION

Acceptable Land use: An area of high level of recreational activities and facilities. Modification of landscape is allowable with the protection of sensitive and critical resource areas.
Allowable Activities: Nature-based recreation activities and facilities. Events are allowable with permit and scheduling. Large event impacts need to be mitigated. Provide for visitor comfort amenities. High capacity designed trails, parking. Dog walking, on-leash -- Ok. Dog walking with equestrian use is allowable with voice control.

SP = SPECIALIZED RECREATION

Acceptable Land Use: Dependent on recreational experience and activity demands.
Allowable Activities: Dependent on recreational needs. ex.; bike recreation areas, amphitheaters, model airplane fly fields, non-motorized organized events such as runs, walks, bike rallies, watertrail activities.

Conditional Uses: Allowances are made for resource use for recreation and public access that are not identified in the land classifications and may be determined an acceptable "conditional use", on a case-by-case basis, through a Kitsap County Parks planning process. These will be noted in a Park Management Plan.

Forest Restoration Activities: As a result of historic silvicultural practices on this property directed to commercial timber harvest; the current forest structure and composition has limited diversity, age class and understory complexity. Restoration activities will enhance forest health and habitats and may include; restorative thinning, inter-planting of native tree species, and introduction of other native plants.

RESOURCE & PUBLIC USE ISSUES | MANAGEMENT APPROACH



PROTECTION OF NATURAL, CULTURAL & HISTORIC RESOURCES

ONGOING RESOURCE STEWARDSHIP

ISSUE: To continue stewardship of these parklands and application of the management objectives there will need to be a concerted effort by local citizens, interest groups (recreational and conservation), and the Tribes, to stay involved and recommend more prescriptive management actions and funding possibilities.

MANAGEMENT OBJECTIVES:

Create a Port Gamble Forest Heritage Park Stewardship Group to further the resource management and recreational needs in this area.
Create a cadre of informed Stewards in developing a series of Stewardship Certification Courses to instruct volunteers in the various aspects of resource assessment, monitoring, management, and recreation planning and development.
Park staff and volunteer stewards will continue to monitor and report resource issues; vandalism, unauthorized park use, garbage dumping, and develop clean-up events.

NATIVE VEGETATION VS. INVASIVES

ISSUE: Selective forestry began in 1878. In the 1920's timber production began in earnest. The majority of the acreage was clear-cut then replanted with a monoculture of Douglas fir trees planted closely together to maximum future timber-harvests. Thereby, the propagation of many native trees species and understory vegetation has been restricted.

MANAGEMENT OBJECTIVES:

Identify and control invasive vegetation with the purpose to enhance native plant communities and create more natural wildlife habitats.
In many of the earlier tree plantations the trees are stressed, as they do not have sufficient space for normal growth and development. Forestry tracts are to be mapped and selectively thinned to open up the existing dense tree canopy, allowing light to reach the forest floor. In opening up the forest floor, space for under-plantings with native evergreen and deciduous species such as cedar, hemlock cascara, alder, big leaf maple and large shrubs including osoberry, elderberry, rhododendron, alder, big-leaf maple, can occur; approximating the original forest conditions prior to the 1920's clear-cutting.

FISH, WILDLIFE & HABITAT

ISSUE: A dense, dark Douglas fir monoculture forest does not support a healthy eco-system as it does not support a diversity of wildlife. Some stream crossings utilize under-sized culverts that do not allow for salmon to migrate upstream.

MANAGEMENT OBJECTIVES:

Replace the Douglas fir monoculture by selective thinning and re-planting with compatible native species such as cedar and hemlock.
Replace, or remove under-sized culverts.
De-construct unwarranted and habitat degrading trails and obsolete former logging roads as appropriate.
Designate areas where there is no public access to protect wildlife habitat and sanctuary.
Provide interpretive displays regarding wildlife populations and viewing opportunities.

STREAMS, WETLANDS, AND WATERBODIES

ISSUE: Port Gamble Forest Heritage Park has wetlands and numerous streams that empty into Gamble Bay. Impacts to the bay begin upstream and are often impacted by the proximity to trails and public use. Park visitors such as hikers, mountain bikers, wildlife viewers, dog walkers, and horseback riders contribute to water quality degradation.

MANAGEMENT OBJECTIVES:

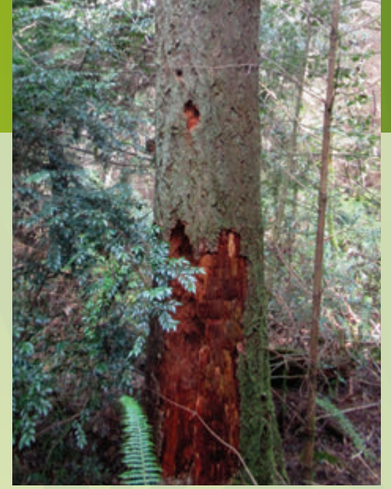
Consider all wetlands, streams and springs as integral to the entire watershed ecosystem, aquifer recharge, and in support of fish-bearing streams and water dependent critters.
Map all fish-bearing streams.
Monitor water quality in wetlands and streams.
Determine trail usage along with proximity to streams and wetlands, and categorize which streams are typed as fish bearing. Apply prescriptive measures such as culvert or trail removal.

SHORELANDS, TIDELANDS & SHELLFISH

ISSUE: The Port Gamble Heritage Forest Park includes 1.5 miles of shorelands and tidelands. Nine types of shellfish are harvested along similar shorelines in this area -- Washington State Department of Fish and Wildlife (WDFW) Region 8. The shellfish population has been largely un-tapped for recreational harvest while in private land ownership. Currently there are no State harvest surveys, regulations or seasons to govern recreation or commercially approved harvest.

MANAGEMENT OBJECTIVES:

Protect the shorelands and tidelands from upland impacts, garbage, and pollutants, and promote the long-term health of the Port Gamble Bay.
Recommend that Kitsap County enter into a shellfish management agreement and develop shellfish resource management plans with the WDFW and affected Tribes.



Encourage the propagation and protection of native shellfish stock and habitat for forage fish.
Provide access to the shoreline in approved and developed trails and parking areas.
Provide for on-site public education and interpretation of the shellfish resources, licenses, harvest seasons and regulations and responsible resource stewardship.

FOREST RESTORATION AND MANAGEMENT

ISSUE: Port Gamble Forest Heritage Park has approximately 800 acres of densely stocked conifer plantations ranging between 23 and 50 years old. This condition is the product of past management practices and doesn't adequately provide for the long term forest health and habitat potential for this new park.

MANAGEMENT OBJECTIVES:

Establish a Forest Stewardship Committee that will help direct forest enhancement plans and operations based on county approved guidelines.
Use restoration thinning in these overstocked stands to improve forest health and restore wildlife habitat.

COMMERCIAL VEGETATION HARVESTING

ISSUE: The harvesting of timber, brush and other special forest products has long been a part of the traditional and cultural history on the lands that include the Port Gamble Forest Heritage Park.

MANAGEMENT OBJECTIVES:

Within the boundary of the Heritage Park, the practice of conventional timber harvesting has ended. Forest thinning for future habitat enhancement and species diversification will be directed by a Forest Stewardship Committee.
Harvesting of brush and other special forest products that are sustainable may be allowed in certain areas, and can provide a source of revenue to support further stewardship activities. Permits will be required.

WILDFIRE PROTECTION

ISSUE: Wildfire is a reality and to minimize that risk during periods of high fire danger, Pope Resources has annually closed the Port Gamble Uplands that surround the Port Gamble Forest Heritage Park.

MANAGEMENT OBJECTIVES:

Be a responsible neighbor: develop and implement a wildfire prevention plan for the Port Gamble Forest Heritage Park that protects both the park and surrounding private property owners.
County Parks will work with local and regional wildfire management agencies to develop a plan for fire prevention and fire suppression response.

HISTORICAL / CULTURAL RESOURCES

ISSUE: Port Gamble Forest and the surrounding private timberlands have a rich and varied history of commercial use. Native inhabitants used the properties for thousands of years for subsistence gathering of natural resources from the shoreline and uplands.

MANAGEMENT OBJECTIVES:

Highlight areas of past historical activities through interpretive media and signage.
Include reference to Tribal subsistence use, railroads and pier construction, logging and mill operations and timberland management.
Heighten awareness of the past land-use and impacts, and compare with current resource management.
Work with the Port Gamble Museum to present information to the public.
Develop signage and interpretive trails where appropriate.

PUBLIC ACCESS & RECREATION OPPORTUNITIES

PUBLIC ACCESS & EVENTS

ISSUE: The previous land owners, Pope Resources Company allowed public access of the interior lands for hikers, equestrians and bikes via existing logging roads. Public access to the 1.5-miles of shoreline has been prohibited. Over the years the mountain bike community has organized numerous events with permission from the previous land owners that attracted hundreds of participants at a time.

MANAGEMENT OBJECTIVES:

Park staff and volunteer stewards will monitor impacts of large group activities on the protection of inherent resources and recreational experiences for all park users. Kitsap County will consider the nature of large social gatherings and their needs, as well as respect for recreationists desiring areas of nature-solitude. Event impacts on the resource will be remedied or mitigated.
Special Events may require a County Parks Department Permit, per County Policy. User fees may be charged per County Park Policy and Kitsap County Park Fees & Charges Schedule as approved by the Kitsap County Board of Commissioners.



RESOURCE & PUBLIC USE ISSUES | MANAGEMENT APPROACH

The Shoreline will be opened for non-motorized use at selected locations where trailhead parking can be provided and safe passage to the tidelands can occur. More planning is needed for designation of official watertrail launch areas and approved day-use activity areas.

Public access will be limited to designated trailheads and developed parking areas, and signed appropriately. Parks will work with the WA State Department of Transportation to warn travelers along SR 104 as to parking and trail crossings and potential vegetation pruning to provide roadway vistas of Port Gamble Bay. Accommodations will be made for infrequent "fly-overs" by the radio controlled model aircraft that have a take-off and landing field adjacent to the north of the parklands. This use will be monitored for resource impacts and any future vegetation modification needs. Other motorized aircraft, including "drones" are not permitted over the parklands at this time without authorization and permit.



RECREATIONAL TRAIL DEVELOPMENT AND MANAGEMENT

ISSUE: Upon acquiring this property as a park there were no designed trailheads, parking, County Park signage, trail signage, or approved recreational routes. Over 40 miles of forested trails and roadway trails currently exist in the park and many that are connected to Pope Resource's forestland properties to the north, south and east of the Park's Shoreline Block. New trails and trail technical structures, designed for trailbikes are currently being constructed without safe standards or permission by County Parks. For events and trail emergencies, there needs to be consistent names and locations for trail and roads. The general public will need orientation and rules.

MANAGEMENT OBJECTIVES:

Work to provide recreational access and activity areas for all non-motorized recreationists which are compatible with the land management objectives.
County Parks will give preference for a future trail connection and continued trail route through the Port Gamble Forest Heritage Park for the regional Sound to Olympics Trail [STO] for a shared-use, active-recreation use corridor.
Display maps with current names and numbers on informational kiosks at County trailhead parking. Post maps on County website.
Any proposed new trail requires a written and mapped trail application and approval process. Remove any trail structures or routes which are unsafe, not built to standards, or impact wildlife habitat, or sensitive vegetation.

RECREATIONAL SAFETY/BEHAVIOR/RULES

ISSUE: The former forestland owner allowed for public access on logging roads and multiple trails and public use throughout. These activities were minimally regulated and public access only controlled during timber management and logging operations, and high-fire danger. An expected increase and diversity of recreational use will increase impacts to these public lands and County Parks will require new rules and enforcement.

MANAGEMENT OBJECTIVES:

Develop orientation and way-finding signage throughout the property.
Develop park rules to discourage unapproved use (firearms, hunting, un-authorized vehicle access, camping, etc.) and direct responsible use by all users.
Work with local law enforcement agencies and emergency response organizations to establish emergency response communications, directions, and protocol for such instances as; wildland fires, injuries, vandalism, etc.





ECONOMIC INTERESTS

ISSUE: Many of the existing and future recreational events have a significant positive contribution to the local Port Gamble economy and surrounding area businesses.

MANAGEMENT OBJECTIVES:

Continue to support and look for opportunities to encourage recreation events, trainings and educational events that help to promote businesses in related services.



FUTURE PROPERTY ACQUISITION

ISSUE: Much of the area under study with this Stewardship Plan, and of importance to resource stewardship and recreation opportunities, has yet to be acquired for County Park management.

MANAGEMENT OBJECTIVES:

The County will continue to pursue funding and other opportunities to acquire significant portions of the Port Gamble Forest landscape, contiguous to the Heritage Park and which will contribute to the goals and objectives of this plan.



"Our County Parks staff shares the community's appreciation of the concerted efforts of the Forest and Bay Coalition and aligned organizations in their pursuit of lands acquisitions to create the Port Gamble Forest Heritage Park. This public area offers a foundation for sustainable forest conservation, wildlife habitat, and a wide range of recreation opportunities. The continued stewardship efforts and support by those groups and individuals will enhance our park and open space goals, into the future. Thanks to all."

— JIM DUNWIDDIE, KITSAP COUNTY PARKS DIRECTOR

"I appreciate the community's work in creating this stewardship plan. It was a pleasure watching the cooperative support from the various stakeholders and interest groups. This process can be expanded and/or replicated for other park properties that may come to fruition as part of the overall conservation effort."

— ROBERT GELDER, COMMISSIONER, KITSAP COUNTY DISTRICT 1

STEWARDSHIP PLAN STEERING COMMITTEE

TRIBES: Port Gamble Tribe, Laura Price | Suquamish Tribe, Jay Zischke
PRIVATE PROPERTY OWNERS: Olympic Property Group, Julie McAfee | Neighbor, Mark Schorn
CONSERVATION COMMUNITY: Kitsap Audubon, Judy Willott | Great Peninsula Conservancy, Debbie Engel, Kate Kuhlman
RECREATION INTERESTS: Kitsap County Parks and Recreation Board, Alvin Andrus, Chair | Olympic Outdoor Center, John Kuntz | North Kitsap Trail Association, Linda Berry Maraist,| Evan Stoll | Radio Controlled Airplanes, Ron Bruhn | Evergreen Mountain Bike Alliance, Brian Kilpatrick | Backcountry Horseman, Elaine & Jim Davis
PARK STAFF & TECHNICAL ADVISORS: Steven Starlund, Parks and Open Space Planner | Arno Bergstrom, Parks Forester | Dori Leckner, Parks Superintendent | Ric Catron, Parks Projects Coordinator | Lucretia Winkler, Mapping Consultant | David Nash, Kitsap County GIS Analyst | T.J. Nedrow, WADOT | Stephen Padua, Kitsap County Regional Trail Planner | Phil Struck, Mike Hall, Parametrix Consultants
KITSAP COUNTY: Parks Director, Jim Dunwiddie
BOARD OF COMMISSIONERS: Robert Gelder, Charlotte Garrido, Edward E. Wolfe
Plan adopted by Resolution: July 13, 2015

REPORT PHOTO CREDITS: Don Willott | Steven Starlund | M. Weiss | Mike Hall



KITSAP COUNTY PARKS
PORT GAMBLE FOREST HERITAGE PARK
RESOURCE STEWARDSHIP & PUBLIC ACCESS PLAN

INTRODUCTION:



Kitsap County Parks assumes the responsibility as guardian of our inherent park resources -- natural, cultural, and historic; and works to provide for recreational use and facilities which are compatible with those inherent park assets, including native forests, wetlands, fish-bearing streams, shorelands and shellfish.

KITSAP COUNTY PARKS
PORT GAMBLE FOREST HERITAGE PARK
RESOURCE STEWARDSHIP & PUBLIC ACCESS PLAN

Background:

Through the long time efforts of the Forest and Bay Coalition (regional conservation and recreation interests) toward preserving open space, habitat, and recreation opportunities on the Port Gamble peninsula, the WA State Legislature authorized funds for the purchase of 535 acres of forested uplands and 1.5 miles of shorelands and tidelands from Pope Resources company. Through the WA State Department of Ecology they provided Kitsap County with $175,000 to develop resource assessment studies with the purpose to develop an overall park stewardship and a public access plan, including recreation opportunities.

Beginning in February of 2015, the County began a planning process to address the inherited natural, cultural and historic resources and evaluate existing and potential recreational use. Our planning approach included the creation of a Stewardship Steering Committee, comprised of local citizens, conservation and recreation interests, recreation business leaders, technical advisors and Tribal representatives.

Over a five-month period, this Committee assessed the qualities of wetlands, streams, wildlife, shellfish, forest composition, and addressed existing and potential recreational interests, including both passive and active recreation activities. Together, we developed clear management intentions that strive for a reasonable balance of resource protection and enhancement, intertwined with public access, trails and other recreation opportunities.

Stewardship Plan Requirements:

The County will manage the Shoreline Block lots via a stewardship committee. Activities that can be funded by Ecology include creating and staffing the stewardship committee, hiring consultants to advise the County on resource management issues, and doing outreach to the community.

Interagency agreement with WA Department of Ecology reads:

The Stewardship Plan, at a minimum, will include the following elements:

1. Description of stewardship goals and objectives
2. Property description
3. Types of proposed planned public uses for the property to the extent they are known
4. Existing roads, parking areas, access points and trails and proposed features to the extent they are known
5. Historic, archaeological and cultural resources
6. Existing natural resources, such as vegetation communities, soils; water resources including wetlands, steams and marine waters; rare, threatened and endangered species; high-quality and sensitive habitats; old-growth and mature forest stands; and tidally influenced lands and associated biota
7. Maps depicting natural resources, roads, parking areas, access points, and trails
8. Proposed management activities for addressing invasive or non-native plant and animal species, forest health, forest diversity, fire control, protection of high-quality habitats, public use and access.
9. Deliverable: Stewardship & Public Access Plan Report due: July 1, 2015.

Stewardship requires understanding of existing conditions. Noted will be cultural and historical use, ecosystem features, superlative and sensitive resources, existing use patterns and impacts. Stewardship planning is also a determination of preservation and conservation measures balanced with an appropriate public access and recreation. The Stewardship Plan will map-outline varying landscape "zones" depicting levels of resource conservation, public access and levels of recreation activity.

Stewardship Plan Elements:

1. Property Profile – compiling maps and narrative perspectives about existing conditions
2. Issues, Concerns & Opportunities – evaluating current resource issues, impacts, and public access and use issue and opportunities
3. Resource Management Approach – addressing resource protection issues and allowable public activity management
4. Conservation and Recreation Land Classification Plan – land-use "zones" of acceptable use & resource protection areas
5. Final Recommendations and Stewardship Activity Actions & Priorities

Stewardship Steering Committee Membership:

Recreation Interests
North Kitsap Trails Association -- Linda Berry Maraist / Evan Stoll
Evergreen Mountain Bike Association -- Brian Kilpatrick
Backcountry Horseman – Elaine and Jim Davis
Radio Controlled Airplanes – Ron Bruhn (ORCA flying club)
Waterways Recreation --John Kuntz [Olympic Outdoor Center]

Tribes
Port Gamble S'Klallam Tribe -- Kelly Sullivan / Laura Price
Suquamish Tribe -- Jay Zischke

Kitsap County Parks Advisory Board
Kitsap County Parks Advisory Board – Alvin Andrus

Conservation Community
Kitsap Audubon – Judy Willott / Gene and Sandy Bullock
Great Peninsula Conservancy -- Debbie Engel / Kate Kuhlman

Neighbors
Olympic Property Group -- John Rose / Julie McAfee
Mark Shorn

Kitsap County Parks Planning Team:

Jim Dunwiddie – Parks Director

Steven Starlund – Parks and Open Space Planner, Stewardship Plan Lead

Arno Bergstrom – Parks Forester

Ric Catron – Park Projects Coordinator

Dori Leckner – Parks Superintendent

Lucretia Winkler – Mapping Consultant

David Nash -- Public Works Mapping Consultant

Phil Struck, Mike Hall – Parametrix, Wildlife Resources Consultant

Jamie Glasgow – Wild Fish Conservancy – Stream Inventory Consultant

Steve Ottmar --- AES Consultants – Property Boundary Survey

Planning Advisors:

Kitsap County Commissioner -- Robert Gelder

Kitsap County Projects Manager -- Eric Baker

Washington Dept. of Transportation-- Thomas (T.J.) Nedrow

Kitsap County Public Regional Trails Planner -- Stephen Padua

STEWARDSHIP COMMITTEE'S STEWARDSHIP PLAN GUIDING PRINCIPLES

Port Gamble Heritage Forest Park's Resource Stewardship shall:

Protect, Restore and Enhance Natural Resources:

1. Protect, restore and enhance Natural Resources; sensitive natural areas, plant species and wildlife habitat
2. Work toward a forest restoration regime for forest health and habitat diversity; create a diverse forest community with varied tree age and species, and suitable for diverse wildlife habitat
3. Protect the aquifer recharge function of this landscape
4. Protect and enhance shoreline habitat; including shellfish and forage fish
5. Protect the water quality of Bay through management of shoreline and uplands
6. Understand the importance of the Pacific flyway (avian "highway")and this landscape's key role
7. Plan for stewardship and public use as part of the large-scale surrounding landscape

Respect Historical and Future Cultural Integrity:

1. Preserve cultural and historical aspects of the lands and shore, inclusive of all Tribes; recognize and protect populations of medicinal plants and other culturally significant flora
2. Preserve and enhance the State Scenic Highway 104 viewshed along the Heritage Forest alignment

Promote Responsible Recreation and Public Use of the Park:

1. Meet recreational needs of the Region
2. Develop a cohesive trail system; create trail loops, trails close-in, and extensive travel trails
3. Develop safe public access points and trailhead parking
4. Plan for connecting corridors for recreation trails [Sound to Olympics) and wildlife travel
5. Recognize and planning for "water trails" as part of Kitsap Peninsula Water trail system
6. Explore land adjacent to the Shoreline Block which intended for a mountain bike ride center , and discuss how to integrate this activity area with park's natural resources protection
7. Engage all users/activities to get them excited about nature-education and conservation through recreation

Stewardship Steering Committee should abide by Core Values:

1. Respect for each other's perspectives, interests and needs
2. Recognize and encourage collaboration amongst conservation and recreation interests
3. Engage and not alienate existing users and long-time resource stewards
4. Ensure access for all abilities in recreation planning and design standards
5. Recognize the value of co-existing nature and recreation
6. Promote active nature-based recreation [eco-recreation]
7. Teach the next generation conservation values, and get kids healthy outdoors
8. Understand the local and regional economic benefits of recreation combined with well-planned resource stewardship

Public Discussion & Involvement Process:

Public review of resource and public use issues and opportunities, was discussed with the representative Stewardship Steering Committee, presented at a public workshop, and further notices through a press release and website notices. General public comment was welcomed and gathered throughout the planning process. Further review continued with briefing to Kitsap County Parks Advisory Board and the Kitsap County Board of County Commissioners.

DATE	COMMITTEE / BOARDS	PLAN TOPIC/REVIEW	TIME/LOCATION
3/03	Steering Committee	Issues/Opportunities	6-7:30pm Poulsbo
3/18	KC Park Board/Public Review	Res. Mgmt. Approach	6-7:30pm Port Orchard
3/28	Public Workshop	Workshop/Comments	9-10:30am Poulsbo
4/07	Steering Committee	Land-use Classification	6-7:30pm Poulsbo
4/15	KC Park Board Briefing	Res. Mgmt. Issues	6-8:00pm Silverdale
4/21	Steering Committee	Res. Issues/Land Class.	6-8:00pm Poulsbo
5/05	Public Workshop	Review/Comment	6-7:3pm Poulsbo
5/12	Steering Committee	Draft Res. Mgmt. Plan	6-8:00pm PGST
5/20	KC Park Board Briefing	Resource Mgmt. Class	6:00-7:30 Port Orchard
6/03	Kitsap County Website Post	Resource Mgmt. Class. Map & descriptions	
6/09	Steering Committee	Sent Draft Plan Outline & Summary / Review	
6/10	Kitsap County Website Post	Draft Mgmt. Plan Summary	
6/10	**Board of Commissioners**	Draft Mgmt. Plan Summary -- Briefing	
6/17	Kitsap County Park Board	Draft Plan Review & Public Comment	
6/23	Steering Committee	Draft Plan Review Due	
6/30	Kitsap County Website Post	Final Report for Review/Comment	
6/30 -7/10	Public Review / Comment	Stewardship Plan -- Open Public Review/Comments	
7/01	**WA Department of Ecology**	**Final Report Sent**	
7/08	**County Commissioners**	**Stewardship Plan Review -- Parks Briefing**	
7/13	**County Commissioners**	**Plan Review / Approval**	

Our management approach includes a **Landscape Classifications System** that recognizes outstanding and sensitive resource areas, and outlines those landscape areas where various recreational activities are considered compatible. This management direction is depicted on a **Resource Stewardship Map.**

Landscape Classification System:



This landscape classification system strives to recognize, map, and thereby direct management of inherent resource values (natural, cultural, historic), on Kitsap County Parks managed properties, while providing an appropriate level of use and compatible public access, recreational use and facilities.

Resource Management |Land-use Classification Definitions – includes resource management and protection requirements, allowable and preferred public access and recreational activities, and reasonable public access facilities.

Classification Categories:

1. NA = Natural Area [Natural / Historic / Cultural Significance]
2. C = Conservation Area
3. PR = Passive Recreation
4. AR = Active Recreation
5. DR = Developed Recreation
6. SP = Specialized Recreation

NA = Natural Area [Natural | Cultural | Historic]



Protect, restore, and enhance inherent natural, cultural and historic attributes. The key purposes for ecosystem reserves are to: represent the biodiversity of an area, provide habitat for species, and provide sites for scientific research, long-term monitoring, and education. Cultural and historic sites are protected with best management practices.

Acceptable Land use: Let natural processes prevail. Observe and monitor health. Ecosystem restoration activities only.

Allowable Activities: Authorized access by permit. Management activities to promote health and longevity; ex. invasive species control. No developed recreational access or use.

C = Conservation Area

Protect key resource elements including historic and cultural features. Minimal, limited, and resource-compatible public access. Conditional Access intended for education, restoration and resource management purposes. Restricted access due to potential environmental or heritage impacts. Research, monitoring, and study activities allowable.



Acceptable Land use: Prescriptive habitat restoration. Monitor ecosystem health. Invasive species management and control.

Allowable Activities: Prohibited organized large group activities. NO pets, livestock, bicycles. Educational and interpretive activities which have minimal resource intrusion and impact. Limited recreational harvest activities and those which sustain and complement resource health and diversity; ex. shellfish, berries, brush picking.

PR = Passive Recreation



Moderate resource disturbance acceptable with dispersed and moderate use [ex. Trails, viewpoints]

Acceptable Land use: Manage landscape for recreational safety and limited impact use. Determine a carrying-capacity for trail access and use.

Allowable Activities: Some recreational harvest of traditional vegetation, low impact trails, manage "hazard trees" in concentrated areas, some conditional commercial harvest for stand maintenance. NO large recreational events. View points. Public amenities; ex. restrooms, interpretive and educational activities. Conditional use: Leashed dog walking may be permitted, depending on resource protection requirements. Watertrail launch and day-use sites are appropriate.

AR = Active Recreation

Resource-based recreation activities that have moderate to high intensity use and some developed "comfort" facilities [e.g. restrooms, trailhead parking, more developed trails and trail facilities]

Acceptable Land use: An area of high level of recreational activities and facilities. Modification of landscape is allowable with the protection of sensitive and critical resource areas. Design and operation of active recreation facilities are responsible for protection of sensitive natural areas and waterways.



Allowable Activities: Nature-based recreation activities and facilities. Events are allowable with permit and scheduling. Large event impacts need to be mitigated. Provide for visitor comfort amenities. High capacity designed trails, parking. Dog walking, on-leash is recommended. Some designated areas and equestrians may have dog walking where voice control is permitted.

DR = Developed Recreation.



Acceptable impacts for moderate to high levels of recreation intensity and development. Recreation and public access areas with moderate to large-scale developed facilities. Site impacts and modification are acceptable with appropriate environmental reviews and mitigations.

Acceptable Land use: High capacity urban-style recreation with developed facilities for access and visitor comfort. Natural areas and landscape amenities in keeping with "park-like" environment and experience.

Allowable Activities: All forms of developed playfields; ball fields, trailheads, skate park, picnic shelters, nature trails, camping, ADA facilities,

SP = Specialized Recreation



An area developed for one or several unique uses which requires special care, and made available for public use in a controlled manner.



Acceptable Land Use: Dependent on recreational experience and activity demands.

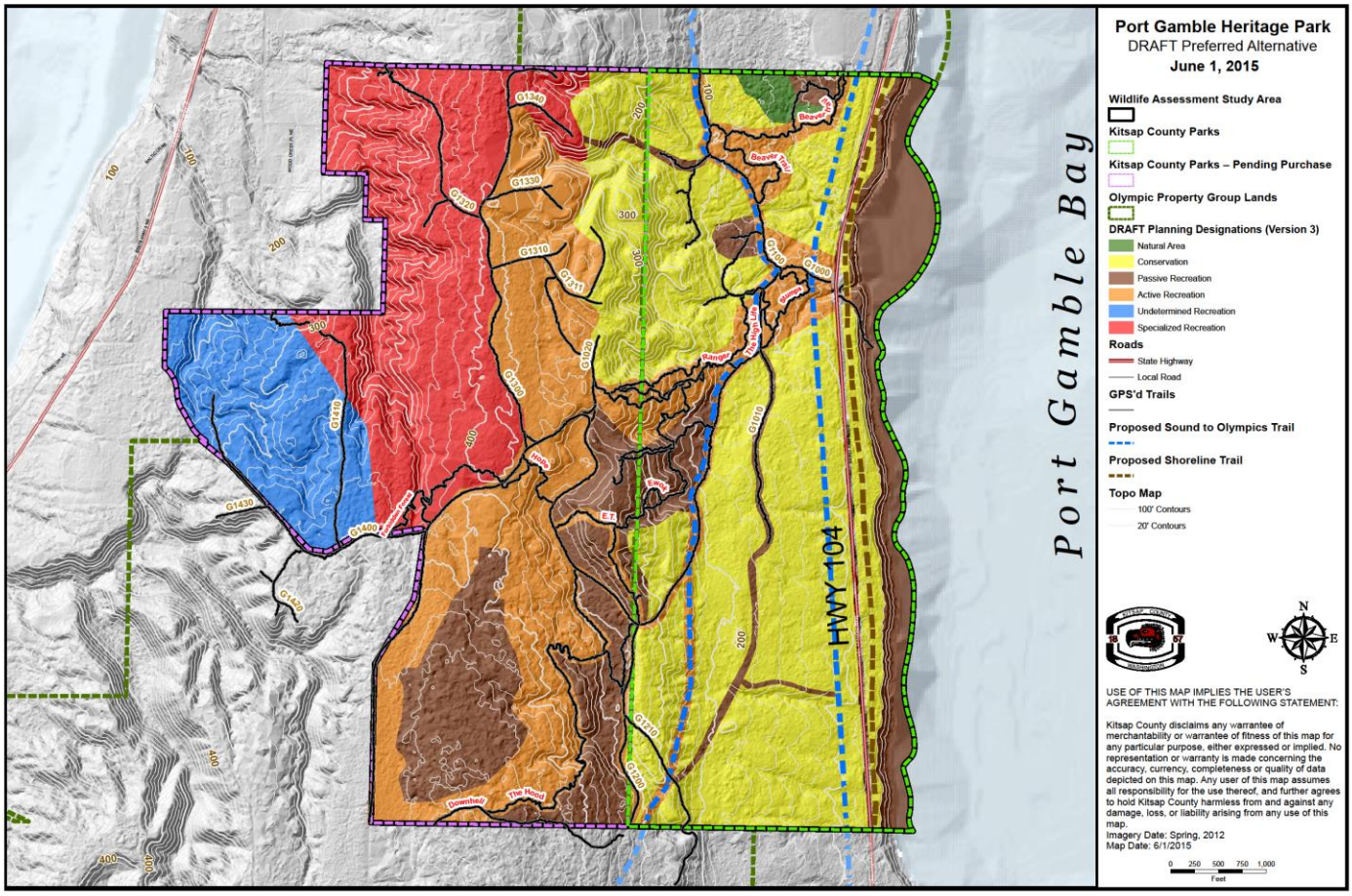
Allowable Activities: Dependent on recreational needs. Ex.; bike recreation areas, amphitheaters, model airplane fly fields, non-motorized organized events such as runs, walks, bike rallies, watertrail activities.

ALL CLASSIFICATIONS:

Conditional Uses: Allowances are made for resource use for recreation and public access which are not identified in the land classifications and which may be determined an acceptable "conditional use", on a case-by-case basis, through a Kitsap County Parks planning process. These will be noted in a Park Management Plan.

Forest Restoration Activities: As a result of historic silvicultural practices on this property, directed to commercial timber harvest, the current forest structure and composition has limited diversity, age class and understory complexity throughout much of this landscape. Restoration activities, directed for forest health and habitat purposes, may include, but limited to; types of restorative thinning, inter-planting of native tree species, and introduction of other native plants.

LANDSCAPE CLASSIFICATION MAP





RESOURCE STEWARDSHIP & PUBLIC ACCESS | MANAGEMENT APPROACH

INTRODUCTION:

As County Parks must assume the responsibility of guardians of our park resources (natural, cultural, historic) as well as address the demands for recreational use and facilities of our park properties. Striking an informed balance of conservation and use can be reasonably achieved after by assessment of those inherent resources; such as forests, wetlands, fish-bearing streams, shorelands and shellfish.

Our management approach included:

1. **Applying a Landscape Classifications System** that recognizes outstanding and sensitive resource areas, worthy of conservation and protection, and depicts those landscape areas where various recreational activities and levels of intensity are compatible. These land-use and conservation areas will provide for diverse recreational use, exceptional outdoor experiences, while protecting key resource values. This system is depicted on our **Stewardship Map.**

2. **Identifying and addressing Issues, Concerns and Opportunities**. In addition, the Steering Committee, Park staff, technical advisors and Tribal representatives clarified and discussed specific management issues which are currently impacting the Heritage Park property. These discussions highlighted anticipated resource protection needs, public use needs and potential new recreational opportunities.

3. **Stewardship requires community partnership and committed volunteers** that have been the foundation of the acquisition of this park. Volunteers have invested thousands of hours and many years in working to acquire the property, maintaining and improving the trails and supporting events.

Following are those prominent and prevalent issues, concerns and opportunities, and proposed management objectives and directions to address them:

NATURAL | CUTLRUAL |HISTORIC RESOURCES PROTECTION



Native Vegetation vs. Invasives

Issue: Selective forestry began in 1878. In the 1920's timber production began in earnest. The majority of the acreage was clear-cut then replanted with a monoculture of Douglas fir trees planted closely together to maximum future timber-harvests. Some old growth trees on steep slopes remain, most likely due to the high cost of timber harvest in those areas.

Management Objectives:

- Trees are stressed, as they do not have sufficient space for normal growth and development. Forestry tracts are to be mapped and selectively thinned to open up the existing dense tree canopy, allowing light to reach the forest floor. In opening up the forest floor, space for under-planting with native species such as Western red cedar and Western hemlock can occur; approximating the original forest conditions prior to the 1920's clear-cutting.
- Concurrently, invasives such as Scotch Broom are being removed, allowing native shrubs such as salal, huckleberry and salmonberry to naturalize. Identify and control invasive vegetation with the purpose to enhance native plant populations and communities and create natural habitats.

Fish, Wildlife & Habitat

Issue: A dense, dark Douglas fir monoculture forest does not support a healthy eco-system as it does not support a diversity of wildlife. Some stream crossings utilize under-sized culverts that do not allow for salmon to migrate upstream. Existing creosote pilings in Gamble Bay are toxic to wildlife, including important feeder fish that serve as the foundation to the food-chain.

Management Objectives:

- Replace the Douglas fir monoculture by selective thinning and re-planting with compatible native species such as cedar and hemlock.
- Replace, or remove under-sized culverts.
- De-accession un-needed trails and former logging roads as appropriate.
- Designate areas where there is no public access to protect wildlife habitat and sanctuary. Provide interpretive displays regarding wildlife populations and viewing opportunities.
- Provide "bird blinds" and overlooks for controlled access for remote viewing of wildlife areas.
- Remove and dispose of creosote pilings in Gamble Bay.
- Remove and replant shellfish, such as oysters from creosote pilings above the tideline.
- Re-plant eelgrass where desirable to serve as an incubator for feeder fish.

Streams, Wetlands, and Waterbodies

Issue: Port Gamble Forest Heritage Park has wetlands and numerous streams which empty into Gamble Bay. Impacts to the bay start upstream, and are dependent on the water's proximity to trails and area usage. Park visitors such as hikers, mountain bikers, wildlife viewers, dog walkers, and horseback riders may contribute to water quality degradation if recreation facilities are not properly located, designed and maintained. It is advisable to monitor water quality in wetlands and streams.

Management Objectives:

- Consider all wetlands, streams and springs as integral to the entire watershed ecosystem, aquifer recharge, and in support of fish-bearing streams, and water dependent critters.
- Coordinate with Clean Water Kitsap or Department of Ecology to develop a feasible water sampling program for the park's wetlands and streams.

- Determine trail usage along with proximity to streams and wetlands, and categorize which streams are typed as fish bearing.
- Confer with the county or Department of Ecology regarding existing NPDES permits.
- Define contaminants most likely for a particular stream or wetland such as fecal coliforms, sediment, zinc, copper, oil, etc.
- Apply prescriptive measures such as culvert or trail removal.

Shorelands, Tidelands & Shellfish

Issue: The Port Gamble Heritage Forest Parks includes 1.5 miles of shorelands and tidelands. Nine types of shellfish are harvested along similar shorelines in this area -- Region 8. The shellfish population has been largely un-tapped for recreational harvest while in private land ownership. The pounds of harvestable clam stock and number of oysters is substantial. Currently there are no State harvest surveys, regulations or seasons to govern recreation or commercially approved harvest. Health of the Port Gamble Bay and stewardship of those resources is paramount. If the natural shellfish beds are let alone, without any harvest, there are concerns of snail invasion and over-crowded oyster beds. Health Dept. determines water quality for safe shellfish harvest. Our tidelands are currently certified as healthy.

Management Objectives: (Shorelands, Tidelands & Shellfish)

- Protect the shorelands and tidelands from upland impacts, garbage, and pollutants, and promote the long-term health of the Port Gamble Bay,
- Recommend that Kitsap County enter into a shellfish management agreement and develop shellfish resource management plans with the Washington State Department of Fish and Wildlife (WDFW) and affected Tribes, for a period of three years. Management would include population surveys and health assessment of the shellfish resource, determination of recreational harvest seasons and catch limits and patrol and enforcement of recreational harvest activities. Kitsap County Parks would have oversight of this plan and operations.
- Encourage the propagation and protection of native shellfish stock. After the three (3) year program evaluation, consider all management options including potential commercial harvest of all or a portion of the shoreline.

- Limit access to the shoreline in approved and developed trails and parking areas.
- Encourage the development of shoreland passive-use trails.
- Provide for on-site public education and interpretation of the shellfish resources, licenses, harvest seasons and regulations and responsible resource stewardship.

Forest Restoration and Management

Issue: Port Gamble Forest Heritage Park has 535 acres of densely stocked conifer plantations ranging between 23 and 50 years old. This condition is the product of past management practices and doesn't adequately provide for the long term forest health and habitat potential for this new park. Our Stewardship Plan study area includes approximately another 300 acres with similar forest conditions.



Management Objectives:

- Establish a Forest Stewardship Committee which will help direct forest enhancement plans and operations based on county approved guidelines. (Including buffers for streams, wetlands, seeps and springs.)
- Use non-conventional, or restoration, thinning in these overstocked stands to improve forest health and restore wildlife habitat. Operationally called variable density thinning (VDT), this type of ecological restoration thinning is specifically recommended for young dense Douglas fir plantations.

Commercial Vegetation Harvesting

Issue: The harvesting of timber, brush and other special forest products has long been a part of the traditional and cultural history on the lands that include the Port Gamble Forest Heritage Park.

Management Objectives:

- For the heritage park, conventional timber harvesting has ended. Forest thinning for future habitat enhancement and species diversification will be directed by a Forest Stewardship Committee.
- Harvesting of brush and other special forest products is sustainable and may be allowed in certain areas and can provide a source of revenue for the park.
- The harvesting of mushrooms for personal use is allowed, without a permit, and subject to the Kitsap County Parks Mushroom Harvesting Policy.
- Allowing commercial management and harvesting of shellfish in the tidelands will be in a limited area and determination made after extensive evaluation of the shellfish surveys, recreational harvest needs, and a look to bettering the shellfish beds and populations.
- Commercial harvesting will only be allowed under contact or by permit.

Wildfire Protection

Issue: Wildfire is a reality and to minimize that risk during periods of high fire danger, Pope Resources has annually closed the Port Gamble Uplands that surround the Port Gamble Forest Heritage Park. This closure includes public access to Pope Resource lands.

Management Objectives:

- Be a responsible neighbor: develop and implement a wildfire prevention plan for the Port Gamble Forest Heritage Park that protects both the park and surrounding private property owners.
- County Parks will work with local and regional wildfire management agencies to develop a plan for forest fuel management, fire prevention and fire suppression response.

Historical / Cultural Resources

Issue: Port Gamble Park and surrounding OPG property have a rich and varied history. Native inhabitants gathered resources from the shoreline and uplands. In addition, logging operations occurred for approximately 90 years in the uplands. Historical information to the public focuses mainly on the shoreline and mill site. Interior upland modification and historical information is lacking. The visitor's experience in the park can be enhanced by sharing the information gathered for this project.

Management Objectives:

- Determine area of historical interest.
- Highlight areas of past historical activities by working with the Tribes and Port Gamble Museum to present information to the public.
- Reference researched articles and books on the county website and QR codes access for more in-depth interpretation.
- Develop signage and interpretive trails where appropriate.
- Develop signage and/or interpretive trails where appropriate. Provide opportunities for Tribal traditional uses of the resources, including such activities as gathering plant materials and bark for subsistence and/or ceremonial purposes (described by Treaty). Provide interpretation of historic and current subsistence and ceremonial resource use and respect.

PUBLIC ACCESS & RECREATION

Public Access & Events

Issue: Previous land owners, Pope Resources Company have allowed public access of the interior lands for hikers, equestrians and bikes via existing logging roads. Over the years the mountain bike community has organized numerous events with permission from Pope Resources on the logging roads and trails, attracting hundreds of participants at a time. Recreational trail-use of the interior trails will continue, but hikers and equestrians will increase in addition to the ongoing bicycle events. Public access to the 1.5-miles of shoreline has been limited, and public shellfish harvest posted as private lands.

Management Objectives:

- Events will require a Parks Permit along with a required parks fee. Fees to be determined based on impacts to: the resources, other recreational access and uses, and degree of site monitoring, mitigation, oversight, and clean-up required for each event. Trails have a carrying capacity and costs associated with events must be paid for by the applicant for staff time, porta-potties, traffic & safety control, trash removal and as necessary for trail repairs.
- Park staff and volunteer stewards will monitor impacts of large group activities on the protection of inherent resources and recreational experiences for all park users. Kitsap County will consider the nature of large social gatherings and their needs, as well as respect for recreationists desiring areas of nature-solitude. Event impacts on the resource will be remedied or mitigated. Special Events may require a County Parks Department Permit, per County Policy. User fees may be charged per County Park Policy, Kitsap County Park Fees & Charges Schedule as approved by the Kitsap County Board of Commissioners. Other County Departments responsible for fire and health, for example, may charge additional fees.
- The Shoreline will be opened for non-motorized use at selected locations where trailhead parking can be provided and safe passage to the tidelands can occur. More planning is needed for designation of official watertrail launch areas, day-use and water access accommodations for non-powered vessels. Shoreline trails along the bluff and viewing areas is encouraged.

- Public access will be limited to designated trailheads and developed parking areas, compared with hazardous roadside pullouts, and signed appropriately. Parks will work with WA Department of Transportation to warn travelers along SR 104 as to parking/trailhead pullouts and any trail crossings, and opportunities for visual vegetation "pruning" to provide pocket view of Port Gamble Bay.
- Accommodations will be made for infrequent "fly-overs" by the radio controlled model aircraft which have a take-off and landing field adjacent to the north of the parklands. This use will be monitored for impacts and future resource modification needs, such as vegetation pruning, for safe model-aircraft field-approach and event operations.
- Other motorized aircraft, including "drones" are not permitted over the parklands at this time without authorization and permit.

Recreational Trail Development and Management

Issue: Upon acquiring this property as a Park, there were no designed trailheads, parking, County Park signage, trail signage, or approved recreational routes. Over 40 miles of forested trails and roadway trails currently exist in the park, many adjoining those existing on Pope Resource's forestland properties to the north, south and east of the Park's Shoreline Block. Most have former road numbers or user-applied names. Existing user-developed trail maps are mostly accurate to layout and access. New trails and trail technical structures, designed for trailbikes are currently being constructed without safe standards or permission by County Parks. For events and trail emergencies, there needs to be consistent names and locations for trail and roads. The general public will need orientation and rules.

Management Objectives:

- Work to provide recreational access and activity areas for all non-motorized recreationists which are compatible with the land management objectives.
- County Parks will give preference for a future trail connection and continued trail route through the Port Gamble Forest Heritage Park for the **Sound to Olympics Trail** [STO) for a shared-use, active-recreation use corridor.
- Accurately map all roads and designated trails with GPS technology.

- Display maps and current names/numbers on informational kiosks at County trailhead parking. Post maps on County website.
- Parks will research and work to apply web-based trail maps for ease of access by recreationalists and emergency response staff.
- Work with trail users to develop a consistent naming procedure and approval for existing and new approved trails. Identify trails by levels of challenge, construction and use, as part of the displays and maps, [ex. "parkway, destination loop, spur, challenge, interpretive"] and which correlate with the County Park's trail categories. Develop a system of way-finding trail signage.
- Enforce new trail application and approval process for any new trails. Remove any trail structures or routes which are unsafe, not built to standards, or impact wildlife habitat, or sensitive vegetation.
- The two approved trailhead parking areas along SR 104 will be named; Shoreline Trailhead (on the eastside of the roadway near MP 18) and G-1000 Trailhead (named after the forest road access name and which lies adjacent to SR 104 on the west side).
- County will continue to work with WA Department of Transportation to improve visitor safety, consider pedestrian walkways across SR 104 and encourage a reduction in traffic speed through the park.

Recreational Safety/Behavior/Rules

Issue: On the privately owned forest land, there was virtually unlimited public access, except during forest restoration thinning operations and recreation activities were largely unregulated. As a County Park, there are standards for public use and non-motorized recreation activities. An expected increase and diversity of recreational use will increase impacts to these public lands and will require rules enforcement.

Management Objectives:

- Work to educate and inform visitors about the property's resources and the need for protection, through signage, tours, interpretive media and publicity.
- Develop orientation and way-finding signage throughout the property.

- Develop park rules for this Heritage Parks that take into account the special needs of all park users; the casual hiker, the mountain biker, the equestrian, the nature-lover, the classroom, the visitor, the recreational clam-digger, the kayaker, the business community, the environmentalist and others.
- The park is a "Land of Many Uses", as such serves the entire community and will require monitoring, enforcement, and management by Parks staff and Park Stewards volunteers. Work with local law enforcement agencies and emergency response organizations to best protect the natural resources and the recreation public.
- Close, sign and/or de-construct "rogue-built" trails where there exists unapproved, poorly designed, or unsafe trail construction and routes through areas of user conflict or sensitive areas. Work to discourage such behavior.
- Implement a system of trail classification and rating that would denote the type of trail development standard (ex .parkway/spur/single-track-challenge, etc.), trail features, and difficulty. This will help to alert and inform the users as to the expected trail experience and use.
- Work with Emergency Response agencies to develop a system of response for consistent park trailhead addresses, road and trail signage and emergency response protocols.

Economic Interests

Issue: Much of the existing and future recreational events have a significant positive contribution to the local Port Gamble economy and surrounding area businesses.

Management Objectives:

- Continue to support and look for opportunities to encourage recreation events, trainings and educational events which help to promote business health in related services, e.g. rentals, eateries, lodging, tours, etc.

Future Property Acquisition

Issue: Much of the area under study with this Stewardship Plan, and of importance to resource stewardship and recreation opportunities, has yet to be acquired for County Park management.

Management Objectives:

- The County will continue to pursue funding and other opportunities to acquire significant portions of the Port Gamble forested landscape, currently owned by Pope Resources Company, which will contribute to the goals and objectives of this plan.
- The County will work to ensure that future land acquisitions, associated with these Park lands, have stewardship planning monies available for initial property resource assessments, hazard identification, stewardship and management activities necessary to take control and ownership.
- Stewardship and public use planning on such newly acquired properties would be advised to follow similar planning processes, as demonstrated in this technical and public proecess.

Ongoing Resource Stewardship

Issue: To continue stewardship of these parklands and application of the management objectives, and land-use determinations there will need to be a concerted effort by local citizens, interest groups (recreational and conservation), and Tribes to stay involved and develop more prescriptive management agendas, actions and funding possibilities.

Management Objectives:

- Create a Port Gamble Forest Heritage Park Stewardship Group which will be coordinated through Kitsap County Parks, Stewardship Program and would enlist local citizens and other recreation and conservation interests, to further the resource management and recreational needs in this area. The Stewardship Group will work to achieve consensus in the detailed implementation of this Plan, and work to further develop stewardship and recreation strategies.
- Develop a detailed Park Management and Development Plan and support various funding strategies pursuits with County Parks' staff.

- To create a cadre of informed Stewards, the County shall develop and offer [dependent on available funds and staff capacity], a series of *Stewardship Certification Courses* to instruct volunteers in the various aspects of resource assessment, monitoring, management, and recreation planning and development. These "education-intensives" may include topics on wetland, streams and wildlife, forest restoration, recreation trails, native vegetation & invasives, cultural and historic preservation, shellfish and tideland management, public education and interpretation and other stewardship and recreation management topics.
- Park staff and volunteer stewards will continue to monitor and report resource issues; vandalism, unauthorized park use, and garbage dumping, and develop clean-up events.

STEWARDSHIP ACTIVITIES:

Critical to any resource stewardship program on newly acquired property, several management actions must take place. Those include:

1. **Identification of New Ownership, Management and Authority**
2. **Identification and Removal of Hazards, Vandalism, Garbage and Debris**
3. **Control and Improvement of Public Access Areas**
4. **Identification and Management of Existing Resource Impacts or Damage**
5. **Display and Enforce Public Use and Recreational Rules and Guidelines**

Following are examples of stewardship management activities planned, underway, or accomplished during the Stewardship contract period:

Identification of New Ownership, Management and Authority

Ownership identification and public access control began with installing Heritage Park signs at major trailheads and parking areas. Since the installation of formal signage and after our community-involved garbage cleanup, there has been no evidence of garbage, vandalism or miss-use of the property access areas. This has been a successful stewardship activity for public use control.





Identification and Removal of Hazards, Vandalism, Garbage and Debris



Members of the Stewardship Steering Committee and Parks staff organized a park cleanup focused at our Hwy 104 Trailhead (#2), the PSE powerline right-of-way, and along both sides of Hwy 104. Years of accumulation of garbage, tires and appliance and car parts, resulted in sixty cubic yards of garbage and two hundred tires for disposal. One hundred volunteers showed up for the event, ranging in ages from seven to seventy-two and logged in more than 500 hundred work-hours.

Control and Improvement of Public Access Areas

An existing roadway pullout along SR 104 was heavily overgrown, potholed and not signed as to trailhead access, ownership or public access requirements. Volunteers and park staff cleared the former log operations landing site and developed a well-graveled and fenced trailhead parking. This developed and signed public access area has curtailed dumping and other illegal activities. A porta-pottie was added to the parking area for sanitation control.





Photos of Port Gamble Trailhead G-1000
Parking – Before and After Re-construction

Identification and Management of Existing Resource Impacts or Damage

Sensitive Areas 'Trail Re-route: The Steering Committee identified current impacts to wildlife and shoreline of a heavily used trail along the eastern edge of a large beaver pond ecosystem. It was agreed to re-route the multi-use trail away from the pond to eliminate wildlife disturbance and reduce impacts inherent with heavily used trail corridors in sensitive habitats.



A Steering Committee Trails Subcommittee and Park Staff approved a ~600 ft. trail re-route 100+ ft. distance from the pond. The existing route will be re-constructed and restricted for passive-use only with no dogs permitted. The new "gated" route will be designed to include viewing blinds and interpretive signage for quiet wildlife observations.

Partnering with local trail and conservation groups, it is likely that the re-route and re-construction can occur over the next 12 months. North Kitsap Trail Association and Great Peninsula Conservancy have been awarded grants from REI to begin the trail projects.



As part of the Beaver Pond Trail re-route, County Parks partnered with Great Peninsula Conservancy and REI to offer a one-day trail construction and maintenance training. This workshop recruited trail crew leaders for future stewardship projects as well as help develop our re-route stewardship trail.

Training announcement:

> **Trail Crew Leadership Training – June 13**
> **We need trail crew leaders!** Join us for a one day leadership training course on Saturday, June 13, at Port Gamble Forest Heritage Park (9 am – 3 pm). This hands-on outdoor workshop will be conducted by Washington Trails Association and cover the basics of flatland trail design, drainage, trail construction and maintenance, safety, and crew leadership.
>
> **Training limited to 24 participants.** Tools and hard hats provided. Bring sturdy gloves, boots, long sleeve shirt, long pants, lunch and water. **Contact** Kate Kuhlman **(360) 373-3500 to register.**
>
> **Trail Crew Leadership Training sponsored by: Kitsap County Parks, Great Peninsula Conservancy, and REI.**



Twenty-four participants received hands-on sustainable trail construction and maintenance training by Washington Trails Association and received trail design and construction manuals.

Display and Enforce Public Use and Recreational Rules and Guidelines

County Parks developed and displayed a new "You Are Here" Map on the Trailhead G-1000 parking along with Recreation Rules to best orient and direct users of the Heritage Park.

County Parks will continue to enforce our resource protection in compliance with **Kitsap County Code 10.12.050 Removal of or damage to park property:**

"It is unlawful to remove, destroy, mutilate or deface any tree, shrub, flower or other plant; any rock, cliff or other natural feature; any building or other manmade structure or artifact; any vehicle, implement, tool or other park property lawfully in any park."

Public Announcement & Comments:

Kitsap County Website Notice of Stewardship Plan and Activities:

Port Gamble Forest Heritage Park
Resource Stewardship and Public Access Plan

In 2014, Kitsap County Parks acquired 535 acres of forested uplands and 1.5 miles of shorelands and tidelands on the northern portion of the Port Gamble Peninsula.

Beginning in February of this year we began a planning process to address the stewardship of our inherited natural, cultural and historic resources and evaluate potential recreational use. Our planning approach included the creation of a Stewardship Steering Committee, comprised of local citizens, conservation and recreation interests, recreation business leaders, technical advisors, and Tribes.

Over the last 5-month period this Committee assessed the qualities of wetlands, streams, wildlife, wildlife, shellfish populations, the age and vitality of the forest stands, and addresses the needs and desires of a variety of recreationists – both passive and active activities.

Together, we developed Stewardship & Recreation Guiding Principles, which strive for a reasonable balance of resource protection and enhancement, intertwined with public access and trail facilities. The result of our overall stewardship and public use plan is summarized in the Landscape Classifications & Map, and recommendations for the agency and volunteers are detailed in the Management Issues & Objectives report. Click Here for the reports.

Parks published and distributed a "Stewardship Plan" flyer that outlined the work of the Steering Committee's Plan Outline and Guiding Principles, also available on the County Parks' website. Public Comments were received from our Public Workshop on March 28, 2015 in Poulsbo, through e-mails, letters, and from the County website feedback.

Public Workshop Topics of Discussion:

- Receive additional input from Kitsap Forest & Bay Coalition
- Laudine DeCoteau Creek is a fish-bearing stream
- 24"-30" culvert under SR 104 may be a deterrent to upstream beaver and salmon health
- Old 1909 Telephone Road to be used as Bluff Trail
- Public safety on SR 104 shoulders
- Verify stream location via surface ground-truthing
- Opportunities to use power line corridors

Public Comments:

I think these plans for land use and trails are extremely exciting and well thought-out and will be of value to a wide variety of people. Congratulations! -Bob Smaus

"Our primary concerns are the future of events/group activities on Port Gamble Trails & some water trail issues. The Port Gamble trails have been touted as a great location for events, we hope that will continue. There are also a lot of youth teams and classes that use the trails." – Linda Berry Maraist, North Kitsap Trail Association

"Regarding use of the Port Gamble heritage park, my comment centers around the use of dogs. As an equestrian I have been attacked by a loose dog that was not under control of its owner who was riding a bicycle. I suggest the following dog restrictions. Dogs are allowed only if on leash at all times. If you are a bicycle rider or a horseback rider, your dogs are not allowed with you on the trials – no exception. This area is a multiple use area and all sorts of issues can come up, like horses or bicycles going too fast. Just adding dogs to the mix is too much. And, dogs bite." -- Charles Regimbal

Planning Comments:

Our County Parks staff share the community's appreciation of the concerted efforts of the Forest and Bay Coalition and aligned organizations in their pursuit of lands acquisitions to create the Port Gamble Forest Heritage Park. The public area offers a foundation for sustainable forest conservation, wildlife habitat, and a wide range of recreation opportunities. The continued stewardship efforts and support by those groups and individuals will enhance our park and open space goals, into the future. Thanks to All.

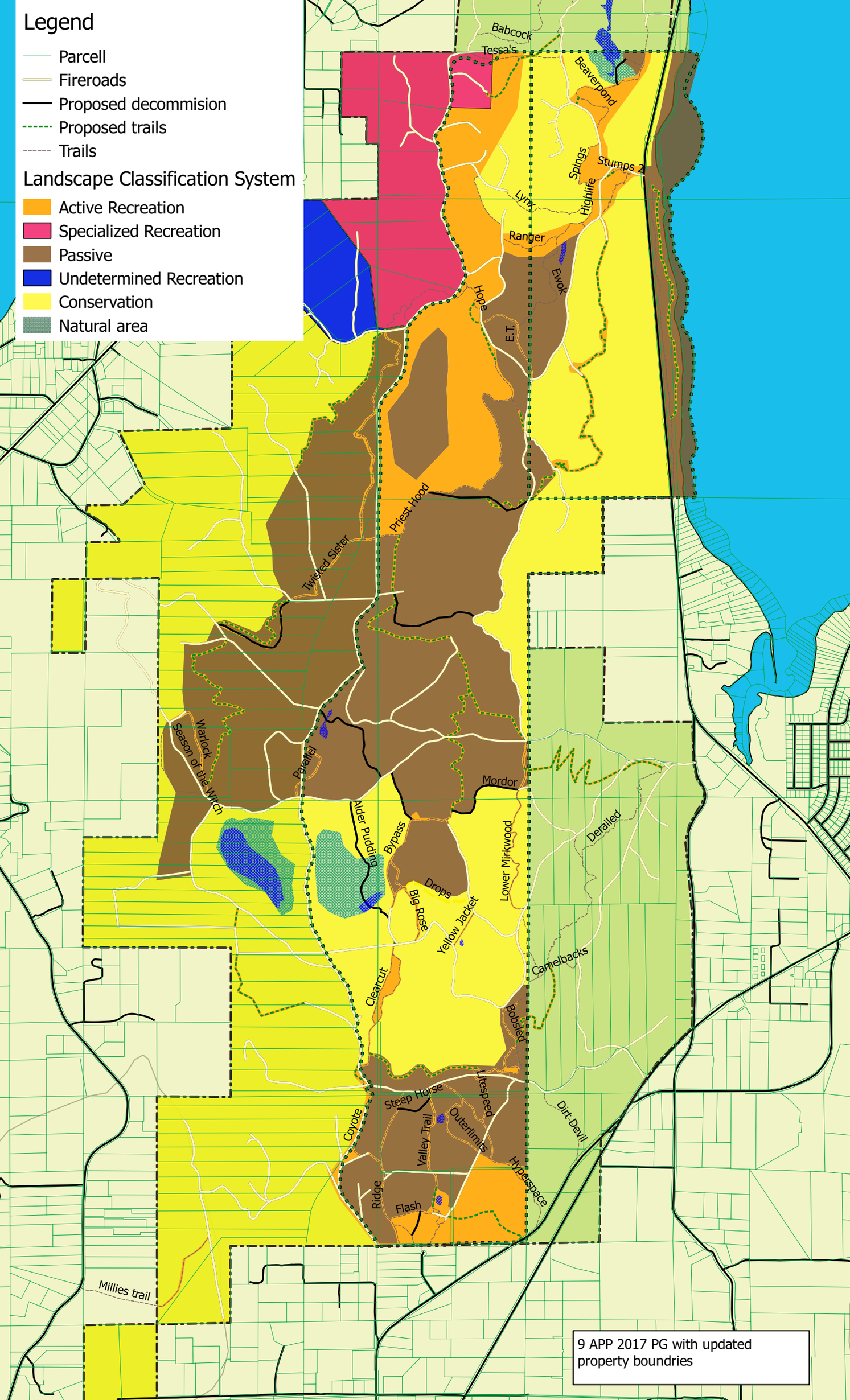
- Jim Dunwiddie, Kitsap County Parks Director

"I appreciate the community's work in creating this stewardship plan. The structure that is created through this process can be expanded and/or replicated for other properties that may come to fruition as part of the overall conservation effort."

- **Robert Gelder, Commissioner, Kitsap County District 1**

Kitsap County: Parks Director, Jim Dunwiddie

Board of Commissioners: Robert Gelder, Charlotte Garrido, Edward E. Wolfe


Legend
Parcell
Fireroads
Proposed decommision
Proposed trails
Trails
Landscape Classification System
Active Recreation
Specialized Recreation
Passive
Undetermined Recreation
Conservation
Natural area
Babcock
Tessa's
Beaverpond
Spings
Stumps 2
Highlife
Lynx
Ranger
Ewok
Hope
E.T.
Priest Hood
Twisted Sister
Warlock
Season of the Witch
Parallel
Mordor
Alder Pudding
Bypass
Drops
Big Rose
Yellow Jacket
Lower Mirkwood
Derailed
Camelbacks
Clearcut
Bobsled
Litespeed
Steep Horse
Coyote
Valley Trail
Outerlimits
Dirt Devil
Hyperspace
Ridge
Flash
Millies trail
9 APP 2017 PG with updated property boundries

3-8

APPENDIX

FRAMEWORK FAQ AND DRAFT REPORT COMMENT MATRIX

PORT GAMBLE FOREST HERITAGE PARK FRAMEWORK FREQUENTLY ASKED QUESTIONS (FAQ)

General

Why does the Framework consider the Mountain Biking Ride Park, Sound to Olympics (STO) Trail, and Stottlemeyer Trailhead as given elements of the Parks future?

The Framework only acknowledged these three Park elements, it did not create them. The 3500-acre Port Gamble Forest Heritage Park (PGFHP) acquisition required years of dedication from multiple community groups and interests. This included conservationists, hikers, bike and horseback riders, and walkers. Each saw a wonderful opportunity for the community as a whole but also for their specific interests.

From the outset of the acquisition campaign in 2010, the Parks future showed opportunities for each interest to have a presence in the Park. This included a Mountain Bike Ride Park in the NW corner, a regional, paved, shared-use path (Sound to Olympics Trail) through the Park, and trailheads to improve parking and access to the many areas, including Stottlemeyer Road. All grant applications, agency negotiations, and advocacy from local and state elected officials included the messaging of these specific opportunities if our acquisition was successful.

Kitsap is dedicated to meeting these commitments to acknowledge the years of efforts of so many to make the Park possible.

When was it determined the Sound to Olympics Trail (STO) would run through the Park?

The STO alignment through the Park was considered from the outset of the acquisition campaign in 2010. It was further memorialized with the North Kitsap String of Pearls Trail Plan in 2011 and the Kitsap County Non-Motorized Facility Plan in 2013. Both documents included expansive public outreach to Kitsap residents, community groups, and organizations. Both Plans received nearly unanimous support at their adoptions. Since then, the STO alignment has been acknowledged in acquisition documents, stewardship plans, and feasibility studies. Kitsap has dedicated hundreds of thousands of dollars to planning, designing, and constructing the multi-million-dollar public investment. The Framework only acknowledges these historic commitments, it does not create them.

Timber Harvest

Why does the Framework discuss cutting trees?

In acquiring large portions of the Park, Kitsap County was limited in funding and only acquired the land to protect it from future development. The timber, more than 60% of the overall property's value, was left with Rayonier to harvest one last time. They must conclude these harvests by 2042. As areas are harvested, Kitsap County takes full ownership and can begin restoring the site to a mature natural forest. This does not apply to the Shoreline Block or the Ride Park, which the County owns both land and timber.

The Framework reflects this obligation but proposes priorities for future timber acquisition if funding becomes available, and Rayonier is willing to sell specific stands.

Doesn't the Framework want to preserve existing tree stands in the Park?

The Framework proposes to restore the vast majority of the Park (93.3%) to long-term, natural, mature forests. The Framework proposes continued efforts to acquire timber stands from Rayonier between now and the conclusion of their timber rights (2042). Kitsap, conservation groups, and community partners are currently working to raise money to preserve several key tree stands around wetlands and streams, the Sound to Olympics Trail alignment, and other mature areas. This acquisition will require a combination of state and local funding and private fundraising to make it a reality. To help be a part of this effort, please visit _____.

Are there areas where the County owns the trees, where there may be future logging?

Many of the timber stands in the Park need management to ensure their long-term health. Rayonier planted and managed many stands for commercial harvest. This growing strategy often plants trees close together, providing for little understory and limited wildlife habitat benefit. To ensure the long-term viability of these stands and protect them from disease, some selective harvesting is necessary over time. These harvests provide space for trees to grow fully and the expansion of ground vegetation. Such environmentally-sensitive thinnings are directed by the Kitsap County Forest Stewardship Plan, which has been used successfully countywide. For more information regarding this Forest Stewardship Plan, please visit https://www.kitsapgov.com/parks/Pages/ForestStewardship.aspx.

Public Participation

How did the Framework process engage the community?

The Framework public engagement process was planned as a multi-level process that included a core Steering Committee, Key Stakeholders, and Advisory Groups, as well as General Public Engagement. The intent of this was to develop as comprehensive a process as possible within the limited budget constraints of the Framework project. A project website was established two weeks before the first public meeting at the beginning of the Visioning and Programming phase. The project website was updated with each phase of the project with project information, recordings of public meetings, and project documents. Four scheduled public meetings occurred at each phase. Due to the concern with Conservation and Restoration, an additional public panel session specifically on these goals was established early in the project. In-person and online surveys were conducted throughout the process to help inform the process. All public comments regarding the draft Framework document have been collected and individually reviewed against the document.

The Steering Committee consisted of three very active community members that acted as representatives of various partner organizations and met roughly every four weeks throughout the process. Key Stakeholders, including local Indigenous Tribes, Parks Advisory Board, Forterra, and Rayonier, were engaged at each phase of the process. Additionally, advisory groups were established to focus on specific goals of the Framework, including Accessibility, Education, and Ecological Restoration and Conservation, which were convened and consulted periodically throughout the process. Further targeted engagement with advisory partners and local

agencies occurred periodically regarding other specific goals such as Forest Management, Equity and Inclusion, Emergency Services, Transportation, Specific Recreational Uses, and Economic Development.

The overall timeline of the process was extended by at least six months to provide additional time for public comment. In addition, the project team captured and reviewed any public input at PGFHP Stewardship Committee Meetings, Parks Advisory Board Meetings, and BoCC Meetings.

Why was the outreach process focused on virtual events and electronic methods?

The Framework was funded by the Kitsap Public Facilities District with a specific schedule for completion by Summer 2022. The schedule coincided with the COVID-19 pandemic and its limitations and, at times, prohibitions for public gatherings. Kitsap followed all guidelines for the protection of our citizens and staff.

To meet the schedule, Kitsap and its consultants employed a broad range of virtual and electronic methods of public outreach (see question above).

Will there be future public discussions before the Framework's proposals are implemented?

The Framework is only a guidance document to be used as a reference in future discussions of Park activities. Other than the long-standing Mountain Biking Ride Park, STO, and Stottlemeyer Trailhead, it is the first step toward discussions of new recreation and education uses in the Park. Creation of new uses and facilities are complex, and costly facilities will require key partnerships with private businesses, organizations, and groups. These will require additional public discussions to help establish a combination of uses, programming, scope, and scale. These conversations would then lead to formal permitting with additional design details and environmental assessments for public review.

How has the current timber owner (Rayonier/OPG) participated in the Framework development?

Rayonier owns the timber on a significant portion of the Park and has several access rights to harvest the trees through 2042. Kitsap has coordinated the Park's future plans with those activities. Rayonier participated as a stakeholder providing insights into their development plans for the adjacent town site and their forestry activities. Their participation was also important to ensure regional trail connections to the north and south of the Park.

During the Framework development process, Kitsap and Rayonier also agreed to a collaboration agreement that expanded regional trail connections. They provided Kitsap land for park amenities in Port Gamble, the Divide, and Hansville. While related, this agreement was independent of the Framework development. In this agreement, Rayonier provided $75,000 to Kitsap County related to the maintenance of the wetlands, open space, and wildlife habitat south of Port Gamble and north of the Park, which will be deeded to Kitsap. This funding will be used to replace culverts and maintain trails through this area while ensuring its environmental protection into the future.

How have the Tribes participated in the Framework development?

Kitsap has coordinated closely with the Suquamish and Port Gamble/S'Klallam Tribes through separate government-to-government discussions as well as invitations to all public meetings. At multiple points of the process, the staff and consultant team presented materials to the Tribes for review and comment. Most recently, Kitsap discussed the draft plan and received verbal comments from the Port Gamble/S'Klallam Tribal

Council for consideration (included in Comments Matrix). Kitsap is awaiting any additional written comments for consideration at the July 11 public hearing.

Framework Application

How "set in stone" are the proposals included in the Framework?

The Framework is strictly a guidance document to be used as a reference in future discussion at the Comprehensive Plan and Parks Recreation and Open Space Plan level. It is not a guaranteed future outcome. While the Framework provides significant analysis of the proposed uses, conservation strategies, and recreation opportunities, their implementation (if at all) is entirely flexible. Particularly, future discussions will determine much of the active recreation and education areas, ensuring adequate funding, partnerships, and support.

Why doesn't the Framework include greater detail regarding proposed uses and impacts?

As the Framework only guides potential opportunities for the Park, additional detail is unknown and dependent on future discussions with partners, the public, and funders. Furthermore, further detail would be deceptive as the scope and scale of any new uses have not to be determined outside the Mountain Biking Ride Park, Sound to Olympics Trail, and Stottlemeyer Trailhead.

Why isn't there a SEPA determination on the Framework?

As a guidance document, the Framework does not direct future action nor function as a step in an approval process, permit, policy, or otherwise. Future efforts towards the recreational and education components of the Framework will require planning level SEPA review once incorporated in the Comprehensive Plan, Parks Recreation, and Open Space Plan or similar document.

The Park projects that predated the beginning of Framework development had previously received planning-level SEPA review. The Mountain Biking Ride Park and Stottlemeyer Trailhead are allowed uses in the Parks zone. Their potential impacts (at a planning level) were determined when they received this zoning. The Sound to Olympics Trail (STO) was considered with the adoption of the North Kitsap String of Pearls Trail Plan in 2011 and the Non-Motorized Facility Plan in 2013. Again, these impacts were assessed at a planning level. Additional project-level SEPA review is required when project permits are submitted. This level of review covers specific traffic and other impacts based on known trip generation and other metrics. Such permits are currently in review for the Mountain Biking Ride Park and Stottlemeyer Trailheads. They will be required for the construction of the STO segments in the future.

What future approvals will be necessary before elements of the Framework are implemented?

Depending on the proposed uses and their size and scale, additional land use, site development activity, and building may be required before any new recreational and educational uses are approved. At this level of detail, project-level SEPA will be conducted to determine traffic and environmental impacts. Such permits must meet all County Codes, including stormwater, critical areas, zoning, building, and fire, amongst others.

How does the Framework consider wetlands, streams, and other environmental features?

The Framework uses all known, existing information regarding environmental features, including wetlands, streams, flood plains, aquifer recharge areas, steep slopes, forest stands, and wildlife habitats, amongst others. The Framework appendix combined these various data sources to develop a site suitability index. This index was used to propose areas best for new recreational or education uses, such as those that are currently cleared, away from environmental features, and close to existing or planned road systems.

Conservation

How much of the Park is being preserved for conservation and passive recreation (timber stands and soft surface trails)?

The Framework proposes more than 93% of the 3,500-acre Park be dedicated to open space, conservation, and passive recreation. The remaining acreage (less than 7%) is focused primarily on long-term commitments such as the Mountain Biking Ride Park, Sound to Olympics Trail, and the Stottlemeyer Trailhead. The Framework proposes only 40 acres of new recreation and education uses and trailheads.

How does the Framework direct areas to be preserved or restored?

The Framework used natural systems, environmental features, existing mature timber stands, existing trail systems, and historic commitments (Mountain Biking Ride Park and Sound to Olympics Trail) to establish its conservation priorities. Active recreation and other significant activities are to be limited in these areas. While Rayonier has retained existing timber rights throughout a majority of the Park, Kitsap is working to raise funding for the acquisition of many of these stands and manage these lands accordingly. The Framework process heavily referenced the 2016 Stewardship Plan for PGFHP and existing environmental and geographic data, with recommendations to update the Stewardship Plan and develop a more comprehensive conservation and restoration planning effort in Phase 1, pending further funding.

Trails and Recreation

Why is the Sound to Olympics Trail (STO) being proposed to be paved?

The Park was acquired for all residents and visitors to Kitsap. While not all the Park will be accessible to all people, the Framework includes opportunities for those of all abilities and those with access needs. Soft surfaces (e.g., gravel and dirt) create impediments for wheelchairs (powered or manual), cane use, walkers, and other mobility aids can struggle with these surfaces, especially in times of rainfall common in the Pacific Northwest. The paved surface allows for a safe and stable means for all visitors to experience the beauty of portions of the Park.

Additionally, the STO is meant for commuters as well as recreators. The Trail is a safer option than SR307 and SR104 for bicyclists and will be constructed using funding dedicated to our transportation system. This requires paving in nearly all cases. Without access to these funds, construction of this accessible trail will not be possible due to its cost.

Why are there so many trails in the Park?

Before Kitsap's acquisition, the property had a substantial system of trails and logging roads extensively used by the public. These trails were predominantly designed for access for timber commercial timber operations. The Framework proposed to maintain many of these trails but has evaluated the system to address safety, environmental, and habitat concerns. Ultimately, the Framework proposes a net reduction in trail miles.

As the Park is 3500 acres in size, the Framework prioritizes the development and maintenance of trails that serve smaller loops to allow access to multiple user groups and audiences. This will require decommissioning several trails and constructing new ones. But, again, the Framework proposed a future with fewer total trails in the Park.

Does the Framework establish single-use trails (e.g., only hikers, bikers, horseback riders)?

The Framework proposes a few single-use trails, such as the Mountain Biking Ride Park and some hiker-only trail segments. The focus on multi-use trails is to limit the number of trails in the Park to maintain wildlife habitat, reduce ongoing maintenance expenses and avoid creating expectations of unenforceable rules.

Signage will be installed to explain the purpose of these trails as well as emphasize the "good user" behaviors Kitsap expects in its Parks countywide.

Funding

Many of these proposals are expensive to construct and maintain? How will these efforts be funded, and will it pull funding from other County parks?

The sheer size of the Port Gamble Forest Heritage Park leads to a different management strategy than other Heritage Parks. Many of the same methods, park coordinators, and stewardship groups play a crucial role but cannot be expected to manage 3,500 acres of diverse Park uses. Strategic partnerships will be necessary if the recreational and educational uses are expanded into the Park. Examples of such partnerships include the one between Evergreen Mountain Bike Alliance and Kitsap for the Mountain Biking Ride Park maintenance.

Public/private partnerships may be promoted for the camping areas, concessionaires, or other recreation facilities. Education facilities will need to be overseen by educational institutions at the local district or university/college level. All of these agreements would be addressed upfront at the planning stage to ensure long-term success.

Construction of such facilities will need funding from economic development organizations like the Kitsap Public Facilities District (KPFD), the Economic Development District (EDD), and state and federal grants.

Even with these partnerships and funding streams, other local sources may need to be developed. For example, user fees for recreation facilities and creating a metropolitan parks district similar to the one that oversees the Kingston Community Center may be explored. The Framework includes a strong list of options that, again, would need to be determined early in the planning stages for any expansions of new uses within the Park.

DRAFT FRAMEWORK PUBLIC COMMENT MATRIX & RECORD OF EDITS MADE TO REPORT- JULY 2022

Name	Comment	Action	County Response	FBP Edit Notes
General Comments				
Judy Willott	The draft master plan is an extraordinary work, with enough details to keep us going for years. I especially appreciate the work on ecological restoration and plans for including restoration work with colleges and universities. It is critical that this body of work not just be accepted as a plan and then put on the shelf. How do we keep it alive and adapting to changes over time? Can required forest thinning fund the restoration?	Comment Noted	Noted, no edit recommended	Noted
Lynn Schorn	1. Outreach to the public has not been limited. There have been 4 community meetings. The process has been open to all members of the community. This Master planning process has not gone on for 10 years by park planners and consultants. The PGFHP master planning has been a year in process since acquisition of a Public Facilities District Grant to fund it. If you are a user of the park, you will have seen invitations to participate in Community meetings at parking areas, trailheads, through social media notices, county park notices, etc. 2. A SEPA assessment has been completed with all of the appropriate environmental DCD and County permitting for the building of the Ride Park, which took over 7 years to complete from the receipt of the State RCO Grant to purchase the ride park land in 2015. Ongoing permitting for building of parking lots, bathroom facilities in accordance with county permitting structure are being completed as the parking lots, STO projects have and are being publicly funded through grant acquisition. 3. and 4. Further environmental, watershed, animal habitat etc. analysis does indeed need to be completed as is clarified in the masterplan. The scope of what you are suggesting and what the masterplan identifies is the need for future funding to complete all that is needed with the intention to balance conservation and recreation. The goal of the masterplan is to balance recreation and ecological restoration following timber harvest. As the park which has been a tree farm for over 100 years goes through its harvest transition to becoming a regenerative, healthy forest, it is difficult to take a survey of plants, animals, etc as transitions will take decades. Perhaps, KEC would be better served to support the purchase of trees as they stand now? www.ourforestfund.org. 5. Conservation efforts through Kitsap County Forestry, KC Parks and thousands of volunteer hours have and will continue to be in place: scotch broom removal, tree planting, further purchase of trees through grant acquisition, and surveys of the ecology of the park as it is now and moves into the future. The park is 3500 acres with trails built by mountain bikers, Washington Trails Association, walkers, runners, horse users and is meant to be a park for all. If any of your constituents want to assist in trail maintenance, tree planting, scotch broom and other invasive plant removal there are opportunities every day of the week. FYI, also ecosystem planning and restoration is currently assisted by and through Western Washington University, Olympic College, Wilderness Integration Project(Wild Society) through education and involvement of youth and adults. 6. Again, the park plan is and was intended for all users. Yes, the northern 170 acres is focused on mountain bike users. FYI, in 2015, The Ride Park land was purchased with a State Recreation and Conservation Grant- $500,000.00, which the County partially matched which allowed purchase of the land and the trees at the culmination of the Capital Campaign. Other than this acreage with trees and 500 acres on the NE portion of the park, all of the rest of the timber tracts will be harvested one more time until 2024, which challenges conservation, erosion, preservation, wildlife habitat and all other ecological factors. 7. Yes, multi-user trails as well as safety considerations have been, are, and will be continued to be discussed through all volunteer mechanisms- PGFHP Stewardship Committee, North Kitsap Trails Association, Kitsap County Parks, Emergency Services through improved mapping, community outreach and volunteer work now and into the future. 8. The STO(Sound to Olympics)'s design through the adopted North Kitsap Trails Plan(2010) is meant for its intended connections and linkages to become part of the greater Rails to Trails cross state and cross the national trail systems. Its North Kitsap routing is intended to link the ferries with the Hood Canal Bridge. As this process was begun in 2007, its focus was on acquisition, purchase of land available for sale by Pope Resources in North Kitsap County. Of course the goal is to also link with central and south parts of Kitsap County with a north-south route, as well. Perhaps your constituents living in central and south Kitsap County can start working on these linkages? 9. The S'Klallam and Suquamish tribes have and will continue to be consulted. Their input, participation and involvement have been integral to the entire process from the beginning. Both tribes are and have been part of the land's history and story- past, present and future. As this is their ancestral land, it is required that they are consulted. 10. OPG, Pope Resources and Rayonier are community members. Economics, balance of conservation and recreation are a constant part of our community lands moving forward. As a member of the North Kitsap Community, I would like to see action items of intentional proactive movement for the enhancement of our community and its environment move us all forward toward goals of assisting in that balance of economics, conservation/restoration and recreation into the future.	Comment Noted	Response to other comments, no edits recommended	Noted
Tania Issa, Kingston resident, on behalf of my husband Antoine and our children Oliver, Noel, Dorian, Lad, and Quinten Issa	Dear County Commissioners, I am writing to thank you for the extraordinary efforts undertaken to solicit public input from a wide variety of citizens and users of these magnificent trails. Your stated efforts to preserve the cultural, environmental and historic legacy of this forest while allowing public use is well reflected already in your draft Master Plan. Our family of seven includes 5 children who are entering young adulthood and who hope to raise their own families in Kingston. Our family has collectively logged many thousands of miles on these trails hiking and biking over the past decade. On these trails, our family has deepened their values for conservation and stewardship while improving our physical and mental health. Not a week goes by where one or more of us enjoy both the solace AND exhilaration offered by the PG Trails. One of the things we love most about the trails is the vast community of hikers, bikers, and equestrian users who share well wishes as they pass. The trails are used across a pleasing variety of age groups and fitness levels. We are just as likely to see babies in strollers and toddlers taking their first uphill climb as we are to see octogenarians walking their dogs or getting in a little rehab as they recover from knee or hip surgery. Whether or not masks were required during the pandemic, the smiles of everyone we passed were mirrored ear to ear. There simply is no happier place is North Kitsap County. We are especially grateful for the creative and tireless volunteer crew organized by Evergreen Mountain Bike Alliance who build and maintain the vast network of public trails amidst the rainy/cold seasons and logging activities. It's just a wonder what has been accomplished thus far and what is dreamed for the future. Thank you sincerely. Tania Issa, Kingston resident, on behalf of my husband Antoine and our children Oliver, Noel, Dorian, Lad, and Quinten Issa	Comment Noted	Noted, no edit recommended	Noted

Jim & Marilyn DeRoy	We are writing in regards to the Port Gamble Forest Heritage Park Master Plan. We have been involved in this park, as well as others in the county, helping to build and maintain trails and structures, as well as to install signs. As far as options related to the master plan, we would like the goals of the park to focus on conservation and restoration of the natural resources, with the continuation of light recreation - hiking, mountain biking, horseback riding. We feel that the plan options allowing for construction of commercial venues, various buildings, and campgrounds are not in line with these goals and would be a detriment to the biodiversity and wildlife corridors that this park could otherwise offer.	Comment Noted	Noted, no edit recommended. As the largest locally-owned park in the state and over 3 times the size of any other County Park, the Park has opportunities to serve multiple interests without creating conflicts. The Framework proposes more than 93% of the Park be focused on conservation and passive recreation with just over 40 acres of the 3500 proposed for new educational and recreation uses. These uses were proposed in areas that are previously logged, away from key environmental features and are focused in the periphery of the park reducing vehicle intrusions.	Noted
David Vliet	I would request that you all extend the period for public comment on the PGHP Draft Master plan. The draft for PGHP just came out this month, and the citizens of Kitsap County need to have more time to weigh in on this important plan. Many of the decisions on this plan will have permanent environmental implications for the county's future. At the least, a SEPA assessment for the entire park area needs to be done to make sure we get this right. I have numerous other concerns with regards to the Draft Master Plan and urge you to defer action until more public meetings can be held on this.	Edit Proposed	Change document name as previously recommended and add a note in the executive summary Site Inventory and Suitability Assessment indicating that the SEPA process was not performed as part of the initial scope of work, and further environmental assessments will still be required for the implementation of projects recommended by the framework	All references to Master Plan were changed to Framework throughout entire document
Patrice Tullai	1. Outreach to the public for the Master Plan process has been limited. The residents of the county have had very little opportunity for meaningful input. The 200-page Draft Master Plan and Appendices came out on March 1; the formal public comment period ends on March 18th. It has taken park planners and consultants more than ten years to draft this plan. Although residents of Kitsap County have had piece-meal input on specific issues over the years, they deserve an adequate period to access, evaluate, and make comment on this master park plan. Now that COVID is receding, there should be community meetings to discuss this plan, before it is officially adopted. 8. The purpose of the Sound to Olympics Trail running through the Park is not clear. The "trail" is considered part of the County's Non-motorized transportation system, and is actually under the purview of the Public Works Department. But if that is the case, it should be designed as an alternative to vehicle use to reduce CO2 emissions. It should be designed to take County residents to where we work or shop. The STO will run through Bainbridge Island and North Kitsap, and will provide little benefit to the central and south ends of the county. And finally, the STO will run through the middle of PGFHP straight up to the town of Port Gamble, owned by and being developed by Rayonier/Olympic Property Group (OPG). 9. According to the Draft Master Plan, consultations with the Port Gamble S'klallam and Suquamish nations have not been completed. When will their input become part of this plan? When will the public be informed about the review of tribal legal counsel, advisors, and scientists on the plan for PGFHP? 10. The Memorandum of Agreement between Kitsap County and OPG appears to create a conflict of interest in the ability of the County to represent the public interest of its citizens and to have adequate public review of this Draft Master Plan if it has already been decided that the Master Plan will be approved by April 30, 2022. It appears that OPG with the payment of $75,000 has already determined major features of this Park.	Edit Proposed	Below is what is in the FAQ. Recommend duplication of similar language here. The STO alignment through the Park was considered from the outset of the acquisition campaign in 2010. It was further memorialized with the North Kitsap String of Pearls Trail Plan in 2011 and the Kitsap County Non-Motorized Facility Plan in 2013. Both documents included expansive public outreach to Kitsap residents, community groups and organizations. Both Plans received nearly unanimous support at their adoptions. Since this time, the STO alignment has been acknowledged in acquisition documents, stewardship plans and feasibility studies. Kitsap has dedicated hundreds of thousands of dollars to the planning, design and eventual construction of the multi-million-dollar public investment.	Completed- added to ES-13 and Chapter 2, Page 43
Jay Zischke	Found the organization of the document difficult to follow and somewhat "disjointed" Appreciate the acknowledgement of the publics' desire to conserve habitat and minimize "development" It is a long term document given the decades of logging still to come. There should be a plan review periodically. If I understood the issue correctly – there are deed transfer conditions which require public access in perpetuity, yet there may be recommended land classification designations (sensitive habitat areas) which in some way violate that requirement. An option to consider might be to restrict/prohibit pets/dogs in such sensitive habitat areas. With the epidemic driven pulse of people getting outside into Parks and natural spaces – there is a risk of compromising habitat value by accommodating too many human visitors. A future effort should be made to consider a target "carrying capacity" to ensure ecological health as well as visitor enjoyment. This should be an objective for all KC Heritage Parks.	Edit Proposed	Recommend adding language that recommends the framework be reevaluated with each phase of proposed projects. No further edits recommended.	Completed- added to ES-1 and ES-9 and Chapter 5, pg 108
John Willett	I feel this survey is weighted heavily to development and not what historically it has been and the way it has been used. Which has been; horse, Walker, biker, hiker friendly. Adding ADU compliant trails. Ride park has been approved by user groups committee. Historically events were staged at the airport. The survey does not capture other alternatives that do not weight heavily to more development of the park than historic or approved uses today.	Comment Noted	Noted, no edit recommended	Noted

Edie Lau	1. Throughout the document, it's stated that harvesting will continue through 2042. It would be helpful for the public to know that harvest isn't a foregone conclusion, because efforts are underway to raise funds to buy timber rights in order to preserve mature trees. I realize that if the trees are harvested as planned, the forest will be replanted, but as I'm sure you're all aware, mature trees sequester much more carbon than young ones. Saving mature trees throughout Kitsap should be a high priority, especially so in parks. I believe I saw a reference in the document to the effort to buy the timber rights, but it is not a prominent reference and easily overlooked. I respectfully suggest adding it to the summary/preamble text on the website. 2. The Draft Master Plan itself is difficult to read, owing to difficulty navigating the four-page layout. I read the executive summary, but when I tried to read some later sections, my computer (which is less than a year old with an M1 chip that is supposed to process quickly) started producing the spinning beach ball of death. Can the final plan be formatted such that it shows one page at a time? I also wonder if it needs to be as lengthy as it is. As a long-time reader of government documents, I suspect there is a lot of repetition. 4. In the preamble text on the website, there's a reference to 8,000 acres acquired from Rayonier and "remaining 3,500" acres. I understand that the 3,500 acres are the park. What are the other 4,500 acres? 5. Lastly, also in the preamble text, I suggest reconsidering the term "pioneers" in the sentence "Pioneers arrived in the 1850s to farm and log the area." Especially because the preceding paragraph references indigenous peoples' presence in the area, a better term might be "white settlers" or "settlers from the East," assuming either of those descriptors is accurate. That same paragraph reads, "A nearby sawmill was founded in 1853, with a historic company town built around the sawmill ..." The company town was not historic at the time. It became so only over time. I suggest deleting the word "historic" or putting it this way: "A sawmill was established in 1853, around which a company town was built — known today as the historic town of Port Gamble."	Edit Proposed	1. Recommend repeating note about ongoing efforts within executive summary 2. Noted, no edit recommended. Recommend considering how the document will be presented online once finalized 4. No edit recommended on document. Recommend editing online content once transferred to County-hosted site 5. Agree with both recommendations, recommend using the term "European settlers"	Completed- added text from the FAQ sheet regarding timber harvest and restoration to ES-2. Also revised the terminology per comment 5 (replaced "Pioneer") in several locations in the document.
Elisa Rogers	1. In the meeting one of the presenters said the park will soon be part of a long-distance bike trail. To accommodate the increase in bike traffic, are there plans to make the roads around the park safer for cyclists? 2. Does anyone know what Rayonier's plans are for logging the parcels of land west of the private residences along Port Gamble Rd? (Which parcels will be harvested, and when?)	Comment Noted	No edits recommended. Recommend including Summary of plans for STO in FAQ and linking to Public Works Site from County-hosted project site	Noted- see FAQ document
Steve Ruggiero	As a long time Kitsap County resident I am a multi day per week user of Port Gamble Forest Heritage Park for walks, trail runs, mountain biking and mushroom picking - it's a jewel in our community and my entire family uses it for these activities. We enjoy it's proximity, peacefulness and the large amount of acreage to enjoy these multi use trails. We're very satisfied with the way that the park is being run, none too thrilled with the scope of the ongoing logging but recognize that as the trade off to keep this asset available to all stakeholders. No matter how crowded a trailhead may appear there is ample opportunity to find solitude or interact with a variety of users plugging in to nature. Any and every day. I noticed a group from Kitsap Environmental Coalition at the Bay View trailhead who were selectively approaching users and handing out talking points that they wanted to promote. With the thousands of volunteer hours, years of study, deliberation and public comment that have been contributed to the Park to get to this stage I was curious what their agenda was and why now. A review of their facebook site and website goals include several leading statements presented as fact that don't balance with my overall experiences here. All projects in this park are subject to Kitsap County review and approval and I find it disingenous to hint at park ecology issues as their handout highlighted and website suggests. Their implication that money made in Kitsap needs to stay in Kitsap suggests it is going elsewhere. It ignores the economic benefit that park users bring to surrounding communities - which are located in Kitsap. Easily their most egregious statement is that mountain biking is dangerous to all users and this park is solely devoted to them. These are multi use trails and there are multiple activities on them daily. I wanted to share my observations and experiences to balance out their narrow point of view. I would like to end with a compliment to all that have gotten the park to this stage and implore you to keep up the good work ensuring that it remains a place of relaxation, recreation, solitude and nature for all users.	Comment Noted	Noted, no edits recommended	Noted
Joseph Lubischer	1. The PGFHP plan's use of multiple terms (Landscape Classification, Land Use Table, Land Use Zone, Land Use Classification, Land Use Sub Classification, and Landscape Sub Classification) is most confusing! Simplification is called for. The plan should use the Landscape Classificationterm as previously defined by Parks and avoid conflicts with existing documents. The use of Land Use Classificationfor park types is not part of the Landscape Classification system (as stated p106) and is better clarified with a more meaningful term such as Park Type Classification. The terms Land Use Sub Classification and Landscape Sub Classification should not be used. 2. Wetland mapping for PGFHP is clearly inadequate. Mapping of wetland buffers is entirely absent. The master plan (p 60) does not address these obvious problems. At the very least, the master plan must acknowledge these deficiencies, as well as the resultant limitations placed on defining landscape classifications and planning land use. 3. The question was raised whether there was adequate public process for the PGFHP master plan. Regardless of Parks' intentions or efforts, it is fair to ask the question "Was the public process meaningful and effective?"	Edit Proposed	1. Simplify language throughout document where it makes sense. Consider defining each term when needed and first introduced in the document, or consider a glossary as part of appendices. 2. Wetland mapping should have a note describing why buffers are not included and reference the same language used to indicate the distance unless otherwise dictated by local or state requirements. 3. Noted, no edits recommended	1. These terms added to a terminology section and terms modified/streamlined throughout document for clarity. 2. Addressed with clarification on pg 62.
	Review of Tribal references in document (David's Comment)	Edit Proposed	Recommend changing any reference of "Native American", "the Tribes" or "Tribes" generically, change to "local Indigenous Tribes". All use of words should be capitalized.	Complete throughout document

Name	Comment	Action	County Response	FBP Edit Notes
Summary and Introduction Sections				

Caroline Perisho	Please consider adding language regarding the significant contribution that the North Kitsap Trails Association (NKTA) has made with years of volunteer hours spent writing the Concept Masterplan "String of Pearls" in 2012 that was adopted by the County. Please also acknowledge the generous and unparalleled contribution that Pope Resources (former owner of the property) made towards PGHFP. Please Complete the STO and make Kitsap County part of a bigger legacy.	Edit Proposed	Acknowledge within history summary	Completed- Integrated into Chpt 2 page 37 and added to ES-2
Kim Greenwood	Introduction and Planning Context, Terminology, Land Characteristics: There was a comment during the March 14th PGFHP stewardship meeting that there was inadequate recognition of the park history, specifically the partnerships involved to save the land. I disagree with that comment. I think the Introduction and Planning Context pages weaves in the history in several sections with plenty of detail without any grandstanding. Relevant documents - There was a comment made at the Parks Advisory Board meeting on March 16th that there wasn't enough explanation of the timber harvest agreement for the public. I think the master plan explains this pretty well in this section.	Edit Proposed	Include summary of history in intro/planning context.	Completed- Integrated into Chpt 2 page 37
Linda Berry-Maraist	•A unique collaborative partnership of extremely diverse interests worked together for an entire decade to create this park. The collaborative spirit of that public-private-community partnership and trust that diverse interests can work through challenges together, is at the heart of this park's existence. This should also mention the Kitsap Forest and Bay process that recommended including another timber rotation to decrease acquisition costs, and to maximize the land preserved for forever. That background and the acquisition process should be included on pg 1. Included new text in History & Acquisition section of ES and report. •The ten-year partnership with Pope Resources/Rayonier, and Pope/Rayonier's willingness to accept a timber deed on ¾ of the park when the County could not afford to buy as much land as they wanted, was remarkable. A timber deed on ¾+ of the park is why we have a vast park and needs to be said clearly up front. Discussions about agreements regarding decommissioning logging roads, replanting and options to purchase more trees need to be stated more clearly and not be hidden so deep in the plan. •Using the 2015 maps AND eliminating the 2015 exemption for restrictions on trail corridors, combined with the new use restrictions in pages 108-115 would restrict mountain bikes, horseback riders, dog walkers and events from using ~ ½ the park (conservation areas)? Is this an error? Tables revised •The conclusions in the plan say our community doesn't support tourism. Pg 78 appendices show that 56% of people said the purpose of the park was both community and tourism use. Is there data to support the conclusion opposing tourism? Reconciled •The plan repeatedly states the park needs funding sources to operate but doesn't work through initial challenges enough to provide any direction or potential solutions. Coming up with well thought out solutions and considering both pros and cons of different actions (especially the risk of not coming up with financial solutions!) is important. •The possibility of grant-funded small guest cabins to provide ongoing revenue for the park didn't appear to be clearly considered. There was a conclusion to not pursue KPFD grant ideas because "there was almost no community support for that intense level of recreational development" (pg 6). But pg 91 shows that of just the people who gave input on the 3 alternatives, 35% preferred more park facilities, 42% preferred less facilities and 22% were in the middle. Appendices pg 30 survey results showed: "When asked to compare user fees for all park visitors to revenue generating facilities at the park, meeting participants were fairly evenly split (48% to 47% preference)." This subject needs more consideration before a decision is made to reject further KPFD funding. Minor revisions to language on Pg 87 •"Active Recreation" needs to be defined. It was one of the nine key goals, but the plan recommends it be limited to a small area of the park (pg 9). Trail use should be clearly allowed and not be mixed up w/ "Active Recreation". Defined in ES-pg 9	Edit Proposed	Include summary of history in intro/planning context. Regarding restrictions on trails, recommend reviewing language throughout for consistency. Define Active recreation as well as other classifications to avoid confusion with other documents. All other comments are noted, with no edits recommended.	Completed- Integrated into report- see red comments next to specific comments to the left.
Linda Berry-Maraist	Pg 1: Executive Summary Introduction should include "Background & Acquisition Process", my suggestion: Pope Resources allowed public access on all of its timberlands and over decades the Port Gamble logging roads and trails built by the community had become very popular with the community. In 2007, Pope Resources/OPG held a community meeting and announced (due to increasing urbanization and distance to mills), long term plans to exit commercial timber operations in Kitsap County. The company asked if there was community interest in working towards a vision of public open space and trails connecting north Kitsap communities Over 500 people showed up at OPG's 2007 community meeting and created a groundswell of grass roots community energy. From the get-go, the land conservation project was rooted in collaborative partnerships between the landowner (Pope Resources/OPG), the community and local government. The groundswell of community support also created a unique and long-lasting collaboration between diverse community members and a wide range of organizations, all with different interests but united around the vision to "Save the land and trails!" Some people were primarily interested in active recreation and others watching birds, but everyone cared about conserving the land for future generations and wanted to be able get outside and enjoy the trails. There was an oft-repeated belief that if we were successful at saving this vast area of land for the public, there would be room for everyone's interests. The North Kitsap Trails Association grew out of the 2007 groundswell of community support and energy about the "String of Pearls" vision of linking our communities by trails and open space. In 2008 and 2009, NKTA obtained National Park Service grant support to create a North Kitsap trail plan and embarked on a multi-year community outreach effort. After 3 years, 27 public meetings and surveys of over 800 people, NKTA crafted the North Kitsap String of Pearls Trail Plan, which was officially adopted into the Kitsap County Comprehensive Plan in 2011. The top priorities from that community process were obtaining access for the Sound to Olympics Trail and saving as much of OPG's Port Gamble land as possible. In 2010, a coalition of community organizations and individuals, with guidance from Great Peninsula Conservancy, created the Kitsap Forest & Bay Project. That unique partnership with Kitsap County, the Port Gamble/S'Klallam and Suquamish Tribes, Pope Resources, Forterra, Great Peninsula Conservancy and 33 community organizations raised over $17,000,000 which led to the acquisition of multiple properties in North Kitsap, including land that is now the Park. At the end of 2017, after a final fundraising push which included 1,200 community members writing checks, 3,435 park acres were owned by Kitsap County. Of the 3,435 acres, Pope Resources carried a timber deed on 2,723 acres or 79% of the acreage. That private-public-community partnership and Pope Resources willingness to carry a timber deed is why we have such a large park. It is also why we have the challenges of commercial timber harvest within a public park. This master plan is a continuation of the significant and collaborative work done by each of those partners and the community.	Edit Proposed	Recommend reviewing with County and Steering Committee for use.	Completed- some of this information was integrated into a new history and acquisition section section in both the ES and report. Text was provided to us by the County (Eric) to include.

Linda Berry-Maraist	The Landscape paragraph 3: •Add: After many years of effort and fundraising, Kitsap County was not able to afford to buy both the land and trees and decided to prioritize long-run land conservation over saving trees. In a series of 2016 and 2017 transactions, Kitsap County acquired 2,723 additional acres, while Pope Resources (now Rayonier) retained the timber rights to make one more harvest over 25 years. Added to ES page 4 •Pg 2: On blocks of land acreage add note that County owns land & trees in 712 acres of shoreline and Ride Park blocks, but in the 2,723 acres of the east and west forest blocks, the County owns the land, but Rayonier has a 25-year timber deed. Incorporated into ES- page 2 Community Preferences: •Pg 6 "…a majority of the public meeting participants indicated a willingness to pay dedicated taxes and fees rather than rely heavily on attracting tourists." Funding: this plan repeatedly discusses the risk of the park if adequate and reliable funding isn't available (pg 1 and elsewhere) but no clear proposal is made for how to fund the park. Evaluation of economic development issues and affordability do not seem to have considered the possibility of grant funded visitor facilities like small cabins that could produce long term revenue for the park. Pg 5 & 77 Economic Development: Conclusion that there is virtually no benefit from tourism is surprising. The statement that 1,000 parties staying overnight only generate $75,000 in local revenue and $8,500 in local tax revenue doesn't mesh with 2015 study estimating that Kitsap County tourism resulted in $30,100,000 in state and local tax receipts. Why are the tourism revenue estimates in this report so much lower than the 2015 study and state and national studies on tourism revenues? "Active Recreation" is not defined and is treated very inconsistently Definition provided in report and inconsistencies reconciled •New Venues for Active Recreation was shown as one of 9 key goals after the initial public meetings. (Pg 9, 50, 51). In public meeting #1 the top priorities were hiking, biking, disc-golf, mountain biking and walking. (pg 56) •But the plan concludes that only a small portion of this park is suitable for active recreational use other than trails (pg 6) and states active recreation will be limited to a small area of the park. Since all of the grants and fundraising for this park emphasized trail use, "active recreation" should be clearly defined as not being trails or trail events. The Master Plan should be clear that trail use is a priorit Definition of Active Recreation Use provided in report and inconsistencies reconciled so that	Edit Proposed	Regarding added language to The Landscape, review with County and Steering Committee for edit. Community Preferences: Noted comment on Page 6, no edits recommended. Recommend description of economic evaluation process in document, could be appendix, no edits to estimates are recommended. Other comments noted, no edits recommended	Completed- Integrated into report- see red comments next to specific comments to the left.
Linda Berry-Maraist	2015 Map & Land Use Recommendations and restrictions: (pg 10) Why are far more extensive restrictions recommended for this park than other large County parks? Pg 27: Table of contents should be at beginning of document Relocated TOC There are conflicting statements within the Plan on how the community feels about tourism. The wording in the plan concludes that the community doesn't support tourism but the questionnaire in the appendices doesn't show that. Reconciled •In the appendices pg 78, the majority (56%) of respondents said the primary purpose of the park was both local use and tourism. Appendices pg 78 question 12: What is the primary purpose of the park? Local UseTourismBoth local use and Tourism 164 (42%)6 (2%)218 (56%) •Pg 6 concludes "the ambitious development plans included in the KPFD grans were not included as alternatives as there was almost no community support for that intense level of recreation development. •Pg 84: "There are conflicting opinions about encouraging tourism as well as impacts of certain uses on the resource. " The public has concerns regarding the economic, ecological and social impacts of tourism…" Where is the data for our community objecting to tourism? Park Recommendations pg 11 & 118-121. There is extensive discussion on decommissioning logging roads but the majority of the park has a 25-year timber deed. Logging roads can't be decommissioned while logging is ongoing. Maps (pg 12,13) should show 3 future trailhead parking locations per NK MOU w/ Rayonier. Pg 14 parking: 12 parking stalls at Stottelmeyer seems inadequate. Where will trail event and overflow parking be? (Stottelmeyer 30/60 had nearly 500 participants some years) Pg 17: Since the County harvests trees in parks to cover the costs of the County forester, hiring a 2nd forester would increase cutting trees w/in parks. Is the trade-off worth it? Map pg 18 & 171 shows the north portion of the Ride Park as having the highest conservation priority. What was the data that generated the conclusions shown in this map? Pg 31: Kitsap County was the lead agency and worked directly w/ Forterra on fundraising. Included in ES pg 33 The collaborative partnership between the landowner, community, County and Tribes extended for over a decade from the 2007 start. For ten years Pope Resources/OPG put off harvesting trees and gave this community the chance to obtain one of the largest County parks anywhere, and for ten years the County, government leaders, community members and multiple organizations kept working at acquiring the land. And when it was clear that time, money and grant sources were running out, there were very hard discussions and hard choices. In 2013 the Kitsap Forest and Bay community group came to a consensus to focus on future generations and prioritize conserving a larger area of land instead of protecting both land and trees. A statement was vetted and unanimously agreed to by KFB community members including Kitsap Audubon, North Kitsap Trails Association, Ride Kitsap (mountain biking group) and the Great Peninsula Conservancy, it was then forwarded to the Kitsap Forest and Bay leadership. It stated: "In order to further the goal of preserving the 7,000 acres of the Kitsap Forest and Bay Project for the public forever, we encourage the KFBP Principals to explore the idea of allowing Pope Resources (or its successor) an additional timber harvest rotation to decrease land acquisition costs, while replanting a mix of native species and transitioning to a sustainably managed forest."	Edit Proposed	Recommend moving Table of Contents to front of Executive Summary due to size of section. If final pdf can also be labelled by section for navigation, this could help. Recommend clarifying that recommendations to decommission logging roads would be after their use for timber harvesting are no longer needed. Recommend including in document a description of methodology used for mapping, could be in appendices. County agrees with revision on pg. 31. All other comments noted, no further edits recommended.	Relocated TOC Field reconn methodology is in Appendices 3-4 and 3-5. Comment on decommissioned roads clarified on pg 122 Completed- Integrated into report- see red comments next to specific comments to the left.

Doug Maraist	Overall, I really like the built-environment development planning at the north & south end in the masterplan, which will leave the vast majority of the park as public open-space for a more natural forest to grow after Rayonier's final tree harvest. Please address my follow questions/comments: 1. EXECUTIVE SUMMARY: Provide additional historic wording/context to acknowledge the incredible contribution that the former landowner (Pope Resources) played by giving the County & their stakeholders +/- 30 time-extensions while holding off tree harvest for more than 10 years. This was THE main reason along with the perseverance of the community partners, that we were able to conserve the final amount of land in the park, but the Master plan seem silent on this very important issue! 2. EXECUTIVE SUMMARY: Provide additional historic wording/context to acknowledge contribution that the North Kitsap Trails Association (NKTA), funded with community donations, National Park Service grant and thousands of volunteer hours spent creating the Concept Masterplan from 2009-2011. NKTA hosted several public planning meetings with dozens of community user groups & citizens along with almost 3-dozen outreach events with public/private local organization and governmental committees. Kitsap County adopted this community-lead planning document called the "String of Pearls" into their Comprehensive Plan in 2011. Once again, this new Masterplan is silent on this very important community-lead detail as to why this park is as large as it is today. 3. EXECUTIVE SUMMARY: Provide additional historic wording/context to acknowledge that Pope/Rayonier still carries a timber deed on almost 80% of the 3,500 acres. This was another main reason that we were able to conserve the final amount of land in the park, but the Master plan seem silent on this very important issue! 4. EXECUTIVE SUMMARY: Provide additional wording/context to acknowledge that according to this public meeting process, 56% of the respondents stated that their primary purpose of the park was for local and tourism use (Appendices pg. 78 question 12). It is unclear why conflicting information in this Masterplan (pg. 6 & 84) that the public "...has concerns regarding the economic, ecological and social impacts of tourism...". It seems that the majority of respondents want "eco-tourism" in Kitsap, but the ambiguous wording elsewhere in the Masterplan alludes to something else. It is very important that this Park play a role in making Kitsap a more sustainable place for the next generation to live and work locally, in which eco-tourism is another option for local employment. 5. EXECUTIVE SUMMARY: Provide additional wording/context to acknowledge on ES-18 LAND CONSERVATION & RESTORATION, that the public understands that the "standard" forestry practices are within the purchase agreement(s) and that the proposed uses of the land for education or tree purchases proposes changes to the harvest of the trees, the forestry practices agreement will need to be revised. 6. INTRODUCTION: Provide a specific definition of what "Active Recreation" means in this Masterplan. History in various Kitsap Parks has proven in past & current events that the "stewards" will create their own definition of that term and outlaw various types of use, as what happened at the Hansville Greenway Park in 2011 (outlawing local high school cross-county running events) and is currently happening at North Kitsap Heritage Park trying to outlaw the Sound to Olympics trail. Most of these PUBLIC spaces were purchased with recreation money. 7. INTRODUCTION: Provide a specific definition of what "Community Resiliency" means in this Masterplan, for it is listed as the "purpose" of the park and it is used redundantly in the document. It is unclear as to how this term is our "purpose". The community's purpose was to buy as much land as possible. This term is very ambiguous and it means something different to the various user groups.	Edit Proposed	1-3: Include summary of history 4: Noted, no edit recommended 5: Noted, no edit recommended (this will be covered by COHP) 6: Define as previously stated 7: Noted, no edit recommended as there is only one mention of this	Completed 1-3- some of this information was integrated into a new history and acquisition section section in both the ES and report. Text was provided to us by the County (Eric) to include. Active Recreation defined in report.

Name	Comment	Action	County Response	FBP Edit Notes
Planning Context Section				
Linda Berry-Maraist	Pg 35 History-refer to comments re Background and Acquisition. Kitsap County did not own the Divide ROW in 2017 but GPC purchased the Grover's Creek portion of the Divide much earlier. Pg 37: last paragraph on FPA is good. This info should be summarized at the beginning of the document so that the public understand the agreements are for standard re-planting practice. Pg 38: Kitsap County adopted the North Kitsap String of Pearls Trail Plan into the County Comprehensive Plan in 2011. The top priorities of that plan were the STO and Port Gamble open space/trails. Pg 39: I attended every public meeting and don't believe this statement is accurate: "… the community strongly expressed preference that most of the park be managed as an environmental versus recreational resource," Where is that data? Pg 41: The NKTA String of Pearls Trail plan was adopted by the County in 2011. In 2013 the County adopted the non-motorized facilities plan and included the STO and NKTA trail plan in the non-motorized plan. Pg 42: road to Ride Park will allow access through Babcock farm (future, not past tense). Road will be built in 2023.	Edit Proposed	p.35: Recommend review of history with County and Steering Committee p.37: Verify and consider note on page ES-2. (Verify that this is accurate, as there's been another mention of replanting options, clarify if that's the case) p.38 and p.41: Reference document once where applicable p.39: Noted, no edit recommended p.42: correct "through" Babcock farm, otherwise statement appears fine.	Completed- Changed history section in ES and Chpt 2 page 37 Added paragraph to ES-2 Added paragraph to page 40 and 41
Jay Zischke	Pg 37 - Relevant documents, plan & policies Last paragraph pg 37 recommends adding the PGFHP & STO trail plan into the State's recreational plan (to be updated in 2022). Recommend adding in other Kitsap County Heritage Parks at that time as well. Pg 38 - County land use and zoning tables - the last two sentences of this paragraph should be reviewed and clarified. This may be referencing the issue of land use designation which prohibits public use (inconsistent with deeds?) Pg 39 - Restrictions per third party agreement - the 4th bullet here references obligations regarding the western block – HCP and annual monitoring - I did not find a plan for meeting this obligation in the master plan?	Comment Noted	All comments noted, no edits recommended for this specific document	Completed- Pg 38 (now 40 clarifications)

Name	Comment	Action	County Response	FBP Edit Notes
Master Planning Process Section				
Doug Maraist	In Part 3 - MASTER PLANNING PROCESS (pg 91), you state "A majority…" of the questionnaire responses preferred the least developed Alternate 'A" (at 42% of responses), that is actually not accurate. Majority of the respondents preferred Alternative "B & C" (at 58%). Please use the correct percentages at: Alternative A @ 42%, Alternative B @ 35% & Alternative C @ 23% in lieu of that stated. I do like how the Masterplan has now created a phased development approach for the "built-environment" of the park's planning.	Edit Proposed	Change "majority"	Completed- Chpt 3-pg 93

Doug Maraist	In Part 3 - MASTER PLANNING PROCESS – Review (pg 91), you state "There was little support for a disc golf course at the north end so that was eliminated from the site plan." This is an unfair statement, for never were the rules of the Masterplan's public meeting ever stated that if you did NOT respond to the questionnaire, your voice would NOT be heard! Quite the contrary, at the Masterplan's 1st public meeting, the Disc Golf community was well in attendance and was very vocal at their desire to be inclusive in the Park's user groups. Also, in 2011-2012 during the Conceptual Masterplan public meetings, the Disc Golf community was well represented as a user group. It seems rather unfair that in the 3,500-acre Park, a half-dozen acres could not be designated in the drawings for this user group. I urge you NOT to eliminate them from the Masterplan design drawings because most of this "youth-oriented" user group were back in school and could not attend the later public meeting past Summer 2021.	Comment Noted	Noted, no edits recommended	Noted
Linda Berry-Maraist	Pg 79: Many people walk dogs in the park. Access: add future parking areas. Pg 85: Community priorities. Data should be provided as to the community opposition to active recreation and KPFD grant alternatives.	Comment Noted	Noted, no edits recommended	Noted
Jay Zischke	Pg 60 - Critical Aquifer Recharge Areas (CARA's) - both the map and text describe a significant percent of PGFHP categorized as CARA 2. Given the acreage of this, and other Heritage Parks in Kitsap County I wonder if the Public Utility District was consulted regarding the benefits of long term protection of these recharge areas?	Comment Noted	Noted, no edits recommended	Noted

Name	Comment	Action	County Response	FBP Edit Notes
Master Plan Overview Section				
Reed Blanchard	1. We need more time to review. This is a really large document and I only found the link to it two weeks ago just before the public meeting on 3/7. An additional two to four weeks would be sufficicient. 2. For my initial look, it appears that the SEPA process may be what I understand to be 'piece meal'. I do utility work as a profession, and I am required to complete the SEPA process with an understanding that all aspects of the project will be incorporated at once - so that the effect of the change is fully captured. I don't think the SEPA process for the Park is correct. This is a big concern for me.	Comment Noted	Noted, no edits recommended. As a guidance document, the Framework does not direct future action nor does it act as a step in any approval process, permit, policy or otherwise. Future efforts towards the recreational and education components for the Framework will require planning level SEPA review once incorporated in the Comprehensive Plan, Parks Recreation and Open Space plan or similar document. The Park projects that predated the beginning of Framework development had previously received planning-level SEPA review. The Mountain Biking Ride Park and Stottlemeyer Trailhead are allowed uses in the Parks zone and their potential impacts (at a planning level) were determined when they received this zoning. The Sound to Olympics Trail (STO) was considered with the adoption of the North Kitsap String of Pearls Trail Plan in 2011 and the Non-Motorized Facility Plan in 2013. Again, these impacts were assessed at a planning level. Additional project-level SEPA review is required when project permits are submitted. This level of review covers specific traffic and other impacts based on known trip generation and other metrics. Such permits are currently in review for the Mountain Biking Ride Park and Stottlemeyer Trailhead and will be required for construction of the STO segments in the future.	Noted
E. Rogers	Hello! I live on Port Gamble Rd NE. My property borders the strip of Rayonier land along the southeastern part of the park. Would you be able to tell me what the plan is for that Rayonier land over the coming years/decades? ANYTHING you might know or any insights you can share would be much appreciated. I asked this question twice during last week's public meeting #4 but nobody addressed it. Please reply -- I'd be very grateful for any information you might be able to offer! Thank you so much!	Comment Noted	Noted, no edits recommended.	Noted

Marion Allen	I am 65 and have lived in Kitsap County for almost 35 years, where my daughter attended public school then went on to graduate from UW. I was born in Oregon and have also lived for periods of time in Idaho and in Leavenworth, Washington. I am a microbiologist, but wildlife and the outdoors have been my passion. My first backpack on the pacific crest trail was at the age of 16. I am happy to now call Poulsbo my home. I have been hiking in the Pt.Gamble trails for almost 10 years. Currently, I am there at least twice a week. I have probably been on a good many of the trails and am so thankful for them. I have been following and participated in some of the community forums for the comprehensive plan. I , and many many others, feel that saving this precious area for wildlife and wildlife habitat, as well as having a place for those of us that live in Kitsap county to go to be out in the forest should be the primary goal. To be clear, I have seen many "multi use plans" in my life. I know the Rayonier company has eyes on making big dollars out of its investment in Port Gamble and the forest, and this is where I say STOP! Here are the points I would like you to consider: 1 Paving the part of the trail for STO handicap access- First, I wonder if anyone in a wheelchair has actually assessed the trail for ease of use. I have hiked that part of the trail and seen young, strong bikers huffing and puffing their way up. I can't imagine someone in a wheelchair doing it. There is also the point that paving a trail is one of the worst things to do for wildlife and water flow. After about the first mile of the beginning, the trail becomes a logging road, which seems like it would be fine for a wheelchair. Please, reconsider the paving of trails. 2 Glamping/camping!? Really!??? Who is that going to benefit? I understand there is to be a big hotel built in Port Gamble. This glamping idea is only an attraction for Rayonier to lure people to their business. I feel like this is only asking for trouble. Has anyone considered the big possibility of anyone Glamping starting a nice forest fire? The area has already been shut down the last 2 or 3 summers because of fire danger and this isn't going to get any better. 3 I realize most of the higher development area is in the end near Port Gamble. This area is already quite busy, especially in the spring/summer/fall time of year. With increased use due to all of this recreation activity, current infrastructure will not support this. Will this cost go to the county or will Rayonier be asked to take on the responsibility? 4 It is clear that the alternate plan of less development is a much better plan. I feel like the master plan partnership listened much harder to what Rayonier preferred than to what the people of kitsap county could and would actually support.	Comment Noted	Noted, no edits recommended. The Park was acquired for all residents and visitors to Kitsap. While not all of the Park will be accessible to all people, the Framework includes opportunities for those differently-abled or those with physical limitations. Soft-surfaces (e.g. gravel and dirt) create impediments for wheelchairs (powered or manual), canes, walkers and other mobility aids can struggle with these surfaces especially it times of rainfall common in the Pacific Northwest. The paved surface allows for a safe and stable means for all visitors to experience the beauty of portions of the Park. Smaller parking lots and trail heads are proposed around the periphery of the Park allow for access to different Park sections for use by multiple audiences with differing capabilities.	Noted
Carol Price	I have been walking in this park 2-3 times a week for some years now. My concern is that this park will become a huge urban thoroughfare what with the STO and the developments in the north end; the company owned town of Pt. Gamble clearly plans on taking advantage. My general comment is "less development in Pt Gamble Park is better". Please! At the end of the survey, I chose not to answer #16 about planting trees and plants originally native to the park, or introducing other plants that may do better as the climate changes. Well, I don't have the expertise to answer such a question. Things are so complicated now. I assume that you and the stewards will be consulting with Arno Bergstrom and those that have the background to make such decisions. The trails system seems to be dedicated primarily for the mountain biking crowd. Why? Aren't the majority of users walking? On the weekends it already gets congested with bikers. Right now during this rainy season, dirt trails like Ewok are being reduced to mud and puddles because of tire traffic. After development, between the STO, the many logging roads, and the Ride Park, bikes will be everywhere. Where will the wildlife find sanctuary? Will there be any wildlife left? Why not have most of the dirt paths be dedicated to walking? Quiet places, meditative spaces are so rare anymore..... Walking through deep forest and in nature is healing--in Japanese, shinrin-yoku, or forest bathing.	Comment Noted	Noted, no edits recommended	Noted
John Willett	David, I did take those surveys at the meetings. I didn't think, from what I knew (I have a lot on my plate right now), that Alternatives were ready to be presented. The Alternatives 1,2 and 3 that now are being presented seem top heavy with Development? Parking for all users groups will be a big deal, especially for horse trailers. We need to figure out water access for small craft. The Park's high banks are a problem. This might be in OPG's court with the old Mill Site? Right now, OPG has no access in their plans that I can see? Also, having a big area in the Park for events (the old airfield owned by OPG was a great place) should be a priority. When the Plan refers to Event Center, what does that mean? I know you are working hard trying to figure out a Plan for the Park gleaned from a very diverse group of Users with complicated agendas. Ain't easy! My biggest concern, as most know, is fire and rescue. Not only will there be lots of need in the Park, but the new town will be underserved and over the time limits for response both in the town and in the Park. I have not heard that my push for a new fire hall in Port Gamble has gotten any traction, yet? I have talked with the Fire Chief in the district (Gillard) and he is supportive of a new fire hall in PG. I really believe that the Park plan should address this critical issue of lack of timely service and adequate infrastructure for fire and rescue on that Port Gamble Peninsula. By the way; I have asked the Commissioners office to start looking for a Planning Company to complete the STO North Plan from Kingston to the Park. F/B should take the lead, in my view	Comment Noted	Noted, no edits recommened other than consider clarifying on page 120 that class 4 trails will be used for maintenance and emergency vehicle access.	Completed- Chpt 5- pg 123
Kim Greenwood	Master Planning Process, Master Plan overview: I am concerned about any potential for spread of active recreation. A comment at the March 14th stewardship meeting asked that active recreation be defined. I agree with that. I think of active recreation as anything that requires some sort of development, such as specialized trails (like in the ride park and STO), amphitheater, camping, forest tree top course, etc - essentially anything that's not an old logging road or a footpath (that obviously is used by bikes and horses as well as pedestrians). Therefore, promises that development will be limited to the area near the ride park are important to me. Maybe some restrictive, limiting boundaries need to be put into place now?	Edit Proposed	Define as previously stated	Completed- ES-9 Active Use Recreation more clearly defined

Name	Comment	Action	County Response	FBP Edit Notes
Park Recommendations Section				

John Williams	I didn't see any discussion of the benefits of Class 1 and Class 2 trails. As a matter of fact, I didn't see any cohesive discussion of the pros and cons leading to the draft plans for trails, to the placement of trails, or to the exclusion of types 1 and 2. I think that a summary of pros and cons for these things would be helpful in the plan. I think that the following ought to be reflected in the plan and should lead to plans for more Class 1 or 2 trails: Pedestrians typically walk much shorter distances than are covered by bicyclists or horse riders. Therefore, when considering trail loops, it is important that there be shortcuts for pedestrians so that they can access the largest portion of the park without unrealistic walking distances. Pedestrians can also tolerate less improved trails than are required for bicycles and horses. The trail treads can be generally unimproved with light forest duff and even fallen logs crossing them. For me and many others, these don't detract from the viability of the trail, rather they help keep my foot-eye coordination in good practice and the softer tread is easier on my hips and knees. But such trails are not recommended for bicycle or horses. For example, there is a primitive trail covered by forest duff that I have walked many times without difficulty, but one day I saw that a horse had been there and its hooves had punched holes in the duff and even broken through some of the rotting logs that were on the trail, something that was probably dangerous for the horse. Furthermore, these trails are far less expensive to build and maintain than Class 3 or greater trails. So with very little impact on the overall budget, they can be designed to allow pedestrian shortcuts and also access to areas whose ecosystems might suffer from the higher level of traffic seen by Class 3 or 4 trails (e.g. the pedestrian trails to the Beaver ponds). One other consideration: I haven't seen any local, scientific data to support this, but my experience and conversations with other trail users leads me to believe that pedestrians and educational groups (rather than horse or bike riders) are more likely to be traveling slowly with the intention of examining the flora and fauna along the trail. And they are more likely to be interested in visiting unique environments, such as seasonal wetlands, and tolerant of seasonally accessible trails. The discontinued Yellow Jacket trail is an example of a trail which provided a useful shortcut for pedestrians as well as access to the kind of seasonal wetland and open area that is otherwise not accessible/visible in the park.	Edit Proposed	Include definitions and descriptions for each classification of trail in the Trails section, and consider supporting graphic. Consider language added to note that user accessibility is considered in trail planning. The Park was acquired for all residents and visitors to Kitsap. While not all of the Park will be accessible to all people, the Framework includes opportunities for those differently-abled or those with physical limitations. Soft-surfaces (e.g. gravel and dirt) create impediments for wheelchairs (powered or manual), canes, walkers and other mobility aids can struggle with these surfaces especially it times of rainfall common in the Pacific Northwest. The paved surface allows for a safe and stable means for all visitors to experience the beauty of portions of the Park. Smaller parking lots and trail heads are proposed around the periphery of the Park allow for access to different Park sections for use by multiple audiences with differing capabilities.	Definitions of each trail class are provided on page 118 with extensive detail for each in the Appendix 5-2. More Class 1 and 2 trails was not the focus of the Stewardship Committee or Steering Committee due to concern over quanitiy of trails already and utilizing and connecting what existed. A trail map was added that includes user types, showing specifically hiker/horse only trails. Language added as suggested to page 120 and ES-13
Gwenn Thomas	The park has already turned into BMX Bike facility. Lots of vegetation has been removed, trails changed for Bike cycles with banked turns that make it nearly possible to hike. I hiked 100 miles in Jan 2022 in the Park and only saw one bird. The bikes scare the animals away. We have adjacent property to the park and we have 3 bucks and 5 does now since the logging and then bike development. The animals have left the park and are changing the our property and have eaten every fruit tree and blueberry bush. We have been here 30 years, this started 2 years ago. The Port Gamble Park propery was bought to preserve the forest and have a place for animals and tranquility. This is not a private bike park. Further any plans for camping are out of character for a county park. Any camping will open it up to homeless encampment. The North End has almost no Sheriff presence, lots of thefts, car thefts, already to have homeless camps. Definite NO to camping at the park. Kitsap Memorial State park is 2 miles away and has a camp ground that is almost always empty Preserve Our Park, the trails and the tranquility. To many bikes as already with over 100 cars every weekend.This is Not a destination bicycle park.	Comment Noted	Noted, no edits recommended	Noted

Colleen Burke	Hello I am deeply concerned about the proposed developments to Port Gamble Heritage Park. This park has been a refuge for me and my dog, especially during covid. It looks like the new developments will greatly favor mountain bikers at the expense of horseback riders and walkers. The great thing about this park is that it is for all different types. To give large portions exclusively for mountain bikers means could effect wildlife and endanger pedestrians. I feel there needs to be more input from the public on how this park is going to be developed and how the county is going to accommodate all these different aspects.	Comment Noted	Noted, no edits recommended. Recommend explaining STO and Ride Park approval with FAQ. The acquisition of the 3500-acre Port Gamble Forest Heritage Park (PGFHP) required years of dedication from multiple different community groups and interests. This included conservationists, hikers, bike and horseback riders and walkers. Each saw a wonderful opportunity for the community as a whole, but also for their specific interests. From the outset of the acquisition campaign in 2010, the Parks future showed opportunities for each interest to have a presence in the Park. This included a Mountain Bike Ride Park in the NW corner, a regional, paved, shared-use path (Sound to Olympics Trail) through the Park and trailheads to improve parking and access to the many areas including Stottlemeyer Road. All grant applications, agency negotiations, advocacy from local and state elected officials included the messaging of these specific opportunities if our acquisition was successful. Kitsap is dedicated to meeting these commitments to acknowledge the years of efforts of so many to make the Park possible. The STO alignment through the Park was considered from the outset of the acquisition campaign in 2010. It was further memorialized with the North Kitsap String of Pearls Trail Plan in 2011 and the Kitsap County Non-Motorized Facility Plan in 2013. Both documents included expansive public outreach to Kitsap residents, community groups and organizations. Both Plans received nearly unanimous support at their adoptions. Since this time, the STO alignment has been acknowledged in acquisition documents, stewardship plans and feasibility studies. Kitsap has dedicated hundreds of thousands of dollars to the planning, design and eventual construction of the multi-million-dollar public investment.	Noted
Judy Willott	I think there are some definition problems causing some concern. For example on page 108, it seems that horses (livestock) and pets(dog walkers) are prohibited in the conservation areas. Since there are trails allowed through that area, I can only assume that there is a definition problem with the wording, - livestock and pets. There may be other inadvertent conflicts in the uses allowed lists.	Comment Noted	Note for future trail and signage planning. Confirm consistency with restrictions. No edits recommended otherwise.	Completed- these inconsistencies have been resolved- on pg 110 and the land use matrix pgs 112-117.
Debbie Griffin	It is rewarding to see the culmination of years of work and visioning by multiple organizations and individuals come together in this draft master plan. I was surprised to see the plan for 50 to 100 tent spaces proposed within the plan. I am not in favor of camping within the park except for the Bayview area to support the string of pearls water trail. I would be curious to see how the definition of 'active recreation" is being used in this document.	Comment Noted	Noted, no edits recommended other than removal of campground at shoreline.	Completed- shoreline camping removed per other comments and consultation with local Tribes. Deletion of text on pg 142 (old draft) and related tables, cost estimate and plans.
Deborah Weinmann	Thank you for adding two Class 2 trails on the Proposed Trails Classifications Map. Based on the map, 0.2 miles of the Class 2 trail type have been added for the Beaver Pond Pedestrian Only (No pets) Trail and 0.4 miles for Ankle Biter (Pedestrian Only?). Doing the math (0.0 + 0.6)/45=0.01. The total milage for Class 1 (0 miles) and Class 2 (0.6 miles) represents 1% of all the proposed trail miles. On p. 78 of the Appendices Question 11, "11. Potential user conflicts on trails can best be avoided by: (Choose one)", the most popular answer was "Designating trails as single use trails". As such, I feel the survey results are not reflected in the Proposed Trail Classifications map, particularly for passive users. You might be surprised to know I mountain bike in the park. Yet, I see that far more trails will be biker only when considering the ride park area, the Ranger corridor, as well as trails such as Derailer, Bobsled, Downhell, and others throughout the park which from a practical standpoint would not be safe for multi-use. For this reason, I would encourage a democratic process within the PGFHP Stewardship trails sub-committee when determining final trail usage. I support both single-use and multi-use trails with usage being decided by an inclusive process which includes representation from all user groups and, most importantly, a focus on equity across user groups. Let's work together and look at the park experience from different user perspectives and then make good decisions reflecting fairness. Additionally, impacts to the environment and wildlife also deserve consideration (for example, the health of Port Gamble Bay). I do hope to get more involved in trail use discussions with the aim of harmony versus conflict.	Comment Noted	Noted for future trail and sigange planning, no edits recommended	Noted

Andy Mangan	Please don't build a paved path through the spine of the park.	Comment Noted	Noted, no edits recommended. Recommend explaining STO and Ride Park approval with FAQ. The STO alignment through the Park was considered from the outset of the acquisition campaign in 2010. It was further memorialized with the North Kitsap String of Pearls Trail Plan in 2011 and the Kitsap County Non-Motorized Facility Plan in 2013. Both documents included expansive public outreach to Kitsap residents, community groups and organizations. Both Plans received nearly unanimous support at their adoptions. Since this time, the STO alignment has been acknowledged in acquisition documents, stewardship plans and feasibility studies. Kitsap has dedicated hundreds of thousands of dollars to the planning, design and eventual construction of the multi-million-dollar public investment.	Noted
Julia Smith	I am hearing that Kitsap county parks are planning on expanding the Port gamble trails to include camping and yurts? I have been walking those trails twice a week for years and don't look forward to them being ruined by development. They don't even own the parking lot at Stottie and Kitsap county parks don't even have enough money to maintain the parks they have. Where is the money coming from? This started out with volunteers and now it's getting too overdeveloped if the master plan is followed.	Comment Noted	Noted, no edits recommended	Noted
Doug Lyons	I believe that we should periodically log alternate portions of the land in order not only fund the upkeep of that property but all the other parks we have.	Comment Noted	Noted, no edits recommended	Noted
Carol Price	This park provides abundant space and trails for walkers and nature admirers, and it is appreciated. PGF park stewards, all volunteers, are doing a commendable job maintaining the trails and parkland. Over the years I have seen barred owls, eagles, hawks, deer tracks, ruffed grouse, woodpeckers, frogs, chipmunks, and vistas of the Olympics and Cascade Mountains. Last year my brother spotted a cougar in the Uplands area. PGFHP has so much potential. There will be active clear cutting for the next 20+ years. Will the mature forest around the Springs area off 1100 be clear cut by Rayonier? Even with buffers around the streams and springs, clear cutting in this fragile area would be a travesty. The springs and beaver ponds area are all within one of the areas where the County owns the tree rights – this means Rayonier does not own these timber rights and will not harvest. Trails are multi-use and this is becoming a real problem. A survey by PGF planners found that the majority of users were on foot, and yet mountain bikers have access to all of the roads and dirt trails, with the exception of Tessa's and part of Beaver Pond. The 170 acre Ride Park, plus five other trails are all exclusively for bikers. And now we hear that e-bikes are going to be allowed. This 3,500 acre park is becoming a mountain biking mecca, crowding out the rest of us. If 60% of users are on foot or horseback, then 60% of the trails need to be exclusively for feet, paws, and hooves. Trails like Secret Squirrel, Springs, Beaver Pond, ET, Ewok, Wild West, Downhell, Ankle Biter, and others deserve to be tire free. The new signage on Ranger and Hood Trails are not in keeping with the usual low key county/state park signs —they are "in your face". Why is there a gate at the top of Ranger Trail? The gate and signs at the Ranger Corridor are in place for safety. Given the extreme nature of these trails it is important that users recognize them as 'different' from the rest of the trail system and treat them with caution. These physical barriers and signs help do to this. The planning process for PGF has been opaque for years. The Master Planning Public Meetings and the survey have allowed for very limited input from residents.	Comment Noted	Noted, no edits recommended. Recommend clarifying timber deeds and efforts to procure timber rights in FAQ. In acquiring large portions of the park, Kitsap County was limited in funding and only acquired the land to protect it from future development. The timber, more than 60% of the overall's property's value, was left with Rayonier to harvest one last time. They must conclude these harvests by 2042. As areas are harvested, Kitsap County takes full ownership and can begin restoration for natural mature forest. This does not apply to the Shoreline Block or the Ride Park which the County owns both land and timber. The Framework proposes to restore the vast majority of the park (93.3%) to long-term, natural, mature forests. The Framework proposes continued efforts to acquire timber stands from Rayonier between now and the conclusion of their timber rights (2042). Kitsap, conservation groups and community partners are currently working to raise money to preserve several key tree stands around wetlands and streams, the Sound to Olympics Trail alignment and other mature areas. This acquisition will require a combination of state and local funding as well as private fundraising to make it a reality. Many of the timbers stands in the Park need management to ensure their long-term health. Rayonier planted and managed many stands for commercial harvest. This growing strategy often plants trees close together, providing for little understory and limited wildlife habitat benefit. To ensure the long-term viability of these stands and protect them from disease, some selective harvesting is necessary over time. These harvests provide space for trees to grow fully and he expansion of ground vegetation. Such environmentally-sensitive thinnings are directed by the Kitsap County Forest Stewardship Plan which has been used successfully countywide.	Noted
Bill Agnew	The Sound to Olympics Trail (STO) and other park infrastructure will bring in many more users, especially bikers, lending weight to relegating dirt trails to feet, paws, and hooves. With the increased traffic on the STO and the Ride Park, won't there be safety issues? This occurred in Seattle when the Burke Gillman and Green Lake Trails were built; they had to paint arrows on the asphalt directing traffic flow. The STO will impact the wild plants and animals, increasing temperatures, storm water runoff, and interrupting wildlife corridors. There are watershed concerns here also: culverts under logging roads that no longer have water flowing through; standing water in the huge clear cut Uplands area; lack of protection for the fragile springs off of 1100. Saving these 3,500 acres as a park is admirable. However, exponentially increasing human recreation and I understand that today is the last day for comment on the PGFHP master plan. I'll be brief. I am a hiker but I have friends who are mountain bikers and friends who are riders. I have just recently become somewhat educated on what the master plan entails. I would say that this is a case where less is more. I hope you will allow more time for people to review the plan and comment.	Comment Noted	Noted, no edits recommended	Noted

Deborah Weinmann	I had the opportunity to observe the Beaver Pond area for several months (April-June) as part of a Western Washington University Natural History class project. I am attaching a map showing the Beaver Pond pedestrian only trail because it is not shown on the trail map provided on the PGFHP planning committee website. I have indicated on the attached map the main Beaver Pond pedestrian trail as Class 2 and the spur trail as Class 1, so you would know which parts of the trail I am referring to. I believe the Beaver Pond pedestrian trail should be designated Class 2 and the spur trail Class 1, possibly decommissioning the spur trail. Having been a user of the land for 15+ years, there was a time when most of the trails, excluding the logging roads, were Class 1 or 2 trails. Obviously, those days are gone. However, the Beaver Pond pedestrian trail is one of the few trails, possibly the only one, where a variety of beautiful native wildflowers still bloom along the pathway edges. Particularly lovely is the fragrant fringecup (Tellima grandiflora) in the spring. Because trails which provide simple pleasures have become less common, they are highly valued, especially by observant walkers. The entire Beaver Pond pedestrian trail measures approximately 0.2 miles. The delightful trail represents a very small segment of the entire trail system. As such, a Class 2 designation would have very little impact on other trail users. In contrast, widening this treasured pathway to a Class 3 trail would decimate many of the native flora growing along the edges. Subsequently, the sense of place experienced by long-time users of the trail would be lost. And, the impact of losing numerous native plant species on other living organisms in the area is unknown. The spur trail, identified as Class 1 on the map, is presently starting to go under water due to nearby beaver activity. Moving the wooden fence, currently going under water at the trail's end, back to where the spur trail begins at the junction near the viewing platform would provide wildlife with a quiet haven. Minimally, designating the spur trail as Class 1, signals to trail users they are approaching a sensitive area. The main pedestrian trail, identified as Class 2 on the map, leads to the wildlife viewing platform. Based on my own regular observations, the area is used by a multitude of native birds, waterfowl in particular. At least twice, Canadian geese have been observed nesting on a stump in the middle of the pond. In addition, countless other native birds and waterfowl families such as hooded mergansers, wigeons, and mallards, have been seen using the wetland area for nesting and raising their young or simply visiting. It appears, herons, eagles, and other wildlife species go back and forth from the wetlands to Port Gamble Bay. No doubt, the Beaver Pond area meets both the needs of wildlife as well as opportunities for human enjoyment. In closing, designating the Beaver Pond pedestrian trail as Class 2 and the spur trail as Class 1 would ensure the needs of flora and fauna are valued while still allowing adequate human access.	Edit Proposed	Recommend confirming mapping and references to beaver pond area call for Class 2 trail. No further edits recommended.	Completed- mapping updated.
Doug Maraist	In Section 5 - PARK RECOMMENDATIONS (pg. 142) this is somewhat acknowledged but these two Masterplan sections need to be better coordinated &/or referenced.	Edit Proposed	Confirm consistency between sections. No further edits recommended.	Comment not clear
Joseph Lubischer	OVERALL. Let's be clear. This was not a master plan, but a "developed facilities plan". The major decisions had already been made--ride park, access road, Stottlemeyer parking, STO route, landscape classifications, and trails. PROCESS. There is nothing on this webpage that identifies the final comment period or the due date for final comments. The chat room style as a public comment process was minimal and deficient. There was no opportunity for clarification of questions or answers. There was no opportunity for discussing issues in any detailed or sophisticated manner. FORESTRY AND RESTORATION. It appears roughly 3/4 of the park area will consist of recent or planned clear cuts? The PROS Plan places great importance on natural habitat, whereas this master plan focuses mostly on facility development. The master plan should contain specifics of restoration activities, costs, and timelines. The forestry plan requires an immediate upate. GIS MAPPING. The GIS mapping feature was very nice, but several layers are inadequate (see below). The land-scape classification layer required over a dozen steps to display. The wetland layer is sparse, indicating a field delineation should have been done. Stream and wetland buffers are missing. Buffers are an essential planning tool for forestry, landscape classifications, and development. Surface geology layer has incorrect units. Glacial till is called out as 'gravel', alluvium as 'peat', and 'high slope' is not a geologic unit. DNR data should have been used. LANDSCAPE CLASSIFICATIONS. The GIS map shows the classifications were extended southward from the last 2015 mapping. When and by whom were the extended classifications made? Were there any changes to the 2015 classifications? Creating the landscape classifications should have been part of the public process. The landscape classification map must be shown as a stand-alone figure. MANAGEMENT. The plan does not address agency conflicts between Parks and Public Works.	Edit Proposed	Recommendations for FAQ clarifications and methodology for mapping as stated previously, no further edits recommended	Comments addressing wetland mapping limitations added per response to previous comments. Report explains process of landscape classification determination with planning team and steering committee.
Kim Greenwood	Sustainable Community Forestry Issues: As much as I like mountain views, I do not favor view corridors. Maintenance is additional cost to the park and views are not critical to restoring to a more natural forest. Proposed recreation facilities: There needs to be an enormous and ongoing education/indoctrination outreach about pack it in/pack it out. From my observations, anytime picnicing is encouraged, people leave litter. This will be a huge problem with wildlife that should be left wild. Littering people leads to interactions with wildlife that can result in killing of wildlife to keep people safe. I don't want to see this happen. Right now throughout the park, it's very clean. There is some garbage around the parking areas. Once more people come in, there will be more garbage unfortunately because there are many in our society who don't see littering as a problem. We need bear proof cans and regular/weekly garbage pick up. This is another cost for the park if it's going to be developed in places.	Edit Proposed	Add notes where applicable that event staging and view corridors can also serve as fire breaks. Add reference to need for waste management within infrastructure section	Note added to page 141. Note on waste management added to pg 163
Linda Berry-Maraist	•Pg 107 map: New "natural" designated areas east & west of Bayview trailhead and along the STO near the beaver pond should be analyzed in larger detail. What would this do the Ranger corridor that County has approved? The Natural zone is north of the Ranger Corridor. What about existing trails and the future STO? Trails not impacted by landscape classifiactions as previously discussed and explained in report edits. Parking appears to not be allowed at the Bayview shoreline trailhead. This is in Passive Rec classificiation- parking allowed. Will expansion of the Bayview west trailhead be allowed? Yes Has Ride Park been reduced? No	Edit Proposed	Confirm consistency between sections. No further edits recommended.	Revisions to Land Use table made for consistency among text, tables, and plans

Name	Comment	Action	County Response	FBP Edit Notes
Linda Berry-Maraist	2015 Map restrictions and zone restrictions (pg 107-115): •Yellow: perhaps ½ the park is colored yellow for conservation which is defined (pg 108 & 109) as No pets, livestock or organized large group activities. Will horses, dogs and trail events be excluded from all areas w/ this designation? How will a horse back rider access the park from the new Stottelmeyer trailhead? Revised- report clarifies that trails are an overlay on landscape classifications, land use table updated •Brown-passive recreation says, "no large recreational events". If trail events are considered recreational events, they would be limited to just a small portion of the park near the Ride Park. Continuity of trails is essential for trail events. See above note- if event is contained within the trail system that does not apply. •Orange-active recreation: "impacts of large events need to be mitigated". What does that mean? Pg 114- Should clarify what type of motorized bikes would be allowed in the Ride Park and Active recreation areas? Is this ebikes, or dirt bikes and motorcycles? (This entire park was always planned for non-motorized trails, not dirt bikes) Limited speed ebikes could be allowed on logging roads. Disc golf is treated inconsistently. •Meeting 1: 200 people. Lots of young people attended interested in Disc Golf. Measured participant support by asking for 1 or 2 words (computer rejected input that was not one word). One-word single issues rose to top; "hiking, biking, disc-golf, recreation, conservation". •Pg 91: "There was little support for a disc golf course so that was eliminated" After public meeting #1 there was little support in the other 3 meetings or in discussions with the Steering Committee or various advisory groups. This is documented in the text. If commmunity preferences change, it is not prohibited in all landscape classifications and location and size are addressed on page 144. December '21 Feedback on 3 alternative Plans: •Questionnaire regarding preference from 3 schematic options (data on pg 91) was not a landslide either for more or less park facilities. 42% wanted the least amount of facilities. Using this data for a conclusion there was almost no community support for increased recreation development seems wrong. A (least park development)B (mid-level of park development) C (more park facility development) 165 (42%)89 (22%)137 (35%) Community preference for local use vs encouraging tourism, majority in survey thought park should support both: Appendices pg 78 question 12: What is the primary purpose of the park? Local UseTourismBoth local use and Tourism 164 (42%)6 (2%)218 (56%)	Edit Proposed	This is a guidance document. It is only proposing future action. Words like prohibit, shall or must are not appropriate. Change language throughout the document to "limit uses and/or facilities" rather than these directive terms. However, certain activities should be avoided in these areas to protect environmental features. Trails and other facilities should only be located if topography, existing uses or other unavoidable circumstances exist. Note regarding e-bikes for future policy reference. Reference state definition of motorized bike (ebike) and as regulated by state statute. No further edits recommended.	Modifications made, however, references to the Stewardship Plan, which "restricts" activities, were not changed. It is clear in the report that restrictions are proposed if not already outrightly prohibited by existing County plans.Where possible "restrict or prohibit" were changes to "limit or condition." No "shall" in document. "Must" only used where appropriate or already required- not proposed recommendations.
Patrice Tullai	2. A SEPA assessment needs to be prepared for the Draft Master Plan. The consultants themselves state that SEPA "prohibits the 'piecemealing' of projects so the project in its entirety will be included as part of the SEPA review". No SEPA analysis has been done on this project as a whole, and needs to be done. Once the analysis is complete, the public would require additional time for public review and comment. Hard copies of the draft plan, analysis (including SEPA analysis), and maps should be available for review at public locations such as libraries, as well the Kitsap County Parks office. 6. The process through which this plan was developed appears to have favored mountain bikers and does not appear to represent the majority of potential users. A number of trails are designated for mountain bike use only and the 170-acre Ride Park development will be dedicated to mountain bikers. Mountain biking, with its needed trail building and maintenance, impact the ability of wildlife to use their habitat. There have been numerous studies that have documented the adverse impact of mountain biker trails on the natural resources of a park, including increased erosion and impacts to vegetation and wildlife. Note also that the Ride Park itself is located in an area which is designated as having unstable steep slopes with historical landslides. 7. While there is acreage set aside for mountain bikers only, there is no corresponding acreage set aside exclusively for walkers and horseback riders who constitute the majority of users . The multi-use designation applied to the majority of trails results in both safety issues and excessive wear and tear on trails used by bikers. Mountain biking can be dangerous; a biker was paralyzed from an accident on Ranger Trail in this park. Very bold signage had to be put up to direct bike traffic and walkers in an effort to avoid future accidents. How is liability being handled by the county when there are accidents at PGFHP? Trails that were once single track paths, have doubled in width due to bike traffic. Compare the Bluff Trail with Stumps as an example; a few years ago Stumps looked like Bluff looks today. Bikes cause erosion, root death, and tree die-back. Horseback riders and walkers need trails devoted to them. Please consider holding an open public discussion on the issue of multi-use trails to propose options.	Comment Noted	2. Noted, and recommend discussing SEPA process in FAQ as previously mentioned. 6. Noted, no edits recommended 7. Noted for future trail planning, no edits recommended. As a guidance document, the Framework does not direct future action nor does it act as a step in any approval process, permit, policy or otherwise. Future efforts towards the recreational and education components for the Framework will require planning level SEPA review once incorporated in the Comprehensive Plan, Parks Recreation and Open Space plan or similar document. The Park projects that predated the beginning of Framework development had previously received planning-level SEPA review. The Mountain Biking Ride Park and Stottlemeyer Trailhead are allowed uses in the Parks zone and their potential impacts (at a planning level) were determined when they received this zoning. The Sound to Olympics Trail (STO) was considered with the adoption of the North Kitsap String of Pearls Trail Plan in 2011 and the Non-Motorized Facility Plan in 2013. Again, these impacts were assessed at a planning level. Additional project-level SEPA review is required when project permits are submitted. This level of review covers specific traffic and other impacts based on known trip generation and other metrics. Such permits are currently in review for the Mountain Biking Ride Park and Stottlemeyer Trailhead and will be required for construction of the STO segments in the future.	Noted
Jay Zischke	Pg 107 – Land Use - agree the idea of introducing a 6th (new) land classification for Heritage Parks – "Conservation Education" is a good idea - suggest the County engage all Heritage Park Stewardship Groups for review of proposed language. Trails section - general comments; appreciate the concept of evolving to larger loop trails through decommissioning and revisions post logging. May need to consider more one way travel over time as well as ped only trails	Comment Noted	Noted, no edits recommended	Noted
Edie Lau	Also, what are "type 2" and "type 3" trails (referenced on page 108)? I searched but could not find a definition.	Edit Proposed	Include definitions and descriptions for each classification of trail in the Trails section, and consider supporting graphic.	Definitions are on page 118 and in Appendix 5-2: lots of detail

Conservation Section				
Randena Walsh	The plan to "help save this forest" brought many groups and individuals together to save critical wildlife habitat and protect the health of Port Gamble Bay, part of Kitsap County's natural resources "heritage," thus the name Heritage Park. While I understand that Rayonier retains logging rights until 2022, the clearcuts have rapidly expanded since the land has been purchased. I would like more effort to be put into replanting with diverse tree species sooner rather than later, and avoiding such huge swaths of clearcuts that turn into scotch broom landscapes, I believe if we focus on creative ways to restore our over-harvested timber land we would be better served in the long run. I have hiked these roads and trails for 20 years, enjoying the beautiful forests, native plant observation, wildlife observation, mushroom hunting and huckleberry picking. This is the heritage I had imagined leaving for future generations when I donated to the Kitsap Forest and Bay Fund. I hope we will make our top priority restoring the park's natural environment. I am opposed to construction within the park such as yurts and other buildings requiring more dollars for maintenance.	Comment Noted	Noted, no edits recommended	Noted
Jim & Marilyn DeRoy	We believe the best option for PGFHP is to focus on the goals of conservation and restoration of the natural resources of the park, in combination with light recreation - hiking, mountain biking, horseback-riding. We feel that the plan options that invite construction of commercial venues, various buildings, and campgrounds are not in line with these goals and would be a detriment to the biodiversity and wildlife corridors that this park could otherwise offer.	Comment Noted	Noted, no edits recommended	Noted
Jim & Marilyn DeRoy	We are writing in regards to the Port Gamble Forest Heritage Park Master Plan. We have been involved in this park, as well as others in the county, helping to build and maintain trails and structures, as well as to install signs. As far as options related to the master plan, we would like the goals of the park to focus on conservation and restoration of the natural resources, with the continuation of light recreation - hiking, mountain biking, horseback riding. We feel that the plan options allowing for construction of commercial venues, various buildings, and campgrounds are not in line with these goals and would be a detriment to the biodiversity and wildlife corridors that this park could otherwise offer.	Comment Noted	Noted, no edits recommended	Noted
Margaret Tufft	First, I think for the most part, the community has been left out of the process. As people who serve the public, I'm sure that you all have a good idea how challenging it can be to make the public aware of what's going on in the greater community, even though it affects them. This project has been worked on for many years, but the outreach has been lacking, especially considering your awareness of the challenge of informing the public. This shouldn't be a reason to give unrealistic deadlines, when the process has been ongoing for years. Two hundred pages in two weeks? People have many things that can distract, but that doesn't detract from the care that people have about their community. The first meeting, the public who attended, overwhelmingly said that they wanted the park left in a natural state, with few changes. Right now, it seems like it's more a proposal to turn it into a theme park. There is and will be so much growth in Kitsap County, the public generally, would like a natural place to go and recharge. This has not really been addressed. At the last meeting, the concern about preserving ecosystems and nature, seemed to be being talked around, not really taking on this concern. There also seems to be interest groups that are being given more weight than others. This should not be. What all these changes could do to affect the flora and fauna have not been addressed. The hydrology has not been addressed. A full SEPA review has not been done. What the climate may do in respect to our area also doesn't seem to be considered. The park has a chance of helping with climate mitigation, but it won't if we destroy much of the ecosystem there. I implore you to take this into serious consideration. I respectfully request that you postpone any decision concerning the park, and refocus on the many issues not adequately addressed, and to get substantial input from the citizens of our county. This can be done with more public meetings. Now that there is more flexibility to meeting in person, there could be smaller neighborhood meetings, so people could be informed and there could be a discussion. Of course, more virtual meetings could also be had. It's important, especially in a time where many sense that their voice is not being listened to. This can be repaired in the best way at a community level. I implore you all to see the process through, in its entirety.	Comment Noted	Noted, no edits recommended	Noted
Joe Lubischer	FORESTRY AND RESTORATION. It appears roughly 3/4 of the park area will consist of recent or planned clear cuts? The PROS Plan places great importance on natural habitat, whereas this master plan focuses mostly on recreation development. Perhaps plans are afoot elsewhere, but shouldn't more specifics of restoration activities, costs, and timelines be included at this stage? Have relative proportions of development versus forestry costs been estimated? Is an update of the current forest plan under consideration? GIS MAPPING. Wow, this is an unusual tool to provide as part of the public review! LANDSCAPE CLASSIFICATIONS. The GIS map shows the classifications were extended southward from the last 2015 mapping. When and by whom were the newer classifications made? As a basic planning tool for Parks, shouldn't the landscape classifications be shown as a stand-alone figure in the plan? WETLANDS. Though I don't have sufficient site-specific knowledge, the wetland layer appeared sparse. I would have expected many more areas, especially seeps on slopes dropping to lower elevations. What are the data sources? Should a recommendation for a field delineation be considered? BUFFERS. Stream and wetland buffers are an essential planning tool for forestry, landscape classifications, and development. Buffers would be an important addition to the GIS mapping. SURFACE GEOLOGY. This layer appears to have some issues compared to DNR mapping. Glacial till is called out as 'gravel', alluvium as 'peat', and 'high slope' is not a geologic unit.	Comment Noted	Noted, no edits recommended	Noted
Steve Weagant	I agree with the position taken by the Kingston Environmental Council that the proposed master plan for PGFHP does not address the environmental impact to the park. There is too much emphasis on development and not enough on conservation. I remember that this purchase was led by Fortera and involved great support from GPC and their donors. I don't think these proposals do justice to their efforts. Respectfully	Comment Noted	Noted, no edits recommended	Noted
Katherine Lewis-Hawk	I hope the forest remains a forest with trails, without the proposed developments of access trails for walkers, bikers, etc. despite how some may want those additions for their recreation or their commerce. Since our county is so quickly arriving at a greater human population, I hope for spaces left for the very ancient wild residents to live in relative peace. I don't care much for the ask of multiple studies to prove the reasons for this because those are expensive and there are so many other places for that money- low-income housing for one. Instead, I find this simply a matter of common sense. We humans need company of other than our own species to be better humans- to think beyond ourselves, to be more compassionate, to relax in the natural world.	Comment Noted	Noted, no edits recommended	Noted

Jayne Larson	When we have many, many roads in Kitsap County that are NOT paved but that our Waste Management, emergency services, USPS and other services require, why are we paving roads through the public parkland that includes some critical areas? Paved roads are not compatible with good watershed management. Even the plan recognizes that the park basically falls into a critical area for aquifer recharge, (see page 60). We should not be squandering our freshwater resource like cities in southern California where the water needs to be piped in from far away mountains. Future water costs will skyrocket if we have to find outside sources and means to deliver them here in Kitsap. In that case, the water costs would be born by every single resident. Let's pave roads that we already have and need and not pave roads through the park like the STO. You call the Sound-To-Olympics a trail but, in fact, it is a road, vehicle ready, built by Public Works who build roads. Think heavy equipment, bulldozers, excavators and the associated soil compression, invasives introduction via tire treads. People on Bainbridge Island were aghast when the short segment along Hwy 305 was built and that was so much less invasive since it already lay within the existing road prism. There will be a hue and cry from Kitsap citizens who are concerned about the environment, when they see, perhaps too late, the impact of that road building. Be aware of what you are doing.	Comment Noted	Noted, no edits recommended	Noted
Randena Walsh	I agree with all of the Kitsap Environmental Coalition comments made on the Master Plan. More time for public comment and more environmental review are needed before approval of this plan.	Comment Noted	Noted, no edits recommended	Noted
Kim Greenwood	Land Conservation and Restoration: "The plan also recommends revisions to the existing restoration plan and specific forest blocks to align forest management priorities with envisioned recreational uses." If this means that recreational uses will take priority over forest conservation and restoration, or if there is a risk that that could happen, then I do not agree with this statement. Land Use: I think a more appropriate land use for the southernmost square of the park (Sawdust Hill) is "HP-NA". It is remote, steep and small and not suitable for trails.	Comment Noted	Noted, no edits recommended	Noted
Patrice Tullai	3. The analysis of critical areas and wetlands is not complete. The one map of wetlands only includes the east part of the Park, not the west portion. Drainage is not adequately described including clear identification of fish bearing streams. There is not adequate discussion of how drainage will be managed as part of trail and facility development. 4. There has been no formal wildlife survey done at PGFHP. Since there is little information on what wildlife is in the park, it is difficult to evaluate how development and the placement of the STO will impact wildlife and their corridors. 5. The public has overwhelmingly expressed a preference for conservation and restoration, over development at PGFHP. The Draft Master Plan proposes a much greater level of development including glamping facilities, a Tree Adventure course, the 170-acre Ride Park, View Corridors, and other park infrastructure. While park planners say they are taking a nature-based approach, they are bypassing the deeper ecosystem-based planning that is needed for real conservation and restoration. This proposed plan does not appear to reflect the public's desire.	Comment Noted	Noted, no edits recommended	Noted
	We realize that highly competent professionals and many volunteers have been involved in developing this draft Master Plan, but at a minimum we believe a complete environmental assessment of the park's natural resources is required. Doing that would provide more opportunity to have a real public discussion about how the park's importance both to the natural ecosystem and to the entire community can best be protected.	Comment Noted	Noted, no edits recommended	Noted
Bruce McCain	As a resident of North Kitsap County, I am deeply concerned that the subject Master Plan is lacking a meaningful, holistic, science-based environmental assessment of the Park. It appears that what assessments that are proposed would be done in a limited, piecemeal manner. For example, few wetland surveys have been conducted. Moreover, limited on-site wildlife assessments have been done. In order to properly assess the effects of the trails and structures proposed for the Park, these environmental studies need to be done.	Comment Noted	Noted, no edits recommended	Noted
Nancy and Ronald Shefton	My husband (Ronald L. Sefton) and I (Nancy Sefton) wish to object to the current Draft Master Plan for Port Gamble Forest Heritage Park. Once again, it appears that Big Money wins out over the need to save Kitsap's natural heritage. Already, trees are coming down in order to build new structures, eliminating wildlife refuges and places for narrow, dirt trails through thriving forests. Allowing our forests to stand as they are costs nothing. But clear-cutting trees once again and then re-planting, costs a small fortune, and it will be decades before new, mature trees, will once again grace the area. Must big money ALWAYS win?? "Conservation costs much less than restoration." The future plans for this currently forested area, as things stand now, carry the unfortunate vision of impermeable asphalt trails with their dangerous bicycle trails and other environmental impacts, all at high costs. Further, profits from the current master plan will only make off-county realtors and builders richer, leaving Kitsap County minus a thriving forested area for years to come. Once again, $$ wins. Must it?	Comment Noted	Noted, no edits recommended	Noted

Sue DeArman	1. The public has stated that their wish is that the heritage park be preserved, and they contributed money thinking that there would be minimal development. Now we see that the plan for the park does not reflect that. There needs to be an open public forum on this draft plan before getting approval from the Parks Advisory Board and the Board of County Commissioners. 2. Where is the concern for the environment in this park? The park needs to come together as a whole and do a wildlife assessment, wetlands delineation and an up to date SEPA review. Additionally, we need an EIS for the project as a whole. This is the biggest park in the nation and must contain professional environmental assessments! 3. I am very much against the planned STO going through the PGFHP. Pavement contains toxic chemicals and will harm our amphibians that are already threatened through climate change and habitat destruction. Let us NOT add to their demise through our actions!. 4. The PGFHP seems to be focusing on the mountain biking community. I feel that the walkers and equestrians need more devoted trails in our park. As you probably already know if you've walked in the park as I do, it is hard to hear the bikes coming up behind you and it is my experience that few bikers ring a bell or alert you in time for you to get off the trail and out of their way. As the park is now, it's an accident waiting to happen. The signage in the park as it now stands gives the bikers the right of way. I feel the signage should be the other way around and should state that bikers must yield to walkers and equestrians. 5. It appears that the development in our PGFHP is moving forward with the hope of brining tourist dollars into the park. It is essential that these dollars stay in our parks! The ongoing upkeep of a park of this size will require money and the park cannot rely solely on park volunteers. Last but not least, when will the Port Gamble S'Klallam and Suquamish nations input become part of the PGFHP plan? Will the public be informed about the review of tribal legal counsel, advisors, and scientists on the plan for PGFHP?	Comment Noted	Noted, no edits recommended	Noted
Edie Lau	3. From attending most, if not all, of the public meetings, I heard a number of people speak passionately about the need to preserve parts of the park for wildlife, and fears that recreational development would destroy habitat. The preamble text on the website strangely doesn't name any particular species making their home in the park. I believe the county does recognize the public's desire to share the park with wildlife but I can see why wildlife advocates think it does not. I suggest adding language in the preamble and executive summary that speaks more directly to and passionately about public appreciation for and wish to share the space with other species. In the section about natural areas, I read that the Stewardship Committee recommends limiting access and requiring permits but that such a restriction is not allowed, per the acquisition agreement. This is disappointing. I support placing all allowable controls to limit impacts on natural areas, including prohibiting dogs. (I say this as someone who loves walking my dogs in the forest. But I recognize that they're not great for wildlife.) I couldn't tell for sure from the maps, but if there are new trails planned for natural areas, how about skipping those additions?	Comment Noted	Noted, no edits recommended	Noted
Mary Gleysteen	I appreciate this opportunity to comment on the Master Plan for the Pt Gamble Heritage Park, but urge a more thorough and robust exploration and discussion the park's place in our community and its ever at risk ecosystem, with an eye to preservation and restoration of this treasure which so many people worked so hard to acquire. I believe that consultation with and assent from the Port Gamble S'Klallam and Suquamish tribes is crucial to adoption of any plan for this property and that SEPA analysis is warranted, followed by adequate opportunity for public review and comment. Finally, I must mention I am troubled by the apparent emphasis on development for mountain biking and the deference in planning given to the successors of Pope Resources and OPG from whom this property was acquired at considerable public expense.	Comment Noted	Noted, no edits recommended	Noted
			In general for all above comments, recommend addressing the shared concerns with FAQ	

Name	Comment	Action	County Response	FBP Edit Notes
Estimates and Funding Section				
Jayne Larson	My concerns about this plan, and I'm sure there are others like myself, is that the plan spends significant pages discussing the financial opportunities, but these financial opportunities are still very much "pie-in-the sky". Any development within the park should NOT place additional tax burdens on local residents, many of whom do not support or use the park, nor would use the developed amenities. Most of the developments are geared toward people from outside Kitsap, and those amenities/concessions should be self-supporting and not result in a special tax district and tax levy. Furthermore, in several areas of the plan, (ex; page 57), the local residents and current users of the park are discussed in a very deprecating way, in spite of the fact that local residents and current users are targeted for potential tax increases. I think the key question that needs to be addressed and answered is: Should the County be in the concessions/development business? What are our taxes going for? Why do we need to develop our public parks, which we have helped to purchase? And who is really benefitting from this development? It's clearly not the current users and local residents.	Edit Proposed	Noted for future capital program planning. Recommend reviewing language under "Stakeholder Engagement" section to ensure reflection cannot be misread. As a guidance document, this Framework includes aspirations for the Park many of which may not be attainable due to lack of interest, funding or other obstacles. However, the document does analyze the opportunities as a foundation for future discussion.	Completed- revised wording on now pg 59.

Joe Lubischer	BUDGET. If understood correctly, the plan projects a required annual tax support of $1.5M to $2.6M compared to the current Parks budget of about $4.6M. Acknowledging that Parks is severely underfunded, the size of the projected expenditure would still call for a County-level analysis and review on the magnitude and sources of funding for the park system. A reasonable concern is that PGFHP would drain resources at the expense of all the other parks, while doing so in part to benefit the private Pope/Rayonier development project.	Edit Proposed	Add note in O&M that acknowledges that the current County budget does not support long-term O&M costs for the current condition of the park and that additional revenue will be needed, especially once Rayonier is no longer contributing to maintenance. The County acknowledges that any park improvements and expansions will need to include funding outside of the existing Parks budget prior to development. The Parks existing condition including trails and the Ride Park will be addressed in the Parks budget as well as maintenance agreements with partners and stewards.	Comment addressing added to pg 181 and ES-22
Joseph Lubischer	BUDGET. The plan projects a required annual financing of $0.9M to $1.6M for O&M of developed facilities and forestry work (per last public meeting). Parks' anemic budget is about $4.6M, pre-Covid level. This plan will drain resources at the expense of all the other parks, while doing so in part to benefit the private Pope/Rayonier development project. The only financing source proposed appears to be a special taxing district, which would raise North Kitsap taxes about 2%. That will be a very tough sell.	Edit Proposed	Same note as above. While a Metropolitan Parks District may be one mechanism for funding any impacts to property owners would be dictated by the funding level proposed in the measure which is currently unknown.	Comment addressing added to pg 181 and ES-22
Jay Zischke	Chapter 7 Funding - depicts a woefully inadequate funding situation for KC parks department. It appears (although lacking a recommendation) that a Parks and Recreation taxing district would likely be the most secure direction - ?	Comment Noted	Noted, no edits recommended. If uses are to be expanded in the Park, multiple additional funding sources may need to be explored for construction and ongoing maintenance. These partnerships, arrangements and mechanisms must be a beginning part of future discussion of new educational or recreation uses.	Noted
	ADDITIONAL CHANGES			
Jon Willett	Included a reference to the KFB Coaltion which resulted in the KFB Project per comment by Jon Willet.	Edit Proposed		Completed- revised wording in ES-2 and report pgs 36 and 37.
	Page 172. The second paragraph doesn't make sense. It appears that there are a series of typos and punctuation errors that make it incomprehensible. Action 1 - Timing seems correct. I'm glad to see that an expectation of pre-commercial thinning and commercial harvesting to reach the management goals is being discussed up front and honestly.	Edit Proposed		Completed- revised wording on now pgs 174-176.
Andrew Wodnik	Action 1 - One of the points say's " Pair a young forest stage (early) restoration thinning event with a restoration thinning event on a more mature stand within the County-wide Forest Stewardship Program to offset costs, allow for revenue, and achieve a no-net-cost project." This will not always work and might be setting up expectations that forest management will not cost anything. If you look at the amount of forestland under the age of 20 and what is over the age of 20 to offset costs, you will see that there is a lot more acreage in the under 20, especially if everything gets harvested that is planned to be harvested. Page 173 - Action 3 There is a reference that Rayonier plants saplings. Timber companies do not plant saplings, they plant seedlings. The definition of a sapling is a tree that is 1" to 4.9" in diameter at 4.5'. I know that this is nit-picking, but that is who I am. This action item mentions planting seedlings under a mature forest canopy. It has been my experience that this rarely works. Tree seedlings need more light than what will be getting to the forest floor through a mature forest canopy and the brush species that will occupy the site. Page 174 - Action 4 Point number three mentions planting quaking aspen as a native species. While quaking aspen is a native species to Washington, it is not native to western Washington. A better choice would be black cottonwood, which was not listed in this bullet point. I have attached two photos of the native ranges for quaking aspen and black cottonwood to illustrate my point. Page 174 - Phasing This section mentions that merchantable harvest re-entries will be 15 years apart. I think that this might be more entries than what is needed to get to the goal of progressing this park to an "old growth" status. If you remember the stand of trees that was clearcut, where the observation deck is now situated, it was commercially thinned about 15-20 years prior to it being clearcut. I don't think anyone would say that that stand needed to be thinned out again. I remember the spacing to allow dappled sunlight to reach the forest floor and few places where the tree crowns were impeding one-another (tree crowns crowding one-another is an indicator that a stand needs to be thinned). To further my point, I ran a simulation with some canned data through FVS (the Forest Service's growth and yield model) to show what the trees per acre (TPA) would be after a commercial thinning operation. The stand starts out at over 600 TPA, gets thinned down to 168 TPA and then is grown forward with no further harvests. When I worked at ORM, we were getting stands commercially thinned to 160-180 TPA. It is very difficult to leave more than 180 TPA after a commercial thinning due to operational limitations of the machinery used in commercial thinning operations. I have attached a word document with illustrations produced by SVS of what the stand would look like pre and post harvest, according to the model. Below is a table showing the projected live TPA, mortality for each 10 year increment, and the number of harvested TPA for 100 years in 10 year increments.			

4-1 APPENDIX

PERMITTING SUMMARY MEMO

APPENDIX

Port Gamble Forest Heritage Park Master Plan Permitting Summary

This summary provides an overview of anticipated regulatory and permitting requirements for the Port Gamble Forest Heritage Park (PGFHP) Master Plan based on the current understanding of proposed activities. Table 1 provides a summary of anticipated federal, state, and local permits and approvals expected to be required for implementing various elements included in the Master Plan. Table 1 includes the lead agency, permit triggers, and notes on submittal requirements.

Additional information on individual permits is also included in this section, along with their relevance to specific Master Plan actions. At the end of this document, Table 2 presents a matrix of Master Plan actions and identifies the probable permit requirements for these actions.

Table 1
Anticipated Environmental Permits and Approvals Matrix

Approval or Permit	Lead Agency	Permit Trigger	Notes
Federal			
National Environmental Policy Act (NEPA) Compliance	U.S. Army Corps of Engineers (Corps)	Actions with a federal nexus (led by a federal agency, receiving federal funding, located on federal lands, or requiring a federal permit)	This federal review may be required if an action receives federal grants or requires a federal permit or approval.
Clean Water Act Section 404/Rivers and Harbors Act Section 10 Permit	Corps	Actions that include discharge of dredged or fill material and/or work within navigable waters of the United States.	This permit requires preparation of a Joint Aquatic Resources Permit Application (JARPA) form for submittal to the Corps.

Approval or Permit	Lead Agency	Permit Trigger	Notes
Endangered Species Act (ESA) Section 7 Compliance	National Marine Fisheries Service and U.S. Fish and Wildlife Service (the Services)	Actions with a federal nexus occurring in the vicinity of any threatened or endangered species or critical habitat.	This consultation typically requires preparation of a Biological Assessment to initiate consultation with the Services. Depending on the anticipated impacts, there is a potential that a No Effect letter could be prepared instead of a Biological Assessment.
National Historic Preservation Act Section 106 Compliance	Corps in consultation with the Department of Archaeology and Historic Preservation (DAHP)	Actions with a federal nexus that have the potential to affect cultural, archaeological, and/or historical properties.	Section 106 compliance requires an assessment of potential impacts to historic structures or properties, and documentation of these findings. This may include the development of a Cultural Resources Report.
State			
Clean Water Act Section 401 Water Quality Certification	Washington State Department of Ecology (Ecology)	Actions requiring a federal license or permit that might result in a discharge of dredge or fill material into state waters.	The certification requires a pre-filing meeting request to be submitted 30 days prior to submitting the Section 401 request to Ecology. The Section 401 request would be submitted concurrently with the JARPA.
Construction Stormwater General Permit	Ecology	Clearing, grading, and excavating activities that disturb 1 acre or more and discharge stormwater to surface waters of the state.	A Notice of Intent (NOI) would be submitted through Ecology's WQWebPortal.
Hydraulic Project Approval (HPA)	Washington Department of Fish and Wildlife (WDFW)	Work that uses, diverts, obstructs, or changes the natural flow or bed of state waters (below the ordinary high water line).	Information used for the JARPA would be uploaded to the WDFW Aquatic Project Permitting System to support permit review and issuance of an HPA.

Approval or Permit	Lead Agency	Permit Trigger	Notes
Forest Practices Approval	Washington State Department of Natural Resources (DNR)	Forest Practices that may require approval include tree planting and seeding, salvaging logging residue, and converting forestlands to another use.	A Forest Practices Application would be prepared and submitted to DNR.
Governor's Executive Order 21-02 (Cultural Resources)	DAHP	State-funded construction projects or acquisitions.	The review process involves initiation of consultation, identification of historic properties and determination of eligibility, assessment of adverse impacts, and resolution of adverse effects.
Local			
State Environmental Policy Act (SEPA) Determination	Kitsap County	Any proposal that requires a local agency decision and that does not meet state SEPA exemption standards.	The SEPA review for Master Plan actions would likely require preparation of a SEPA Checklist and attachments for submittal to Kitsap County.
Shoreline Substantial Development Permit (SSDP)	Kitsap County	Work occurring within 200 feet of the shoreline.	This permit would require completion of an SSDP form, Shoreline Master Program (SMP) compliance analysis, and attachments for submittal to Kitsap County.
Critical Areas Ordinance (CAO) Compliance	Kitsap County	Work occurring within designated critical areas, including wetlands, critical aquifer recharge areas, geologically hazardous areas, fish and wildlife habitat conservation areas, and frequently flooded areas.	As applicable per Kitsap County Code (KCC) 19.700, preparation of a habitat management plan, wetland delineation report, and/or wetland mitigation plan would be required for submittal to Kitsap County.

Approval or Permit	Lead Agency	Permit Trigger	Notes
Building Permit	Kitsap County	Projects that propose new load-bearing structures or buildings in the County.	This permit would require submittal and review of design documents by Kitsap County, including structural design sheets and calculations in accordance with KCC 14.04.
Site Development Activity Permit (Grading)	Kitsap County	Land-disturbing activities including grading of more than 150 cubic yards or disturbance of more than 7,000 square feet of ground area.	A site development activity permit application would be prepared and submitted to Kitsap County in accordance with KCC 12.10. Based on the project activities, the application may require engineering drawings, a geotechnical analysis, and/or a soils analysis.

Federal Permits and Approvals

National Environmental Policy Act Compliance

If implementation of the Master Plan requires federal approval, or receives federal funding such as grants, then National Environmental Policy Act (NEPA) compliance is required. A federal action may be "categorically excluded" from a detailed environmental analysis when the federal action normally does not have a significant effect on the human environment. If a categorical exclusion does not apply, the federal agency may prepare an Environmental Worksheet or Environmental Assessment. If NEPA compliance is anticipated for implementation of actions within the Master Plan, the County can consider an approach to streamline the NEPA process by grouping actions within a single NEPA review document.

Clean Water Act Section 404/Rivers and Harbors Act Section 10 Permit

A Section 404 permit is required for any discharge of dredge or fill material into waters of the United States including Port Gamble Bay and wetlands within PGFHP. A Section 10 permit is required for work in navigable waters of the United States and will be required for any in-water work waterward of the High Tide Line. As shown in Table 2, this permit requirement could include activities related to the Master Plan Element #2 – Water Access, as well as any action within Port Gamble Bay or wetlands.

Endangered Species Act Section 7 Compliance

ESA-listed aquatic species are present in Port Gamble Bay, including ESA-listed salmonid species. Upland wildlife and bird species listed by the U.S. Fish and Wildlife Service could also be present within the park. Depending on the location and extent of work that will take place, a Biological Assessment, Biological Evaluation, or No Effect Letter would be prepared and submitted to the Corps.

National Historic Preservation Act Section 106 Compliance

The National Historic Preservation Act Section 106 process requires any federal undertaking to consider effects to historic properties including historic and prehistoric sites, structures, districts, or objects eligible for listing in the National Register of Historic Places (NRHP). If NRHP-eligible sites are located within the Master Plan area and federal funding or approval is required, a Cultural Resources Assessment may be prepared and submitted to the lead federal agency. The assessment would recommend the Area of Potential Effects (APE) for the project, inventory potential historic properties within the APE, and evaluate project effects.

State Permits and Approvals

Clean Water Act Section 401 Water Quality Certification

Clean Water Act Section 401 compliance is required for projects that propose to discharge dredge or fill material in waters of the United States, and for projects requiring compliance with Washington State Water Quality Surface Water Standards per Washington Administrative Code (WAC) 173-201A. If the water access point includes placement of any material into Port Gamble Bay, Section 401 compliance may be required.

Hydraulic Project Approval

WDFW regulates work that uses, diverts, obstructs, or changes the natural flow or bed of any of the salt or fresh waters of the state, including project elements landward of the ordinary high water mark (OHWM) that will directly impact fish life and habitat. Master Plan activities associated with the water access could include work in and adjacent to waters of the state; therefore, a WDFW Hydraulic Project Approval (HPA) may be required. HPA review begins once a SEPA determination is issued and takes up to 45 days. No public notice is required.

Forest Practices Approval

DNR regulates forest practices on private and state forestland. There are five classes of forest practices depending on the types of activities being proposed and their potential impacts to public resources. Forest practices that may require approval include tree planting and seeding, land

clearing, salvaging logging residue, and converting forestlands to another use. A Forest Practices application would be prepared and submitted to DNR. Once an application is received by DNR, it would be assigned a classification, which in turn determines the type of permit required.

Local Permits and Approvals

Kitsap County would be the lead agency for SEPA and other local permits and approvals, providing review for Shoreline Management Act consistency, critical areas regulations compliance, and buildings and construction code compliance.

SEPA Determination

The trigger for SEPA is any project or plan requiring local environmental review. SEPA prohibits the "piecemealing" of projects, so the project in its entirety will be included as part of the SEPA review. WAC 197-11-060(5) allows the environmental review to be phased or tiered so SEPA compliance can be done at each phase. A tiered review allows agencies and the public to focus on issues that are ready for decision while excluding those already decided or not yet ready. Following this approach could allow all Master Plan elements to be included under one SEPA review process while allowing for flexibility if certain project elements are ready to move forward while others are still at a conceptual level.

For projects requiring environmental review, a pre-application meeting with Kitsap County is recommended to review the concept design and confirm the permitting approach. It is anticipated that a SEPA Checklist would be prepared and submitted to initiate the SEPA review process. The SEPA review will require a minimum 14-day public notice period, which may be combined with the SSDP public notice period.

Shoreline Substantial Development Permit

The Master Plan will be regulated under the Kitsap County SMP (Kitsap County 2014). The Master Plan would likely include elements such as the water access point that are within the 200-foot shoreline environment, requiring an SSDP to be obtained. The shoreline designation within PGFHP is Natural, which is intended to protect shoreline areas that are relatively free of human influence or which include intact or minimally degraded shoreline functions intolerant of human use. For SMP compliance, an SSDP application will need to be prepared and submitted to Kitsap County.

Critical Areas Ordinance Compliance

The project elements included in the Master Plan are located within Kitsap County designated critical areas. Work occurring within designated critical areas, including wildlife conservation areas and wetlands, would require the development of a habitat management plan, wetland delineation report, and/or wetland mitigation plan. These plans would be prepared and submitted to Kitsap County in

compliance with KCC 19.700. Development in any critical areas would need to be avoided and minimized to the extent practical.

Building Permit and Site Development Activity Permit

For building and construction code compliance, certain elements of the Master Plan would require building permits and/or a site development activity permit from Kitsap County. Building permits and site development activity permits would be applied for in accordance with KCC 14.04 and KCC 12.10. These permits are typically applied for at 90% or 100% design. Final plan sets are submitted to Kitsap County for approval. A building permit cannot be issued until a SEPA determination is issued. Any projects that disturb more than 7,000 square feet or include more than 150 cubic yards of cut/fill would be required to obtain a site development activity permit. Project elements that may require building permits and/or site activity development permits could include the research facility, environmental and cultural center, and restrooms.

Table 2
Potential Permits or Approvals Required by Project Element

Plan Code	Master Plan Element	Description	Phase(s)	NEPA/SEPA[1]	Section 404/10	ESA Section 7	Sect. 106 Consultation	Section 401 WQ	NPDES Construction	HPA	FPA	SSDP	CAO Compliance	Building Permit	Site Developmen
Recreational Uses/Facilities															
1	Parking	Multiple locations	1 2 3 4	✔					M				M		✔
2	Water Access[2]	Improve existing facilities	1 2 3 4	✔	✔	✔	✔	✔		✔		✔	✔		✔
3	Wildlife Viewing Area/ Platforms	12 Locations TBD, additional boardwalks and fire tower structure	1 2 3 4	✔			M		M		M			✔	✔
4	Event Staging Area (Replace Airfield)	6-8 acres adjacent to formal parking for another facility	1 2 3 4	✔			M		M		M				✔
5	"Gathering Place"	Entry feature with interpretation	1 2 3 4	M										M	M
6	Nature-based Playground	3 playgrounds located adjacent to parking areas (North STO, Stottlemeyer, and Bayview)	1 2 3 4	✔			M						✔		✔
7	Picnic Area with Shelter + Stage	5 picnic areas at Event Staging Area, Education Center and parking (North STO, Stottlemeyer and Bayview)	1 2 3 4	✔							M		✔	✔	✔
8	Assistive Device Storage Structure	Located at Gathering Place/Staging Parking Area	1 2 3 4	✔									M	M	M
9	Adventure Tree Course	7-10 acres in Ride Park	1 2 3 4	✔					M		M		✔		✔

Plan Code	Master Plan Element	Description	Phase(s)	NEPA/SEPA[1]	Section 404/10	ESA Section 7	Sect. 106 Consultation	Section 401 WQ	NPDES Construction	HPA	FPA	SSDP	CAO Compliance	Building Permit	Site Developmen
10	Mountain Bike Ride Park	Approved	1 2 3 4	✔					M		M		✔		✔
11A	Camping – walk-in	Small, 50-100 tent spaces; walk-in with restrooms (4) and cart barns (4)	1 2 3 4	✔			M		M		M		M	✔	✔
11B	Glamping – walk-in	Small 10-20 cabins/yurts; walk-in with restrooms (2) and cart barn (1)	1 2 3 4	✔			M		M		M		M	✔	M
11C	Water Trail Camping – walk-in	3 pads located adjacent to Bayview water access	1 2 3 4	✔			M					M	M		M
12	Trail Restrooms (pit toilets)	2 additional located along STO (not including new toilet at parking areas)	1 2 3 4	✔			M						M	✔	✔
13	Orientation points	Multiple small kiosks at key trail intersections throughout park	1 2 3 4	M									M		M
Educational Uses/ Facilities															
15	Research Facility + Greenhouse + Restroom	Independent of other education facilities													
15A	Small indoor/outdoor lab + restroom	Details pending	1 2 3 4	✔									M	✔	✔
15B	Nursery	Details pending	1 2 3 4	✔									M	M	M
15C	Greenhouse	Details pending	1 2 3 4	✔									M	M	M

Plan Code	Master Plan Element	Description	Phase(s)	NEPA/SEPA[1]	Section 404/10	ESA Section 7	Sect. 106 Consultation	Section 401 WQ	NPDES Construction	HPA	FPA	SSDP	CAO Compliance	Building Permit	Site Developmen
17	Outdoor Classroom Areas	1 large covered area near Environmental and Cultural Center; 2 small areas (dispersed)	1 2 3 4	✔					M				M	✔	✔
18	Native Plant Nursery	4 acres associated with research facility	1 2 3 4	✔					M				M	✔	✔
19	Environmental and Cultural Center + Restroom	Independent of research facilities													
19A	Multi-use structure + restroom	Details pending	1 2 3 4	✔									M	✔	✔
19B	Interpretive classroom	Details pending	1 2 3 4	✔									M	✔	✔
19C	Gathering hall/kitchenette	Details pending	1 2 3 4	✔									M	✔	✔
20	Accommodations – Overnight	Bunkhouse associated with Education Center + restroom	1 2 3 4	✔									M	✔	✔
Infrastructure															
Trans	Main road to North End Recreation/ Education District	24-foot wide main access road into park + infrastructure; Phase 1 – gravel; Phase 2 - paved	1 2 3 4	✔					M				M	✔	✔
Trans	Spur road to Research Facility/ Camping	Phase 1 – grave; Phase 2 – add parking	1 2 3 4	✔					M				M	✔	✔
Trans	Spur Road to Glamping	Phase 1 – grave; Phase 2 – add parking	1 2 3 4	✔					M				M	✔	✔
Trans	Bus stops	Bayview and Stottlemeyer	1 2 3 4	M											

Plan Code	Master Plan Element	Description	Phase(s)	NEPA/SEPA[1]	Section 404/10	ESA Section 7	Sect. 106 Consultation	Section 401 WQ	NPDES Construction	HPA	FPA	SSDP	CAO Compliance	Building Permit	Site Developmen
Trans	Gates – parking lots and roads	Multiple	1 2 3 4	M											
Util	Power	Assume solar for North End Recreation/ Education District; as needed per structure	1 2 3 4	✔			M						M		M
Util	Water	KPUD water line proposed under STO route	1 2 3 4	✔			M						M		M
Util	Communication		1 2 3 4	✔			M						M		M
Services	Park Host/Ranger residence		1 2 3 4	✔									M	✔	✔
Services	Park Maintenance Yard and Shop		1 2 3 4	✔									M	✔	✔

Notes: [1] NEPA is assumed to be required only with federal permit or funding (e.g., grant). [2] Section 404/10 permit assumes Plan Element #2-Water Access requires work below OHWM/MHHW.
Legend: ✔ = Likely required; M= may be required depending on design phase "package" and site conditions.

5-1 APPENDIX

TRAIL MAPS (FULL SIZE)

ALL EXISTING TRAILS & ROADS

Approved STO Alignment
Logging Roads
Trails

HOOD CANAL
SR 3
SR 104
GAMBLE BAY
BIG VALLEY RD
PORT GAMBLE TOWN
RAYONIER PROPERTY (APPROX.)
RIDE PARK
1100
1300
LYNX
RANGER
EWOK
EXISTING BAYVIEW PARKING
1000
DOWNHELL
1200
1500
ANKLE BITER
1600
1000
1000
1700
ALDER PUDDING
1920
DERAILED
1800
1900
2000
1830
1800
COYOTE
2100
EXISTING STOTTLEMEYER PARKING
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE

0 0.25 MI 0.50 MI 1 MI

NORTH

EXISTING TRAIL CLASSIFICATIONS

- Approved STO Alignment
- Easy multiuse trail
- Moderate multiuse trail
- Difficult multiuse trail
- Logging road

HOOD CANAL

SR 3

RIDE PARK

1100

1300

PORT GAMBLE TOWN

LYNX

RANGER

EWOK

EXISTING BAYVIEW PARKING

GAMBLE BAY

1000

DOWNHELL

1200

1500

ANKLE BITER

SR 104

RAYONIER PROPERTY (APPROX.)

1600

1000

1000

1700

ALDER PUDDING

1920

DERAILED

1800

1900

2000

RAYONIER PROPERTY (APPROX.)

BIG VALLEY RD

1830

1800

COYOTE

2100

EXISTING STOTTLEMEYER PARKING

STOTTLEMEYER RD

BOND RD

PORT GAMBLE RD NE

0 0.25 MI 0.50 MI 1 MI

NORTH

TRAIL DECOMMISSIONS & ADDITIONS

- Proposed Road/Trail Decommissions (Used Only for Future Forest Mgmt but Not Maintained)
- Proposed Trail Decommissions (Typically Non-logging Roads to be Removed)
- Proposed Additions
- Proposed Reclassification (from Class 4 to Class 3 Trail)
- Proposed Reclassification (from Class 3 to Class 4 Trail)
- Approved Ride Park (proposed trails not shown)

HOOD CANAL
SR 3
BIG VALLEY RD
RAYONIER PROPERTY (APPROX.)
RIDE PARK
1100
1300
1000
1500
1600
1700
1800
1920
1900
2000
1830
2100
LYNX
RANGER
EWOK
DOWNHELL
1200
ANKLE BITER
ALDER PUDDING
DERAILED
COYOTE
PORT GAMBLE TOWN
EXISTING BAYVIEW PARKING
GAMBLE BAY
SR 104
RAYONIER PROPERTY (APPROX.)
EXISTING STOTTLEMEYER PARKING
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE
0
0.25 MI
0.50 MI
1 MI
NORTH

PROPOSED TRAIL CLASSIFICATIONS

- Class 5 Trail – Fully Developed
- Class 4 Trail – Highly Developed
- Class 3 Trail – Developed
- Class 2 Trail – Moderately Developed

HOOD CANAL
SR 3
RIDE PARK
1100
1300
PORT GAMBLE TOWN
EXISTING BAYVIEW PARKING
LYNX
RANGER
EWOK
GAMBLE BAY
1000
DOWNHELL
1200
SR 104
1500
ANKLE BITER
RAYONIER PROPERTY (APPROX.)
1600
1000
1000
1700
ALDER PUDDING
1920
DERAILED
BIG VALLEY RD
1800
1900
2000
RAYONIER PROPERTY (APPROX.)
1830
1800
COYOTE
2100
EXISTING STOTTLEMEYER PARKING
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE
0
0.25 MI
0.50 MI
1 MI
NORTH

PROGRAMMING
SOUND TO OLYMPICS TRAIL

STO Trail Segments

Destinations

Orientation Nodes

Restrooms

OLYMPIC VIEW 1

OLYMPIC VIEW 2

OLD CEDARS

BEAVER POND

THE OVERLOOK

MT. BAKER VIEW

BAYVIEW 2

RIDGE LOOKOUT

THE BROTHERS VIEW

WETLAND

THE ALDERS

LUNCH ROCK

PARK SEGMENT

CONIFER SEGMENT

VIEW SEGMENT

ALDER SEGMENT

STOTTLEMEYER SEGMENT

EXISTING BAYVIEW PARKING

EXISTING STOTTLEMEYER PARKING

RIDE PARK

LYNX

RANGER

EWOK

DOWNHELL

ANKLE BITER

ALDER PUDDING

DERAILED

COYOTE

SR 3

SR 104

1100

1300

1000

1500

1200

1600

1700

1920

1800

1900

2000

2100

1830

PORT GAMBLE TOWN

GAMBLE BAY

HOOD CANAL

RAYONIER PROPERTY (APPROX.)

BIG VALLEY RD

STOTTLEMEYER RD

BOND RD

PORT GAMBLE RD NE

0 0.25 MI 0.50 MI 1 MI

NORTH

PROGRAMMING
PROPOSED MAJOR CLASS 3 TRAIL LOOPS

- Proposed Major Loops on Class 3 Trails
- Destinations
- Orientation Nodes
- Restrooms

OLYMPIC VIEW 1
OLYMPIC VIEW 2
OLD CEDARS
BEAVER POND
THE OVERLOOK
MT. BAKER VIEW
RIDGE LOOKOUT
BAYVIEW 2
THE BROTHERS VIEW
WETLAND
THE ALDERS
LUNCH ROCK
EXISTING BAYVIEW PARKING
EXISTING STOTTLEMEYER PARKING
RIDE PARK
LYNX
RANGER
EWOK
DOWNHELL
ANKLE BITER
ALDER PUDDING
DERAILED
COYOTE
1100
1300
1000
1500
1600
1200
1700
1800
1920
1900
2000
1830
2100
SR 3
SR 104
PORT GAMBLE TOWN
GAMBLE BAY
HOOD CANAL
RAYONIER PROPERTY (APPROX.)
BIG VALLEY RD
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE

0 0.25 MI 0.50 MI 1 MI

NORTH

PROGRAMMING

PROPOSED MAJOR CLASS 4 TRAIL LOOPS

- Proposed Major Loops on Class 4 Trails
- Requires Travel on STO or Gravel Shoulder of STO
- Loop Connector Trails
- Destinations
- Orientation Nodes
- Restrooms

OLYMPIC VIEW 1
OLYMPIC VIEW 2
OLD CEDARS
BEAVER POND
THE OVERLOOK
MT. BAKER VIEW
RIDGE LOOKOUT
THE BROTHERS VIEW
WETLAND
THE ALDERS
LUNCH ROCK
BAYVIEW 2
EXISTING BAYVIEW PARKING
EXISTING STOTTLEMEYER PARKING
RIDE PARK
LYNX
RANGER
EWOK
DOWNHELL
ANKLE BITER
ALDER PUDDING
DERAILED
COYOTE
1100
1300
1000
1200
1500
1600
1700
1800
1900
2000
1830
2100
SR 3
SR 104
PORT GAMBLE TOWN
GAMBLE BAY
HOOD CANAL
RAYONIER PROPERTY (APPROX.)
BIG VALLEY RD
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE
0
0.25 MI
0.50 MI
1 MI
NORTH

PROPOSED ACCESS

- Walk-in Access (Retained)
- Small/Medium Parking Lot (Retained)
- Large Parking Lot (Retained)
- Proposed Walk-in Access
- Proposed Small/Medium Parking Lot
- Proposed Large Parking Lot

HOOD CANAL
SR 3
RIDE PARK
1100
1300
1000
1500
1600
1700
1800
1900
2000
1920
1200
1000
1000
2100
LYNX
RANGER
EWOK
DOWNHELL
ANKLE BITER
ALDER PUDDING
DERAILED
COYOTE
PORT GAMBLE TOWN
GAMBLE BAY
SR 104
BIG VALLEY RD
RAYONIER PROPERTY (APPROX.)
RAYONIER PROPERTY (APPROX.)
STOTTLEMEYER RD
BOND RD
PORT GAMBLE RD NE
1H
1K
1L
1M
1J
1I
1A
1A
1B
EXISTING BAYVIEW PARKING
1F
1E
1G
1D
EXISTING STOTTLEMEYER PARKING
0
0.25 MI
0.50 MI
1 MI
NORTH

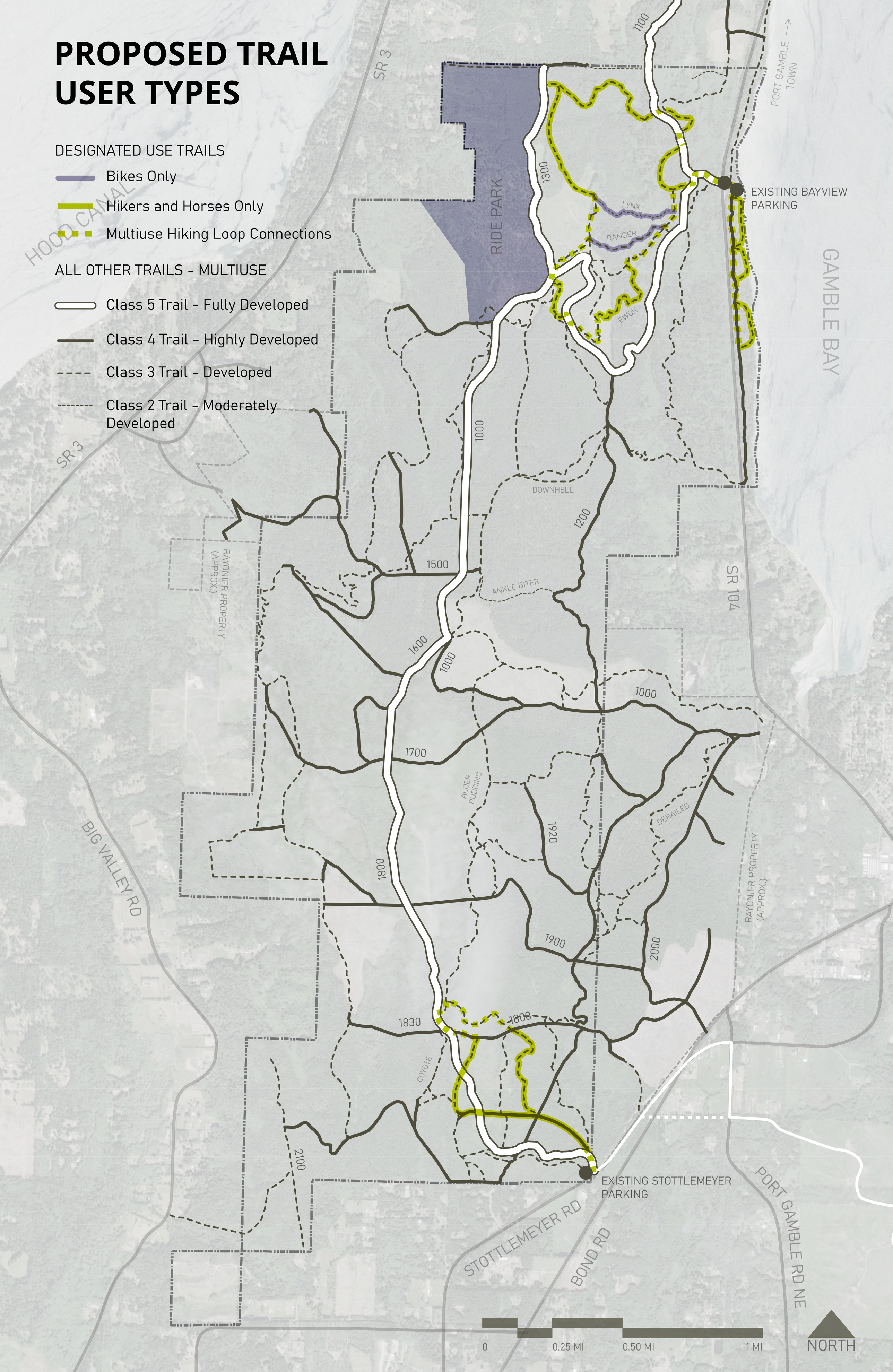
PROPOSED TRAIL USER TYPES

DESIGNATED USE TRAILS

- Bikes Only
- Hikers and Horses Only
- Multiuse Hiking Loop Connections

ALL OTHER TRAILS - MULTIUSE

- Class 5 Trail - Fully Developed
- Class 4 Trail - Highly Developed
- Class 3 Trail - Developed
- Class 2 Trail - Moderately Developed



5-2 APPENDIX

USFS TRAIL DESIGN PARAMETERS &
STANDARD SPECIFICATIONS

Trail Fundamentals

Trail Type ▪ Trail Class ▪ Managed Use ▪ Designed Use ▪ Design Parameters

Trail Fundamentals are five concepts that are the cornerstones of Forest Service trail management:

- Trail Type
- Trail Class *
- Managed Use *
- Designed Use *
- Design Parameters

Identify the five Trail Fundamentals for each National Forest System (NFS) trail or trail segment based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction (FSM 2353.13).

Trail Fundamentals provide an integrated means to consistently record and communicate the intended design and management guidelines for trail design, construction, maintenance and use. Before completing documentation for Trail Management Objectives (TMO), TRACS, or applying Trail Fundamentals in trail management, it is essential that their intent is clearly understood.

Trail Type (FSH 2309.18, sec. 14.1)

A category that reflects the predominant trail surface and general mode of travel accommodated by a trail

There are three Trails Types:

Standard/Terra Trail: *A trail that has a surface consisting predominantly of the ground and that is designed and managed to accommodate use on that surface.*

Snow Trail: *A trail that has a surface consisting predominantly of snow or ice and that is designed and managed to accommodate use on that surface.*

Water Trail*: A trail that has a surface consisting predominantly of water (but may include land-based portages) and that is designed and managed to accommodate use on that surface.*

This management concept allows managers to identify trail-specific Design Parameters, management needs, and the cost of managing the trail for particular uses and/or seasons by trail or trail segment.

1. Inventory trails and identify the appropriate Design Parameters, management needs, and management costs for NFS trails using the Trail Types.

2. Identify only one Trail Type per trail.

3. Identify the Trail Type for each NFS trail based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction.

4. Inventory both trails and Trail Types in the Infra Trails Module when two National Forest System trails overlap, for example, when a Snow Trail overlaps a Standard Terra Trail.

Trail Class (FSH 2309.18, sec.14.2)

The prescribed scale of development for a trail, representing its intended design and management standards.

Trail Classes are general categories reflecting trail development scale, arranged along a continuum.

There are five Trail Classes, ranging from the least developed (Trail Class 1) to the most developed (Trail Class 5):

Trail Class 1: Minimally Developed

Trail Class 2: Moderately Developed

Trail Class 3: Developed

Trail Class 4: Highly Developed

Trail Class 5: Fully Developed

Use Trail Classes to inventory NFS trails and to identify the applicable Design Parameters and costs for meeting the National Quality Standards for Trails.

1. Identify only one Trail Class per trail or trail segment.

2. Trail Class descriptors reflect typical attributes of trails in each class. Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

3. There is a direct relationship between Trail Class and Managed Uses (FHS 2309.18, sec. 14.3): generally, one cannot be determined without consideration of the other.

4. Identify the appropriate Trail Class for each NFS trail or trail segment based on the management intent in the applicable land management plan, travel management decisions, trail-specific decisions, and other related direction. Apply the Trail Class that most closely reflects the management intent for the trail or trail segment, which may or may not reflect the current condition of the trail.

For specifics on each Trail Class, refer to the Trail Class Matrix (FSH 2309.18, sec. 14.2, ex. 01).

Managed Use (FSH 2309.18, sec. 14.3)

A mode of travel that is <u>actively</u> managed and appropriate on a trail, based on its design and management.

1. Managed Use indicates management intent to accommodate a specific use.

2. There can be more than one Managed Use per trail or trail segment.

3. The Managed Uses for a trail are usually a small subset of all the allowed uses on the trail, that is, uses that are allowed unless specifically prohibited. For example, on a trail that is closed to all motorized use but open to all non-motorized use, the Managed Uses could be Hiker/Pedestrian and Pack and Saddle. The allowed uses, however, would also include bicycles and all other non-motorized uses.

4. Identify the Managed Uses for each NFS trail or trail segment based on applicable land management plan direction, travel management decisions, trail-specific decisions, and other related direction.

5. There is a direct relationship between Managed Use and Trail Class: generally, one cannot be determined without consideration of the other. Not all Trail Classes are appropriate for all Managed Uses. For guidance on the potential appropriateness of each Trail Class to each Managed Use, see FSH 2309.18, section 14.3, exhibit 01.

Designed Use (FSH 2309.18, sec 14.4)

The Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters will apply to a trail.

1. There is only one Designed Use per trail or trail segment. Although a trail or trail segment may have more than one Managed Use and numerous uses may be allowed, only one Managed Use is identified as the design driver or Designed Use.

2. Determine the Designed Use for a trail or trail segment from the Managed Uses identified for that trail. When making this determination, consider all Managed Uses that occur during all seasons of use of the trail or trail segment. Assess any essential or limiting geometry for the Managed Uses of the trail or trail segment to determine whether any trail-specific adjustments are necessary to the applicable Design Parameters.

    a. In some situations, when there is more than one Managed Use identified for a trail, the Designed Use may be readily apparent. For example, on a trail with Managed Uses of all-terrain vehicle and Motorcycle, all-terrain vehicle use would be the Designed Use because this use requires wider tread widths and has lower tolerances for surface obstacles and maximum trail grades.

    b. In other situations involving more than one Managed Use, the Designed Use may not be readily apparent, as is often the case when there are fewer differences between the applicable sets of Design Parameters than in the example above. For example, on a trail that is actively managed for hiker and pedestrian, pack and saddle, and bicycle use, pack and saddle use would likely be the Designed Use because of the three Managed Uses, pack and saddle use generally has the most limiting design requirements. While the Bicycle Design Parameters are very similar to the Pack and Saddle Design Parameters, the Design Parameters for this trail may need to be adjusted to accommodate bicycles.

Designed Use / Managed Use Types

Hiker / Pedestrian
Pack and Saddle
Bicycle
Motorcycle
All Terrain Vehicle
Four-Wheel Drive Vehicle > 50” in Width
Cross-Country Ski
Snowshoe
Snowmobile
Motorized Watercraft
Non-Motorized Watercraft

Design Parameters (FSH 2309.18, sec. 14.5)

Technical guidelines for the survey, design, construction, maintenance, and assessment of a trail, based on its Designed Use and Trail Class.

1. Design Parameters reflect the design objectives for NFS trails and determine the dominant physical criteria that most define their geometric shape. These criteria include:

   a. Design Tread Width. Design Tread Width is expressed in terms of single lane, double lane, and the minimum tread width on trail structures.

   b. Design Surface. Design Surface is expressed in terms of surface type, protrusions, and obstacles.

   c. Design Grade. Design Grade is expressed in terms of Target Grade, Short Pitch Maximum Grade, and Maximum Pitch Density.

   d. Design Cross Slope. Design Cross Slope is expressed in terms of Target Cross Slope and Maximum Cross Slope.

   e. Design Clearing. Design Clearing is expressed in terms of width, height, and shoulder clearance.

   f. Design Turns. Design Turns are expressed in terms of the turning radius.

2. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, and other factors (for example, mitigation of site-specific safety concerns and adjustments to accommodate other Managed Uses), provided that the deviations are consistent with the general intent of the applicable Trail Class.

3. Identify the Design Parameters for a NFS trail or trail segment based on its Trail Class and Designed Use. For a Design Parameter such as Design Tread Width, Design Clearing Width, and Design Turns that is expressed as a range of values, identify a specific value for each trail or trail segment.

For the complete set of Design Parameters, refer to FSH 2309.18, section 23.11, exhibit 01, through section 23.33, exhibit 01.

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* This management concept / attribute is included in the Federal Trail Data Standards developed by the US Forest Service, National Park Service, Bureau of Land Management and US Fish and Wildlife Service.

Trail Class Matrix

Trail Classes are general categories reflecting trail development scale, arranged along a continuum. The Trail Class identified for a National Forest System (NFS) trail prescribes its development scale, representing its intended design and management standards.[1] Local deviations from any Trail Class descriptor may be established based on trail-specific conditions, topography, or other factors, provided that the deviations do not undermine the general intent of the applicable Trail Class.

Identify the appropriate Trail Class for each National Forest System trail or trail segment based on the management intent in the applicable land management plan, travel management direction, trail-specific decisions, and other related direction. Apply the Trail Class that most closely matches the management intent for the trail or trail segment, which may or may not reflect the current condition of the trail.

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
Tread & Traffic Flow	◆ Tread intermittent and often indistinct ◆ May require route finding ◆ Single lane with no allowances constructed for passing ◆ Predominantl y native materials	◆ Tread continuous and discernible, but narrow and rough ◆ Single lane with minor allowances constructed for passing ◆ Typically native materials	◆ Tread continuous and obvious ◆ Single lane, with allowances constructed for passing where required by traffic volumes in areas with no reasonable passing opportunities available ◆ Native or imported materials	◆ Tread wide and relatively smooth with few irregularities ◆ Single lane, with allowances constructed for passing where required by traffic volumes in areas with no reasonable passing opportunities available ◆ Double lane where traffic volumes are high and passing is frequent ◆ Native or imported materials ◆ May be hardened	◆ Tread wide, firm, stable, and generally uniform ◆ Single lane, with frequent turnouts where traffic volumes are low to moderate ◆ Double lane where traffic volumes are moderate to high ◆ Commonl y hardened with asphalt or other imported material
Obstacles	◆ O bstacles common, naturally ocurring, often substantial and intended to provide increased challenge ◆ Narrow passages; brush, steep grades, rocks and logs present	◆ Obstacles may be common, substantial, and intended to provide increased challenge ◆ Blockages cleared to define route and protect resources ◆ Vegetation may encroach into trailway	◆ Obstacles may be common, but not substantial or intended to provide challenge ◆ Vegetation cleared outside of trailway	◆ Obstacles infrequent and insubstantial ◆ Vegetation cleared outside of trailway	◆ Obstacles not present ◆ Grades typically < 8%

10/16/2008

Trail Attributes	Trail Class 1 Minimally Developed	Trail Class 2 Moderately Developed	Trail Class 3 Developed	Trail Class 4 Highly Developed	Trail Class 5 Fully Developed
Constructed Features & Trail Elements	◆ Structures minimal to non-existent ◆ Drainage typically accomplished without structures ◆ Natural fords ◆ Typically no bridges	◆ Structures of limited size, scale, and quantity; typically constructed of native materials ◆ Structures adequate to protect trail infrastructure and resources ◆ Natural fords ◆ Bridges as needed for resource protection and appropriate access	◆ Structures may be common and substantial; constructed of imported or native materials ◆ Natural or constructed fords ◆ Bridges as needed for resource protection and appropriate access	◆ Structures frequent and substantial; typically constructed of imported materials ◆ Contructed or natural fords ◆ Bridges as needed for resource protection and user convenience ◆ Trailside amenities may be present	◆ Structures frequent or continuous; typically constructed of imported materials ◆ May include bridges, boardwalks, curbs, handrails, trailside amenities, and similar features
Signs[2]	◆ Route identification signing limited to junctions ◆ Route markers present when trail location is not evident ◆ Regulator y and resource protection signing infrequent ◆ Desination signing, unless required, generally not present ◆ Information and interpretive signing generally not present	◆ Route identification signing limited to junctions ◆ Route markers present when trail location is not evident ◆ Regulator y and resource protection signing infrequent ◆ Destination signing typically infrequent outside of wilderness; generally not present in wilderness ◆ Information and interpretive signing not common	◆ Route identification signing at junctions and as needed for user reassurance ◆ Route markers as needed for user reassurance ◆ Regulator y and resource protection signing may be common ◆ Destination signing likely outside of wilderness; generally not present in wilderness ◆ Information and interpretive signs may be present outside of wilderness	◆ Route identification signing at junctions and as needed for user reassurance ◆ Route markers as needed for user reassurance ◆ Regulator y and resource protection signing common ◆ Destination signing common outside of wilderness; generally not present in wilderness ◆ Information and interpretive signs may be common outside of wilderness ◆ Accessibility information likely displayed at trailhead	◆ Route identification signing at junctions and for user reassurance ◆ Route markers as needed for user reassurance ◆ Regulator y and resource protection signing common ◆ Destination signing common ◆ Information and interpretive signs common ◆ Access ibility information likely displayed at trailhead
Typical Recreation Environs & Experience[3]	◆ Natural, unmodified ◆ ROS: Typically Primitive to Roaded Natural ◆ WROS: Typically Primitive to Semi-Primitive	◆ Natur al, essentially unmodified ◆ ROS: Typically Primitive to Roaded Natural Typically ◆ WROS: Typically Primitive to Semi-Primitive	◆ Natur al, primarily unmodified ◆ ROS: Typically Primitive to Roaded Natural ◆ WROS: Typically Semi-Primitive to Transition	◆ May be modified ◆ ROS: Typically Semi-Primitive to Rural Roaded Natural to Rural setting ◆ WROS: Typically Portal or Transition	◆ May be highly modified ◆ Commonly associated with visitor centers or high-use recreation sites ◆ ROS: Typically Roaded Natural to Urban ◆ Generally not present in Wilderness

[1] For National Quality Standards for Trails, Potential Appropriateness of Trail Classes for Managed Uses, Design Parameters, and other related guidance, refer to FSM 2353, FSH 2309.18, and other applicable agency references.

[2] For standards and guidelines for the use of signs and posters along trails, refer to the Sign and Poster Guidelines for the Forest Service (EM-7100-15).

[3] The Trail Class Matrix shows the combinations of Trail Class and Recreation Opportunity Spectrum (ROS) or Wilderness Recreation Opportunity Spectrum (WROS) settings that commonly occur, although trails in all Trail Classes may and do occur in all settings. For guidance on the application of the ROS and WROS, refer to FSM 2310 and 2353 and FSH 2309.18.

FOREST SERVICE HANDBOOK
NATIONAL HEADQUARTERS (WO)
WASHINGTON, DC

FSH 2309.18 – TRAILS MANAGEMENT HANDBOOK

CHAPTER 20 – TRAIL DEVELOPMENT

Amendment No.: 2309.18-2008-4

Effective Date: October 16, 2008

Duration: This amendment is effective until superseded or removed.

Approved: CHARLES L. MYERS
Associate Deputy Chief, NFS

Date Approved: 09/30/2008

Posting Instructions: Amendments are numbered consecutively by handbook number and calendar year. Post by document; remove the entire document and replace it with this amendment. Retain this transmittal as the first page(s) of this document. The last amendment to this handbook was 2309.18-2008-3 to 2309.18_10.

New Document	2309.18_20	48 Pages
Superseded Document(s) by Issuance Number and Effective Date	!2309.18,2 Contents (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.31a, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.31b, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.31d, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.32a, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.32b, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991 2309.18,2.32c, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.32d, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991) 2309.18,2.33a, Ex. 01 (Amendment 2309.18-91-2, 11/08/1991)	1 Page 19 Pages 1 Page 2 Pages 1 Page 2 Pages 2 Pages 2 Pages 1 Page 2 Pages

Digest:

Notice of issuance of this directive was published in the Federal Register on October 16, 2008 (73 FR 61600).

Recodes chapter from 1 digit to 2 digits to conform to standard Forest Service directive format.

20.2 – Revises "Objectives" to include Trail Management Objectives (TMOs).

21 - Changes caption from "Sequence of Events" to "Planning, Preparation, and Implementation of Trail Projects," and enumerates trail project steps in exhibit 01.

22.1 - Changes caption from "Recreation Opportunity Spectrum" to "Trail Management Objectives (TMOs)," and adds reference to FSM 2353.12.

22.2 – Changes caption from "Difficulty Levels" to "Recreation Opportunity Spectrum," and revises direction previously set forth at 2.21.

22.3 – Changes caption from "Trailheads" to "Trail Class and Level of Challenge," and adds direction previously set forth at 2.22.

22.4-22.45 – Changes captions, and recodes to this section direction previously set forth at 2.23-2.23e.

22.5 – Establishes new code and caption, "Facilities and Associated Constructed Features Along Trails," and sets forth new direction.

22.6 – Establishes new code and caption, "Wilderness Considerations," and clarifies direction.

23 – Changes caption from "Trail Construction and Maintenance Guides" to "Design Parameters."

23.1 – Changes caption from "Nonmotorized Trails" to "Standard Terra Trails: Non-Motorized."

23.11-23.13 – Changes captions, and adds exhibits for the Design Parameters for Hiker/Pedestrian, Pack and Saddle, and Bicycle.

23.2 – Changes caption from "Motorized Trails" to "Standard Terra Trails: Motorized."

23.21-23.23 – Changes captions and adds exhibits for the Motorcycle Design Parameters, All-Terrain Vehicle Design Parameters, and Design Parameters for Four-Wheel Vehicles Greater Than 50 Inches in Width.

Digest--Continued:

23.3 – Changes caption from "Special Trails" to "Snow Trails."

23.31-23.33 – Changes captions, and adds exhibits for the Cross-Country Ski Design Parameters, Snowshoe Design Parameters, and Snowmobile Design Parameters.

23.4 – Establishes a reserved code and caption, "Water Trails."

23.5 – Establishes new code and caption, "Special Trails," and sets forth direction, including "Accessible Trails" at 23.51 and "Interpretive Trails" at 23.52. Recodes to this section direction previously set forth in 2.33a and 2.33b.

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20.2 – Objectives

1. Provide trails that meet their Trail Management Objectives (TMOs), are consistent with the applicable land management plan, provide opportunities for satisfying recreation experiences, harmonize with and provide opportunities for enjoyment of the national forest or grassland setting, and minimize maintenance costs.

2. Design, construct, and maintain sustainable trails, that is, trails that withstand the wear and tear of normal traffic and reasonable user behavior during the managed season of use and that have minimal negative effects on adjacent resources.

21 – PLANNING, PREPARATION, AND IMPLEMENTATION OF TRAIL PROJECTS

The chart on the following page shows the steps that should be followed in planning, preparing, and implementing a trail project.

21 - Exhibit 01

PLANNING, PREPARATION, AND IMPLEMENTATION OF TRAIL PROJECTS

Phases[1]	Components	Average Lead Time (In Years)
1. Programing	Planning	5
	Design Elements Selection	
2. Reconnaissance	Preconstruction[1]	4
	Route Investigation	
	Placement of Preliminary Flag Lines	
	Environmental Analysis	
	Final Route Selection	
	Commence Right-of-Way Acquisition (if needed)	
3. Location Survey	Survey[2]	2
	Placement of Preliminary Flag Lines	
	Trail Classification Data	
	Project Cost Estimate	
	Final Design	
4. Project or Contract Preparation	Drawings and Specifications	1
	Review of Plans	
5. Construction	Contract Award	0
	Contract Administration	

[1] These phases do not occur independently. The most notable overlap occurs in design. Design begins during the programming phase, is further refined during the reconnaissance and location survey phases, and is completed prior to development of drawings and specifications during project or contract preparation.

[2] The survey work should not start until the requisite environmental analysis has been completed

22 - GENERAL DESIGN CONSIDERATIONS

The following direction applies to the reconnaissance phase of project-level trail planning.

22.1 - Trail Management Objectives (TMOs)

Incorporate applicable TMOs in the design and development of each National Forest System (NFS) trail (FSM 2353.12).

22.2 - Recreation Opportunity Spectrum

1. The Recreation Opportunity Spectrum (ROS) identifies experience levels and management prescriptions to provide a diversity of recreation experiences.

2. Trail development and uses must reflect trail direction in the applicable land management plan, including the ROS classes identified in the plan (FSM 2311.1).

22.3 – Trail Class and Level of Challenge

1. Trail Classes generally reflect the level of recreational challenge provided by a trail, including the corresponding level of user skill and experience needed to negotiate the trail. For example, a trail in Trail Class 2 normally is constructed and maintained to a lower standard than a trail in Trail Class 4. Therefore, a trail in Trail Class 2 is usually more challenging and generally requires more user skill and experience than a trail in Trail Class 4 to traverse.

2. The degree of challenge presented by a trail depends on a combination of trail characteristics, including trail grade, alignment, clearing width, tread conditions, gain or loss of elevation, and other criteria outlined in the Design Parameters (sec. 23.1, ex. 01, through 23.3, ex. 01).

22.4 - Trailheads

22.41 – Trailhead Location

1. Where appropriate, situate trailheads so as to allow access to the greatest number and diversity of trails. Depending on the circumstances, the greatest diversity of trails may include trails with the same Managed Use or with multiple Managed Uses, depending on the combination of uses, relative use levels, and potential for use conflicts. Match the development scale and size of the trailhead facility to the carrying capacity of the area and to the Trail Classes of the trails to be served.

2. In locating trailheads, consider snow use as well as non-snow use where appropriate, along with opportunities for using existing facilities. Other pertinent considerations include the ability to provide pull-through parking for vehicles with trailers and space for unloading trailers and stock trucks and safety of unattended vehicles.

3. Use visual resource management principles to minimize the visual impacts of the trailhead on trail users (see FSM 2380 and Landscape Aesthetics: A Handbook for Scenery Management, USDA Agriculture Handbook 701).

4. All constructed features must comply with the applicable technical provisions of the Architectural Barriers Act Accessibility Standards (ABAAS) or the Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG). The routes connecting constructed features at trailheads must comply with the technical provisions for outdoor recreation access routes in the FSORAG. The FSORAG is available electronically at *http://www.fs.fed.us/recreation/programs/accessibility*.

22.42 – Trailhead Parking

1. When space is available, consider separate parking facilities for certain uses, such as horseback riding and hiking. Provide separate facilities within walking distance of areas of concentrated public use, such as campgrounds. Locate the trailhead next to a trail so that non-highway-legal vehicles are not forced to travel on roads that may be used only by highway-legal vehicles.

2. When 5 or more designated parking spaces are provided at a trailhead, they must comply with the technical provisions in ABAAS for accessible parking spaces.

22.43 – Pack and Saddle Trailheads

1. The trailhead needs of pack and saddle animal users vary with the type of vehicles used for transportation, the number of animals being handled, and the length of stay at the trailhead.

2. Many animals are transported in trailers or trucks equipped with portable ramps. Therefore, unloading ramps are not needed at every trailhead. As an alternative, consider designing an earthen bank for unloading.

3. Trailheads used primarily for day trips require less development than those used for overnight trips.

4. Trailheads with a full range of facilities, such as a loading ramp, a corral, a water source, hitching racks, and feed bunks, may be justified if the objective is to have users bring pack and saddle animals out of the backcountry for the night. Fully developed trailheads may be especially desirable in areas with scarce forage or fragile soils. Provide toilets and fire rings where needed.

5. Corrals are expensive to construct and maintain and should be considered only when animals need to be held for more than one or two nights. Many owners are reluctant to place their animals in a corral with other animals with which they are not familiar.

6. A watering source for livestock is an important consideration. A trail to a nearby stream may suffice, but for heavy-use sites, consider piping in water to a watering tank.

22.44 – Snow Removal at Trailheads

Coordinate plowing at trailheads with the local public road authority. If rotary plows will be used, pave the surface of the road or parking lot. The size of the plowed parking area will provide an upper limit for trail use. Consider the following when providing winter parking at trailheads:

1. Snow Removal.

   a. Adequate surface for snowplowed lots.

   b. Adequate slope for drainage and operation of appropriate equipment.

   c. Proximity to buildings and surface obstructions.

2. Size and Shape of Parking Lot.

   a. Design that allows for efficient snow removal and use. A compromise between the visual resource and efficiency of snow removal may be necessary.

   b. Maneuverability of necessary equipment.

3. Adequate Snow Storage.

   a. Sufficient room for snow storage to prevent removal of the same snow multiple times.

   b. Protection of adjacent vegetation from mechanical or chemical damage incidental to snow clearing.

4. Access Road.

   a. Adequate width.

   b. Availability of proper storage for snow removed from the road.

   c. Situated at a reasonable distance from major access points.

   d. Minimal curvature.

   e. Grade of less than 3 percent.

   f. Adequate visibility at parking area or access road entrances.

22.45 – Application of Forest Service Trail Accessibility Guidelines (FSTAG) at Trailheads

Ensure that all new or altered trails with a Designed Use of Hiker/Pedestrian that connect directly to a trailhead or to a currently accessible trail comply with the FSTAG. The FSTAG is available electronically at *http://www.fs.fed.us/recreation/programs/accessibility*.

22.5 – Facilities and Associated Constructed Features Along Trails

1. Facilities and associated constructed features along trails include shelters, toilets, and other structures that provide support for trail users. These facilities and associated constructed features must comply with the FSORAG under the Forest Service's universal design policy.

2. Facilities and associated constructed features along trails must be designed appropriately for the setting and in compliance with the FSORAG to ensure that the facilities can be used for their primary purpose by all hikers, including hikers with disabilities. See the FSORAG for specific technical provisions. This requirement applies but is not limited to:

   a. Pit Toilets With No Walls. The total height of the toilet seat and the riser it sits on must be 17 to 19 inches above the ground or floor. A clear floor or ground space complying with section 6.6.6 of the FSORAG must be provided adjacent to the riser. Since walls are not provided, grab bars are not required.

   b. Trail Shelters or Lean-Tos With Three Walls. Where the constructed finished floor elevation is above the ground, a shelter or lean-to must be located so that at least one section of the floor on the open side of the shelter or lean-to is 17 to 19 inches above ground to facilitate transfer from a wheelchair.

22.6 – Wilderness Considerations

1. The applicable land management plan establishes specific objectives for wilderness management, including appropriate levels and types of use. Plan and manage the trail system serving a wilderness area in accordance with these objectives (FSM 2323).

2. The criteria for locating, constructing, and maintaining trails in a wilderness area are based on the management objectives outlined in the applicable wilderness plan. At a minimum, locate, construct, and maintain trails in a wilderness area so as to achieve the following goals:

a. To give the appearance of being a part of the wilderness area, rather than an intrusion upon it.

b. To meet and maintain the levels of acceptable use established for specific locations in the wilderness area.

c. To meet the setting requirements for the Recreation Opportunity Spectrum (ROS) class established for specific locations in the wilderness area.

d. To meet the scenic integrity objectives established for specific locations in the wilderness area.

e. To protect the safety of users consistent with the normal degree of difficulty they would likely encounter during the primary season of public use.

f. To protect and perpetuate the wilderness character of the area.

g. To construct and maintain trails with non-motorized equipment.

h. To provide trail treads that do not exceed 24 inches in width.

23 – DESIGN PARAMETERS

Identify Design Parameters for each NFS trail or trail segment based on the guidance in section 14.5 and the corresponding set of Design Parameters in sections 23.1 through 23.3.

The following sets of Design Parameters are included as exhibits in sections 23.1 through 23.3:

1. Section 23.1 – Standard Terra Trails: Non-Motorized.

   a. Hiker/Pedestrian.

b. Pack and Saddle.

c. Bicycle.

2. Section 23.2 – Standard Terra Trails: Motorized.

   a. Motorcycle.

   b. All-Terrain Vehicle (ATV).

   c. Four-Wheel Drive Vehicle Greater Than 50 Inches in Width.

3. Section 23.3 – Snow Trails.

   a. Cross-Country Ski.

   b. Snowshoe.

   c. Snowmobile.

4. Section 23.4 – Water Trails [Reserved].

Besides the Designed Uses included in the Design Parameters, there are a variety of other Managed Uses, such as dog sledding. Regional sets of Design Parameters may be developed for these Managed Uses, if needed. If these Managed Uses become common, a national set of Design Parameters may be developed for those uses.

For definitions of the design attributes in each set of Design Parameters (including Design Tread Width, Design Surface, Design Grade, Design Cross Slope, Design Clearing, and Design Turns), refer to section 05.

23.1 – Standard Terra Trails – Non-Motorized

23.11 – Hiker/Pedestrian Design Parameters

The next page displays the Hiker/Pedestrian Design Parameters, followed by considerations regarding their application.

23.11 - Exhibit 01

HIKER/PEDESTRIAN DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use HIKER/PEDESTRIAN		**Trail Class 1**	**Trail Class 2**	**Trail Class 3** [2]	**Trail Class 4** [2]	**Trail Class 5** [2]
Design Tread Width	**Wilderness** (Single Lane)	0” – 12”	6” – 18”	12” – 24” Exception: may be 36” – 48” at steep side slopes	18” – 24” Exception: may be 36” – 48” at steep side slopes	Not applicable
	Non-Wilderness (Single Lane)	0” – 12”	6” – 18”	18” – 36”	24” – 60”	36” – 72”
	Non-Wilderness (Double Lane)	36”	36”	36” – 60”	48” – 72”	72” – 120”
	Structures (Minimum Width)	18”	18”	18”	36”	36”
Design Surface[3]	**Type**	Native, ungraded May be continuously rough	Native, limited grading May be continuously rough	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native with improved sections of borrow or imported material, and routine grading Minor roughness	Likely imported material, and routine grading Uniform, firm, and stable
	Protrusions	≤ 24” Likely common and continuous	≤ 6” May be common and continuous	≤ 3” May be common, not continuous	≤ 3 ” Uncommon, not continuous	No protrusions
	Obstacles (Maximum Height)	24”	14”	10”	8”	No obstacles

23.11 – Exhibit 01--Continued

Designed Use HIKER/PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3 [2]	Trail Class 4 [2]	Trail Class 5 [2]
Design Grade [3]	**Target Grade**	5% – 25%	5% – 18%	3% – 12%	2% – 10%	2% – 5%
	Short Pitch Maximum	40%	35%	25%	15%	5% FSTAG: 5% – 12%[2]
	Maximum Pitch Density	20% – 40% of trail	20% – 30% of trail	10% – 20% of trail	5% – 20% of trail	0% – 5% of trail
Design Cross Slope	**Target Cross Slope**	Natural side slope	5% – 20%	5% – 10%	3% – 7%	2% – 3% (or crowned)
	Maximum Cross Slope	Natural side slope	25%	15%	10%	3%
Design Clearing	**Height**	6’	6’ – 7’	7’ – 8’	8’ – 10’	8’ – 10’
	Width	≥ 24” Some vegetation may encroach into clearing area	24” – 48” Some light vegetation may encroach into clearing area	36” – 60”	48” – 72”	60” – 72”
	Shoulder Clearance	3” – 6”	6” – 12”	12” – 18”	12” – 18”	12” – 24”
Design Turn	**Radius**	No minimum	2’ – 3’	3’ – 6’	4’ – 8’	6’ – 8’

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] Trail Classes 3, 4, and 5, in particular, have the potential to be accessible. If assessing or designing trails for accessibility, refer to the Forest Service Trail Accessibility Guidelines (FSTAG) for more specific technical provisions and tolerances (FSM 2350).

[3] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Hiker/Pedestrian Design Parameters:

1. Trails with a Designed Use of Hiker/Pedestrian generally require less development than trails with another Designed Use, thereby offering the greatest opportunity to bring users close to nature. Tread width, clearing width and height, alignment, and structures for crossing streams normally are at a smaller scale.

2. On trails with a Designed Use of Hiker/Pedestrian, grades leading to and from switchbacks should not be less than 10 percent. Within the turn, reduce the grade to less than 10 percent for a distance of 5 or 6 feet. When needed, reduce or eliminate creation of switchbacks by trail users by installing rocks, logs, native vegetation, or other material.

3. When trails with a Designed Use of Hiker/Pedestrian cross wet areas or streams, select routes that require the fewest structures. When designing structures to cross wet areas, follow the guidance in the Design Parameters regarding the minimum tread width for trail structures. Stepping stones generally should be at least 12 to 18 inches wide, depending on the Trail Class of the trail and its management intent, and should be set no more than 24 inches apart.

4. Design bridges on trails with a Designed Use of Hiker/Pedestrian to prevent overloading, especially if they are located in areas used by pack and saddle stock.

5. The maximum grade for trails in Trail Class 1 with a Designed Use of Hiker/Pedestrian matches the grade for trails in the lowest class of mountaineering routes. However, mountaineering routes, which require the use of unconstructed hand and toe holes or ropes, are not covered by the Hiker/Pedestrian Design Parameters.

23.12 – Pack and Saddle Design Parameters

The next page displays the Pack and Saddle Design Parameters, followed by considerations regarding their application.

23.12 - Exhibit 01

PACK AND SADDLE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **PACK AND SADDLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Wilderness** (Single Lane)	Typically not designed or actively managed for equestrians, although use may be allowed	12” – 18” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	18” – 24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	Typically not designed or actively managed for equestrians, although use may be allowed
	Non-Wilderness (Single Lane)		12” – 24” May be up to 48” along steep side slopes 48” – 60” or greater along precipices	18” – 48” 48” – 60” or greater along precipices	24” – 96” 48” – 60” or greater along precipices	
	Non-Wilderness (Double Lane)		60”	60” – 84”	84” – 120”	
	Structures (Minimum Width)		Other than bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	Other than bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	Other than bridges: 36” Bridges without handrails: 60” Bridges with handrails: 84” clear width	
Design Surface[2]	**Type**		Native, with limited grading May be frequently rough	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough	Native, with improved sections of borrow or imported material and routine grading Minor roughness	

23.12 – Exhibit 01--Continued

Designed Use PACK AND SADDLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Surface (continued)	**Protrusions**		≤ 6” May be common and continuous	≤ 3” May be common, not continuous	≤ 3” Uncommon, not continuous	
	Obstacles (Maximum Height)		12”	6”	3”	
Design Grade [2]	**Target Grade**		5% – 20%	3% – 12%	2% – 10%	
	Short Pitch Maximum		30%	20%	15%	
	Maximum Pitch Density		15% – 20% of trail	5% – 15% of trail	5% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		5% – 10%	3% – 5%	0% – 5%	
	Maximum Cross Slope		10%	8%	5%	
Design Clearing	**Height**		8’ – 10’	10’	10’ – 12’	
	Width		72” Some light vegetation may encroach into clearing area	72” – 96”	96”	
	Shoulder Clearance		6” – 12” Pack clearance: 36” x 36”	12” – 18” Pack clearance: 36” x 36”	12” – 18” Pack clearance: 36” x 36”	
Design Turn	**Radius**		4’ – 5’	5’ – 8’	6’ – 10’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Pack and Saddle Design Parameters:

1. Trails with a Designed Use of Pack and Saddle are designed and maintained to accommodate a wide variety of pack and saddle animals, including horses, mules, donkeys, and burros. Some of these trails are simple day-use bridle paths, and others are built to accommodate long strings of pack animals on journeys lasting many days. The combination of shorter and longer trails affords opportunities for natural experiences with the greatest range in user ability and knowledge.

2. When locating trails with a Designed Use of Pack and Saddle, give special consideration to the care and safety of livestock and riders. If practical, provide reasonable access to streams or lakes for stock watering at intervals of no more than 10 miles. To the extent practicable, notify equestrians if intervals between water sources are excessive. Avoid locations near campgrounds or other areas of concentrated use, where dogs or loud noises could startle pack and saddle animals. If the trail must cross highways or railroads, select sites with adequate visibility at the crossing point.

3. Consider the use of climbing turns if the terrain permits, incorporating a curve radius of 4 feet or greater, depending on the Trail Class and site-specific conditions. Design switchbacks with a curve radius as long as possible and a radius of 5 feet or greater, depending on the Trail Class and site-specific conditions. To discourage shortcutting between switchbacks by trail users, design grades of at least 10 to 15 percent for a distance of 100 feet leading to and from switchbacks. Consider using a rock or log barrier for a distance of 15 to 30 feet from the turning point.

4. Clearing needs for trails with a Designed Use of Pack and Saddle may vary depending on whether the trails are designed for day rides or pack animals.

5. Additional widening is needed to accommodate pack clearance on trails cut through solid rock on steep side hills. Along a precipice or other hazardous area, the trail base should be at least 48 to 60 inches wide to be safe for both animals and riders.

6. Pack and saddle animals can cause severe wear and tear on trail tread, especially when soils are wet. When possible, locate trails on stable soil types or on side slopes, where water is drained away. Gravel surfacing, turnpike, or puncheons may be needed on wet sections.

7. Fords are preferred over bridges for stream crossings, provided the velocity and depth of the water are acceptable for fording during the normal season of use. Generally, streams can be forded safely if they are less than 24 inches deep and the current is moderate. Where feasible, route trails to natural fords, rather than building fords.

8. Construction of a ford requires widening the trail base to at least 36 inches, removing large rocks, and flattening the stream bottom to make a relatively smooth and level crossing. If necessary to make the ford viable, widen the streambed to reduce depth and velocity. Ice buildup during late fall may be an important factor to consider in determining whether to construct a ford.

9. If a decision is made to build a bridge for pack and saddle animals, select a site with an adequate foundation for abutments and stream piers. The bridge must have a load-carrying capacity equal to the weight of the maximum number of loaded animals that can occupy the bridge at one time or the maximum anticipated snow load, whichever is greater. Design railings to prevent packs from getting caught. For minimum bridge widths and railing heights, see FSH 7709.56b, section 7.69, exhibit 01, Trail Bridge Design Criteria.

23.13 – Bicycle Design Parameters

The next page displays the Bicycle Design Parameters.

23.13 – Exhibit 01

BICYCLE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **BICYCLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	6” – 12”	12” – 24”	18” – 36”	24” – 48”	36” – 60”
	Double Lane	36” – 48”	36” – 48”	36” – 48”	48” – 84”	72” – 120”
	Structures (Minimum Width)	18”	18”	36”	48”	60”
Design Surface[2]	**Type**	Native, ungraded May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present, but not common	Native, with improved sections of borrow or imported materials and routine grading Stable, with minor roughness	Likely imported material and routine grading Uniform, firm, and stable
	Protrusions	≤ 24” Likely common and continuous	≤ 6” May be common and continuous	≤ 3” May be common, but not continuous	≤ 3” Uncommon and not continuous	No protrusions
	Obstacles (Maximum Height)	24”	12”	10”	8”	No obstacles

23.13 – Exhibit 01--Continued

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**	5% – 20%	5% – 12%	3% – 10%	2% – 8%	2% – 5%
	Short Pitch Maximum	30% 50% on downhill segments only	25% 35% on downhill segments only	15%	10%	8%
	Maximum Pitch Density	20% – 30% of trail	10% – 30% of trail	10% – 20% of trail	5% – 10% of trail	0% – 5% of trail
Design Cross Slope	**Target Cross Slope**	5% – 10%	5% – 8%	3% – 8%	3% – 5%	2% – 3%
	Maximum Cross Slope	10%	10%	8%	5%	5%
Design Clearing	**Height**	6’	6’ – 8’	8’	8’ - 9’	8’ - 9’
	Width	24” – 36” Some vegetation may encroach into clearing area	36” – 48” Some light vegetation may encroach into clearing area	60” – 72”	72” – 96”	72” – 96”
	Shoulder Clearance	0’ – 12”	6” – 12”	6” – 12”	6” – 18”	12” – 18”
Design Turn	**Radius**	2’ – 3’	3’ – 6’	4’ – 8’	8’ – 10’	8’ - 12’

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Bicycle Design Parameters may be developed as determined necessary.

23.2 – Standard Terra Trails - Motorized

23.21 – Motorcycle Design Parameters

The next page displays the Motorcycle Design Parameters, followed by considerations regarding their application.

23.21 – Exhibit 01

MOTORCYCLE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **MOTORCYCLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for motorcycles, although use may be allowed	8” – 24”	18” – 36”	24” – 48”	Typically not designed or actively managed for motorcycles, although use may be allowed
	Double Lane		48”	48 ” – 60”	60” – 72”	
	Structures (Minimum Width)		36”	48”	48”	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread not common	
	Protrusions		≤ 6” May be common and continuous	≤ 3” May be common, but not continuous	≤ 3” Uncommon and not continuous	
	Obstacles (Maximum Height)		18” May be common or placed for increased challenge	12” Common and left for increased challenge	3” Uncommon	

23.21 – Exhibit 01--Continued

Designed Use MOTORCYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**		10% – 25%	5% – 20%	3% – 10%	
	Short Pitch Maximum		40%	25%	15%	
	Maximum Pitch Density		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	
Design Cross Slope	**Target Cross Slope**		5% – 10%	5% – 8%	3% – 5%	
	Maximum Cross Slope		15%	10%	10%	
Design Clearing	**Height**		6’ – 7’	6’ - 8’	8’ - 10’	
	Width (On steep side hills, increase clearing on uphill side by 6” – 12”)		36” – 48” Some light vegetation may encroach into clearing area	48” – 60”	60” - 72”	
	Shoulder Clearance		6” – 12”	12” – 18”	12” – 24”	
Design Turn	**Radius**		3’ – 4’	4’ – 6’	5’ – 8’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grades, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall trail sustainability.

Application considerations for Motorcycle Design Parameters:

1. NFS trails that allow motorcycle use must be designated for that vehicle class pursuant to 36 CFR 212.51 and displayed on a motor vehicle use map (FSM 7703.1).

2. For NFS trails that have been designated for motorcycle use and that have a Designed Use of Motorcycle, apply the Motorcycle Design Parameters and the following guidance.

a. A variety of distances and recreation experiences may be provided by designing cutoffs for less experienced riders within a system of loop trails. An experienced rider can ride approximately 50 miles in an average day. Some riders can cover over 100 miles in a day.

b. Trail alignment should exhibit decreasing randomness between Trail Class 2 and Trail Class 4.

c. Favor drainage dips over water bars.

d. On trails in Trail Class 4, the alignment is generally moderate, with no sharp curves combined with steep grades. Novice riders may be subjected to sharp curves, but generally not in combination with rough surfaces or steep grades (see sec. 23.21, ex. 01).

e. Favor climbing turns over switchbacks, within the applicable Design Parameter grade tolerances, as deemed appropriate, considering the use and direction of travel. Modify the level of challenge of a curve by increasing or decreasing its turning radius.

f. For trails in Trail Class 4, locate turns on level ground or on slopes of less than 6 percent. On trails designed for novice and intermediate riders, consider providing a 4-to-6-foot barrier on the downhill side of a switchback.

g. The speed of a motorcycle entering a turn varies depending on the radius of the turn. A trail designer can slow the speed of a motorcycle entering a turn by decreasing its turning radius. A trail designer may increase the length of a trail in a limited area by increasing the number of turns.

h. Hardening of switchbacks and climbing turns in sensitive soils is recommended. Suggested hardening materials include concrete blocks, soil, and cement.

i. For minimum bridge widths and railing heights, refer to FSH 7709.56b, section 7.69, exhibit 01, Trail Bridge Design Criteria. Bridges should have a straight approach and should not change directions. Special decking may be necessary to accommodate wheeled vehicles.

j. To minimize confusion, consider locating trail junctions so that no more than two trails intersect at one point.

23.22 - All-Terrain Vehicle (ATV) Design Parameters

The next page displays the All-Terrain Vehicle (ATV) Design Parameters, followed by considerations regarding their application.

23.22 – Exhibit 01

ALL-TERRAIN VEHICLE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **ALL-TERRAIN VEHICLE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for ATVs, although use may be allowed	48” – 60”	60”	60” – 72”	Typically not designed or actively managed for ATVs, although use may be allowed
	Double Lane		96”	96” – 108”	96” – 120”	
	Structures (Minimum Width)		60”	60”	60”	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread uncommon	
	Protrusions		≤ 6” May be common and continuous	≤ 3” May be common, but not continuous	≤ 3” Uncommon and not continuous	
	Obstacles (Maximum Height)		12” May be common or placed for increased challenge	6” May be common and left for increased challenge	3” Uncommon	

23.22 – Exhibit 01--Continued

Designed Use ALL-TERRAIN VEHICLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**		10% – 25%	5% – 15%	3% – 10%	
	Short Pitch Maximum		35%	25%	15%	
	Maximum Pitch Density		20% – 40% of trail	15% – 30% of trail	10% – 20% of trail	
Design Cross Slope	**Target Cross Slope**		5% – 10%	3% – 8%	3% – 5%	
	Maximum Cross Slope		15%	10%	8%	
Design Clearing	**Height**		6’ – 7’	6’ – 8’	8’ – 10’	
	Width (On steep side hills, increase clearing on uphill side by 6” – 12”)		60” Some light vegetation may encroach into clearing area	60” – 72”	72” - 96”	
	Shoulder Clearance		0” – 6”	6” – 12”	12” – 18”	
Design Turn	**Radius**		6’ – 8’	8’ – 10’	8’ – 12’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for All-Terrain Vehicle Design Parameters:

1. NFS trails that allow ATV use must be designated for that vehicle class pursuant to 36 CFR 212.51 and displayed on a motor vehicle use map (FSM 7703.1).

2. For NFS trails designated for ATV use and that have a Designed Use of ATV, apply the ATV Design Parameters and the following guidance.

a. A variety of distances and recreation experiences may be provided by designing cutoffs for less experienced riders within a system of loop trails.

b. Trail alignment should exhibit decreasing randomness between Trail Class 2 and Trail Class 4.

c. Include frequent elevation changes and turns appropriate for each skill level. These design features can be incorporated as appropriate to slow vehicle speeds, increase safety, and provide more riding time per mile (see sec. 23.22, ex. 01).

d. Favor drainage dips over water bars.

e. Favor climbing turns over switchbacks, within the applicable Design Parameter grade tolerances, as deemed appropriate, considering the use and direction of travel. Modify the level of challenge of a curve by increasing or decreasing its turning radius.

f. On trails in Trail Class 4, the alignment generally should be moderate, with no sharp curves combined with steep grades. Novice riders may be subjected to sharp curves, but generally not in combination with rough surfaces or steep grades. If possible, incorporate climbing turns with a wide radius for ascending hills. Use switchbacks on steep slopes only for more challenging trails.

g. Hardening of switchbacks and climbing turns in areas with sensitive soils is recommended. Suggested hardening materials include concrete blocks, soil, and cement.

h. For minimum bridge widths and railing heights, refer to FSH 7709.56b, section 7.69, exhibit 01, Trail Bridge Design Criteria. Bridges should have a straight approach and should not change directions. Special decking may be necessary to accommodate wheeled vehicles.

i. To minimize confusion, consider locating trail junctions so that no more than two trails intersect at one point.

23.23 – Design Parameters for Four-Wheel Drive Vehicles Greater Than 50 Inches in Width

The next page displays the Design Parameters for Four-Wheel Drive Vehicles Greater Than 50 Inches in Width, followed by considerations regarding their application.

23.23 – Exhibit 01

DESIGN PARAMETERS FOR FOUR-WHEEL DRIVE VEHICLES GREATER THAN 50 INCHES IN WIDTH

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use FOUR-WHEEL DRIVE VEHICLE > 50"		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for 4WD Vehicles > 50", although use may be allowed	72" – 84"	72" – 96"	96" – 120"	Typically not designed or actively managed for 4WD Vehicles > 50", although use may be allowed
	Double Lane		16'	16'	16'	
	Structures (Minimum Width)		96"	96"	96"	
Design Surface[2]	**Type**		Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread uncommon	
	Protrusions		≤ 12" May be common and continuous	≤ 8" May be common and continuous	≤ 4" May be common and continuous	
	Obstacles (Maximum Height)		36" May be common or placed for increased challenge	24" Common and left for increased challenge	12" Uncommon	

23.23 – Exhibit 01--Continued

Designed Use FOUR WHEEL DRIVE VEHICLE < 50"		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade[2]	**Target Grade**		10% – 21%	5% – 18%	5% – 12%	
	Short Pitch Maximum		25%	20%	15%	
	Maximum Pitch Density		20% – 30% of trail	10% – 20% of trail	5% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		8% – 15%	5% – 12%	5% – 8%	
	Maximum Cross Slope		15%	12%	8%	
Design Clearing	**Height**		6’ – 8’	6’ – 8’	8’ – 10’	
	Width		72” – 84” Some light vegetation may encroach into clearing area	72” – 96”	96” - 144”	
	Shoulder Clearance		0” – 6”	6” – 12”	12” – 18”	
Design Turn	**Radius**		10’ – 15’	15’ – 20’	20’ – 30’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Four-Wheel Drive Vehicles > 50” In Width Design Parameters:

1. NFS trails that allow four-wheel drive vehicle use must be designated for that vehicle class pursuant to 36 CFR 212.51 and displayed on a motor vehicle use map (FSM 7703.1).

2. For NFS trails designated for four-wheel drive vehicles over 50 inches in width and that have a Designed Use for that type of vehicle, apply the appropriate Design Parameters and the guidance below, as applicable.

a. The level of challenge provided by a trail increases with the size of the vehicle. For example, a trail that is challenging for a vehicle with a short wheelbase (less than 100 inches) is likely to be even more challenging for a vehicle with a long wheelbase (greater than 100 inches).

b. Trails designed for four-wheel drive vehicles greater than 50 inches in width have varying degrees of horizontal and vertical alignments, with safe tread for an average speed of 2 to 4 miles per hour.

c. A variety of distances and recreation experiences may be provided for less experienced riders by designing cutoffs within a system of loop trails.

d. Favor drainage dips over water bars.

e. Favor climbing turns over switchbacks, within the applicable Design Parameter grade tolerances, as deemed appropriate, considering the use and direction of travel. Modify the level of challenge of a curve by increasing or decreasing its turning radius.

f. Alignment on trails with grades of 4 percent or less should provide 5 lock-to-lock turns (five changes of direction of the steering wheel, from far right to far left) in the first 150 feet of the trail to restrict use of the trail to smaller vehicles. The rest of the trail should have 2 to 5 lock-to-lock turns, depending on vegetation, topography, and planned challenge level (see sec. 23.23, ex. 01).

g. Trails with grades of 4 to 10 percent should have wider turning radii and dips and bumps, as topography allows. Depending on topography, locate 10 percent or more of the trail on a relatively straight alignment, with a maximum side slope of 30 percent.

23.3 – Snow Trails

23.31 – Cross-Country Ski Design Parameters

The next page displays the Cross-Country Ski Design Parameters, followed by considerations regarding their application.

23.31 – Exhibit 01

CROSS-COUNTRY SKI DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **CROSS-COUNTRY SKI**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Groomed Width	**Single Lane**	Typically not designed or actively managed for cross-country skiing, allow use may be allowed	2' – 4' Typically not groomed	6' – 8' Or width of grooming equipment	8'– 10" Or width of grooming equipment	Typically not designed or actively managed for cross-country skiing, although use may be allowed
	Double Lane		6' – 8'	8' – 12'	12' – 16'	
	Structures (Minimum Width)		36"	36"	36"	
Design Grooming and Surface[2]	**Type**		Generally no machine grooming	May receive occasional machine grooming for snow compaction and track setting	Regular machine grooming for snow compaction and track setting	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12" Uncommon	8" Uncommon (no obstacles if machine groomed)	No obstacles	

23.31 – Exhibit 01--Continued

Designed Use CROSS-COUNTRY SKI		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**		5% – 15%	2% – 10%	0% – 8%	
	Short Pitch Maximum		25%	20%	12%	
	Maximum Pitch Density		10% – 20% of trail	5% – 15% of trail	0% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		0% – 10%	0% – 5%	0% – 5%	
	Maximum Cross Slope (For up to 50')		20%	15%	10%	
Design Clearing	**Height** (Above normal maximum snow level)		6' – 8'	8' Or height of grooming equipment	8' – 10'	
	Width		24" – 60" Light vegetation may encroach into clearing area	72" – 20"' Light vegetation may encroach into clearing area	96"' – 168" Widen clearing at turns or if increased sight distance needed	
	Shoulder Clearance		0" – 6"	0" - 12"	0" – 24"	
Design Turn	**Radius**		8' – 10'	15' – 20' Or to accommodate grooming equipment	≥ 25'	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential and other factors contributing to surface stability and overall sustainability of the trail

Application considerations for Cross-Country Ski Design Parameters:

1. Trails with a Designed Use of Cross-Country Ski are Snow Trails that are designed and managed for travel during the snow season. They may, however, overlap a Standard Terra Trail that is managed for use when there is no snow. When this overlap occurs, identification of the applicable Design Parameters should be based on consideration of both the Designed Use for the Standard Terra Trail and the Designed Use for the Snow Trail. From the two Designed Uses, select the Design Parameters with the most demanding design, construction, and maintenance requirements (sec. 14.4).

2. Locate or review potential locations for cross-country ski trails during the winter months.

3. Locate cross-country ski trails where reliable snow conditions exist for 2 to 3 months annually. Utilize topography to extend the period of snow cover. Consider the direction the slope faces, prevailing wind direction, shade, and microclimate when locating cross-country ski trails.

4. Avoid avalanche hazards. Consult with those knowledgeable of local avalanche hazards before developing cross-country ski trails.

5. Avoid hazardous stream and lake crossings. Normally, 6 inches of hard blue ice is considered safe for cross-country ski trail crossings.

6. Avoid locating trails under dense canopies, especially in tall, old-growth stands. Canopies intercept much of the snowfall, and when the air temperature rises, large chunks of snow fall on the trails.

7. Similar to downhill ski runs, cross-country ski trails are rated as easiest, more difficult, and most difficult. Always design trails rated as easiest for novice skiers under normal snow conditions. Design trails rated as most difficult to provide challenges, but no unusual difficulties, for experienced skiers. Design more difficult trails to fall between these two extremes.

8. Provide only sweeping curves, rather than sharp turns, on downhill sections. Locate sufficient distance at the base of downhill runs to permit the user to slow down before turning. A place to stop adjacent to the trail mid-slope is desirable on long downhill runs.

a. Trail Width. Widths of trails with a Designed Use of Cross-Country Ski vary depending on the terrain, steepness of the trail, sharpness of curves, amount of use, and number of tracks. On flat or gently rolling terrain (with grades of up to 3 percent), clear single-track groomed trails to a width of 6 to 8 feet and double-track groomed trails to a width of 10 to 12 feet. Steeper, uphill sections should include extra clearing width where herringbone or sidestep skiing techniques might be used.

The extra clearing width should be one-half times the normal width, up to 14 feet. Downhill sections require extra widening commensurate with the speed allowed by the hill. The lower portions and runout require the most widening, while the upper portions require the least. Normally, a downhill run is cleared to 1.5 times the normal width from approximately one-third to two-thirds of the way down the hill. From two-thirds down to the bottom and through the runout, clear the trail to twice the normal width.

b. Trail Length. Accommodate user needs for different distances and degrees of challenge by providing cutoffs for less experienced users on a system of loop trails, as follows:

Recommended Lengths	Half Day	Full Day
Easiest Trail	3.2 miles	6.4 miles
Most Difficult Trail	6.4 miles	9.5 miles

c. Bridges. For minimum bridge widths and railing heights, see FSH 7709.56b, section 7.69, exhibit 01, Trail Bridge Design Criteria.

d. Intersections. Approaches to intersections should have grades of 5 percent or less to allow for speed control. Clear intersections to a diameter of twice the trail width.

e. Marking Standards. Cross-country ski trails should be marked so that travelers unfamiliar with the trails can follow them during poor weather conditions, when there are with no tracks to follow and relatively poor lighting. See the Sign and Poster Guidelines for the Forest Service (EM 7100-15) for guidance on marking trails.

23.32 – Snowshoe Design Parameters

The next page displays the Snowshoe Design Parameters.

23.32 – Exhibit 01

SNOWSHOE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use SNOWSHOE		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for snowshoe, although use may be allowed	36”	36” – 48”	36’ – 60’	Typically not designed or actively managed for snowshoe, although use may be allowed
	Double Lane		60”	72”	72” – 96”	
	Structures (Minimum Width)		36”	48”	48”	
Design Surface[2]	**Type**		Generally no machine grooming	May receive occasional machine grooming for snow compaction	Likely to receive occasional machine grooming for snow compaction	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12” Uncommon	8” Uncommon (no obstacles if machine groomed)	No obstacles	
Design Grade [2]	**Target Grade**		10% – 20%	5% – 15%	0% – 10%	
	Short Pitch Maximum		30%	20%	15%	
	Maximum Pitch Density		5% – 20% of trail	5% – 25% of trail	0% – 10% of trail	

23.32 – Exhibit 01--Continued

Designed Use SNOWSHOE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	**Target Cross Slope**		0% – - 10%	0% – 5%	0% – 5%	
	Maximum Cross Slope		20%	15%	10%	
Design Clearing	**Height** (Above normal maximum snow level)		6’ – 8’	8’	8’ – 10’	
	Width		48” Some light vegetation may encroach into clearing area	72” Light vegetation may encroach into clearing area	72” – 96”	
	Shoulder Clearance		0”	12”	12” – 24”	
Design Turn	**Radius**		3’ – 4’	3’ – 6’	4’ – 8’ Or to accommodate grooming equipment	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Snowshoe Design Parameters may be developed as determined necessary.

23.33 – Snowmobile Design Parameters

The next page displays the Snowmobile Design Parameters, followed by considerations regarding their application.

23.33 – Exhibit 01

SNOWMOBILE DESIGN PARAMETERS

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent[1]. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use **SNOWMOBILE**		**Trail Class 1**	**Trail Class 2**	**Trail Class 3**	**Trail Class 4**	**Trail Class 5**
Design Tread Width	**Single Lane**	Typically not designed or actively managed for snowmobiles, although use may be allowed	4’ – 6’ Typically not groomed	6’ – 8’ Or width of grooming equipment On turns with tight radius, increase groomed width to ≥ 10’	8’ – 10’ Or width of grooming equipment On turns with tight radius, increase groomed width to ≥ 12’	Typically not designed or actively managed for snowmobiles, although use may be allowed
	Double Lane		10’ Typically not groomed	10’ – 12’	12’ – 20’	
	Structures (Minimum Width)		6’	12’	18’	
Design Surface[1]	**Type**		Generally no machine grooming Commonly rough and bumpy	May receive occasional machine grooming for snow compaction and conditioning Frequently rough and bumpy	Regular machine grooming for snow compaction and conditioning Commonly smooth	
	Protrusions		No protrusions	No protrusions	No protrusions	
	Obstacles (Maximum Height)		12” Uncommon	6” Uncommon (no obstacles if machine groomed)	No obstacles	

23.33 – Exhibit 01--Continued

Designed Use SNOWMOBILE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Grade [2]	**Target Grade**		0% – 12%	0% – 10%	0% – 8%	
	Short Pitch Maximum		35%	25%	20%	
	Maximum Pitch Density		15% – 30% of trail	10% – 20% of trail	5% – 10% of trail	
Design Cross Slope	**Target Cross Slope**		0% – 10%	0% – 5%	0%	
	Maximum Cross Slope		15%	10%	5%	
Design Clearing	**Height** (Above normal maximum snow level)		6’	6’ – 8’ Provide sufficient clearance for grooming equipment	8’ – 12’ Provide sufficient clearance for grooming equipment	
	Width		6’ – 12’ Some light vegetation may encroach into clearing area	8’ – 14’ Light vegetation may encroach into clearing area	10’ – 22’ Widen clearing at turns or if increased sight distance needed	
	Shoulder Clearance		6” – 12”	12” – 18”	12” – 24”	
Design Turn	**Radius**		8’ – 10’	15’ – 20’ Or to accommodate grooming equipment	25’ – 50’	

[1] For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18.

[2] The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Application considerations for Snowmobile Design Parameters:

1. Trails with a Designed Use of Snowmobile are Snow Trails that are designed and managed for travel during the snow season. They may, however, overlap with Standard/Terra Trails. When this occurs, identify the applicable Design Parameters based on consideration of both the Designed Use identified for the Standard/Terra Trail and the Designed Use for the Snow Trail. Select the Design Parameters with the most demanding design, construction, and maintenance requirements.

2. Locate or review potential locations for snowmobile trails during the winter months.

3. Snowmobiling is often conducted in large groups. Where possible, the needs of large numbers of trail users should be considered in the design and location of snowmobile facilities. Incorporate opportunities for picnicking, off-trail facilities (for example, overlooks and places along the trail where users can congregate without blocking the trail), and trail segments of varying difficulty into the trail system.

4. Snowmobile trails should lead to a destination of scenic or other natural interest or other destinations, such as recreation sites and communities.

5. Snow depth, natural lighting, and nighttime operation add hazards to snowmobiling. To the extent appropriate and practicable, address trail hazards, for example, consider posting signs. Consult with those knowledgeable of local avalanche hazards before locating snowmobile trails.

6. Where possible, avoid development of one-way snowmobile trails.

7. A loop trail system should provide a half-day of snowmobiling without repeating a trail experience. Trails within the system should be at least 5 to 10 miles long, with a median length of 15 to 30 miles. Provide alternate, shorter routes in the trail system.

8. Variety in vertical alignment contributes to user enjoyment. Based on the applicable Trail Class, use vertical alignment in proper combination with horizontal alignment to control operating speeds for safety while enhancing the experience. For example, intersperse segments of relatively steeper and generally straighter trail with segments of relatively flatter and curvier trail along the route.

9. When a trail or trail segment has a Short Pitch Maximum of over 25 percent, provide straight approaches to the steeper portions (which may also include grades of less than 25 percent), with a gradual increase in grade.

10. As the season progresses, drifting snow may alter the grade of some portions of a trail. Therefore, during the trail location phase, identify areas where drifting is probable, and try to avoid them in aligning trails for snowmobile use. Where rerouting is not possible, limit grades to accommodate the most adverse conditions anticipated.

11. When a planned snowmobile trail will cross a public road or railroad right-of-way, contact the responsible authority at the earliest possible stage to coordinate planning. Coordinate on the final selection of the crossing point, approval of approach alignment and visibility at the crossing point, and sign plans for both the public road or railroad right-of-way and the trail, and agree on respective responsibilities.

12. Snowmobile trails frequently use existing roads and are thus constrained by the physical characteristics of those roads. However, where possible, lay out trail junctions so that only two trails intersect at one point. Crossings should be at right angles, with a level grade approaching the junction to allow users to control their approach speed.

23.4 - Water Trails [Reserved]

23.5 - Special Trails

23.51 - Accessible Trails

1. The FSTAG provides guidance for maximizing accessibility of trails in the NFS, while recognizing and protecting the unique characteristics of their natural setting. Appropriate application of the FSTAG will ensure that the full range of trail opportunities continues to be provided, from primitive long-distance trails to highly developed trails and popular scenic overlooks. Application of the FSTAG is not intended to change the Trail Class or Designed Use prescribed for a trail. The FSTAG is available electronically at *www.fs.fed.us/reacreation/programs/accessibility*.

2. Refer to the FSTAG for direction on assessment, development, and management of trails that are subject to the FSTAG.

3. To support integration between this handbook and the FSTAG, an overview of the FSTAG follows. See the FSTAG for further direction on its application.

4. The FSTAG applies to NFS trails that meet all three of the following criteria:

   a. The trail or trail segment is new or altered (an alteration is a change in the original purpose, intent, or design of a trail);

   b. The trail has a Designed Use of Hiker/Pedestrian; and

c. The trail connects directly to an accessible trail or to a trailhead.

5. While trail designers and managers are encouraged to look for opportunities where accessibility may be improved beyond those trails where it is required, the uniqueness of each trail must be preserved. The FSTAG contains conditions for departure and exceptions that apply when application of a technical provision would cause a change in a trail's setting or the purpose or function for which a trail was designed.

6. The FSTAG may not apply to most portions of existing primitive, long-distance trails. However, the FSTAG may apply to some segments of those trails, such as where they pass through a more developed area. The FSTAG contains exceptions that will prevent accessibility from being pointlessly applied in a piecemeal fashion along a trail when access between trail segments is not possible. The FSTAG also contains requirements to provide accessibility to special features where possible.

7. If materials need to be obtained from or manipulated on a sign or kiosk, the sign or kiosk must be designed to meet the reach ranges in section 308 of the Architectural Barrier Act Accessibility Standards (ABAAS).

8. In accordance with the Forest Service policy of universal design, trail information must be provided in a manner that will permit users to evaluate the appropriateness of a trail for their ability, resources, and the type of trail experience they are seeking.

9. Signs must be posted at the trailhead of new or altered trails and trail segments that fall into Trail Class 4 or Trail Class 5, as well as at the trailhead of trails that have been evaluated for accessibility. At a minimum, in addition to the standard information including the name and length of the trail, these signs must include the typical and maximum trail grade, typical and maximum cross slope, typical and minimum tread width, surface type and firmness, and obstacles. These signs also should state that the posted information reflects the condition of the trail when it was constructed or assessed and should include the date of the construction or assessment.

10. Where more extensive trail information is provided (for example, an aerial map of the trail and related facilities), the location of specific trail features and obstacles that do not comply with the FSTAG's technical provisions should be identified and a profile of the trail grade should be included.

11. Do not use the international symbol of accessibility, the wheelchair symbol, in trail signage.

12. Local managers have the discretion to decide whether to post FSTAG signage on newly constructed or altered trails that fall into Trail Class 1, Trail Class 2, or Trail Class 3.

23.52 - Interpretive Trails

1. While interpretive trails may be managed for a variety of uses, they most often fall into Trail Class 4 or Trail Class 5, with a Designed Use of Hiker/Pedestrian, although they sometimes fall into Trail Class 3.

2. Interpretive trails offer access to areas with natural, geological, historical, or cultural significance. Interpretive trails provide a recreation experience that enriches visitors' understanding of the environment, fosters a stewardship ethic, and furthers sustainable resource management objectives. Consider providing interpretive trails in a wide range of settings that maximize interaction between users and the environment.

3. An interpretive plan is recommended for development of most interpretive trails. Interpretive plans vary in complexity and scope, depending on the trail being developed. In developing an interpretive plan, at a minimum:

   a. Determine the specific audience to be reached. Invite user participation in the development of the trail.

   b. Determine the specific objectives of the interpretive message.

   c. Determine the appropriate media (for example, trail signing, audio stations, and brochures) that are best suited to the message and the audience.

   d. Evaluate all sites that provide the intended message and theme. Consider population proximity, amount of expected use, adjacent facilities and services, and quality of the setting.

   e. Evaluate what the area has to offer and what visitors want. Develop the trail message to expand visitors' knowledge.

   f. Inventory the selected site to identify its limitations, interpretive opportunities, and fragile areas. The inventory may be conducted by developing a grid with parallel strips representing every 50 to 100 feet. On each strip, the surveyor notes items of interest. These rudimentary maps are then refined into a more detailed map.

   g. Use a multidisciplinary approach in planning an interpretive plan. Depending on the interpretive theme of the trail or sites along the trail, specialists my include wildlife biologists, botanists, and geologists.

4. Avoid critical wildlife habitats and other fragile, unusual, and sensitive areas unless they can be adequately protected or only guided walks are conducted through these areas.

5. The standard interpretive trail is usually less than 1 mile long. Additional shorter loops can be a part of the longer segment. Interpretation of special areas can be provided on any trail.

6. Locate interpretive trails near population centers or heavily used developed sites. Strive to locate interpretive trails away from noise and distracting activities. Some distracting conditions can be mitigated by a vegetation screen.

7. Select a route with a wide range of special features or one that illustrates a single purpose (sometimes known as a theme trail). The latter approach is preferred.

8. The following design criteria apply to most interpretive trails:

a. Design the message or theme of the trail to achieve its management intent, develop user awareness, and promote enjoyment of the area.

b. Space stops to allow users to absorb ideas. Plan for approximately 10 to 15 signs or stops per trail, with stops at least 200 feet apart. If more than 15 stops are planned, consider providing brochures.

c. Design entry and other signs, registration stations, and brochure distribution boxes to present a positive image and a pleasant entrance experience.

d. Write the text of the message at the anticipated educational and social level of users. Indicate in the message why the item is important. Test stops and text on representatives of the intended audience before final development. Redesign as necessary.

e. Do not interpret all items of interest along the trail. Items of interest that are not interpreted can be added later to create a changing message. Consider a seasonal approach, if possible.

f. Call attention to items between stops, such as birds and animals, by noting them on signs or in brochures.

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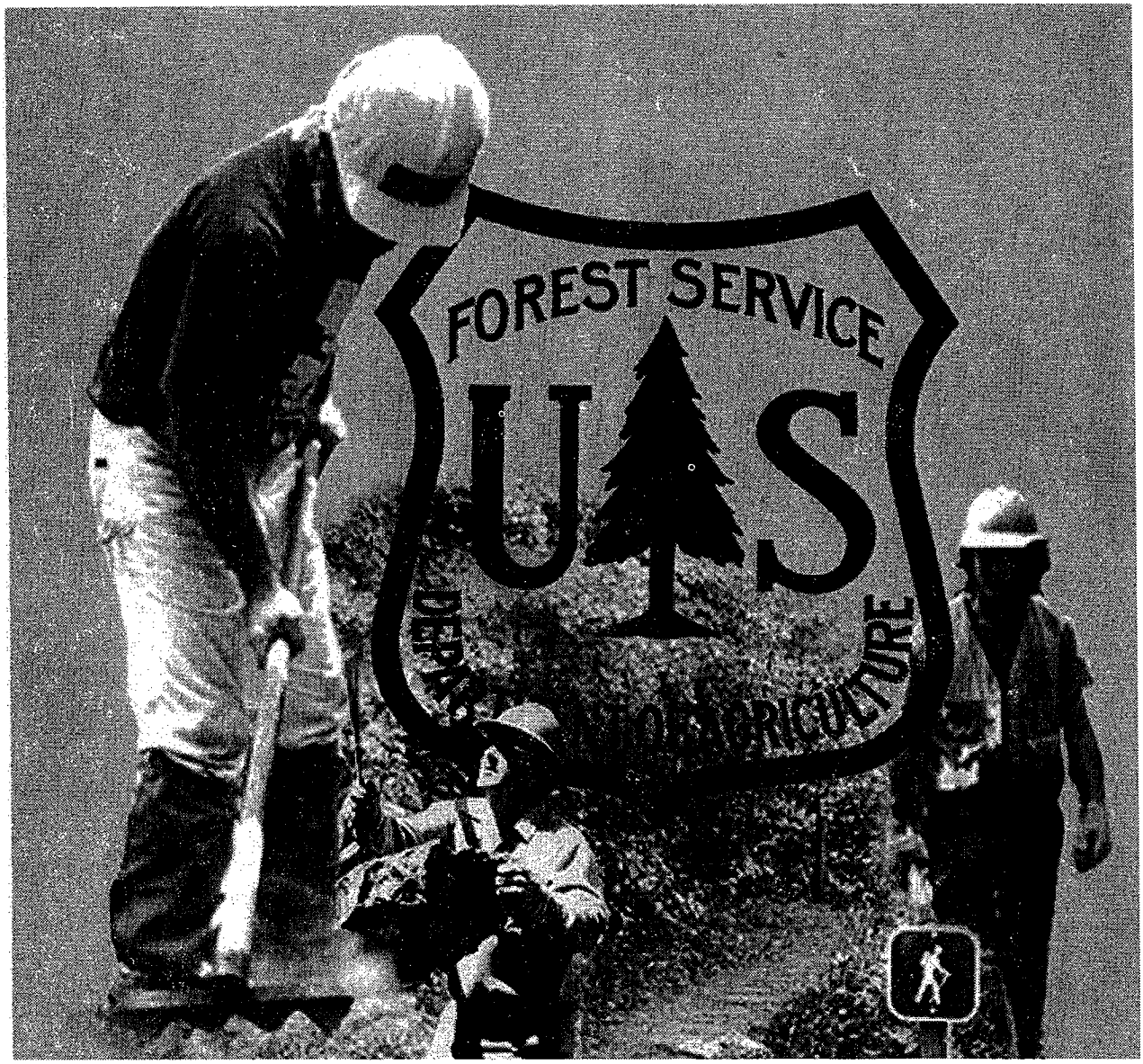
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Standard Specifications for Construction and Maintenance of Trails



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Section 900
General. Specifications

Section 901-Abbreviations, Acronyms, and Terms

901.01 Terms, Organizations, and Standards

(a) Specification Terms. These specifications are generally written in the imperative mood. In sentences using the imperative mood, the subject "the Contractor," is implied. Also implied in this language is "shall," "shall be," or similar words or phrases. In material specifications, the subject may also be the supplier, fabricator, or manufacturer supplying material, products, or equipment for use on the project:

Wherever "directed," "required," "prescribed," or similar words are used, the "direction," "requirement," or "order" of the CO is intended. Similarly, wherever "approved," "acceptable," suitable," "satisfactory," or similar words are used, they mean "approved by," "acceptable to," or "satisfactory to" the CO.

The word "will" generally pertains to decisions or actions of the CO.

Whenever in these specifications, or in other contract documents, the following terms (or pronouns in place of them) are used, the intent and meaning shall be interpreted as follows: reference to a specific standard, test, testing method, or specification shall mean the latest published edition or amendment that is in effect at the solicitation issue date for the public works contracts.

(b) Abbreviations and Acronyms

AASHTO	**American Association of State Highway and Transportation Officials**
ABS	**Acrylonitrile-Butadiene-Styrene**
AQ	**Actual Quantities**
APA	**American Plywood Association**
ASTM	**American Society for Testing and Material**
AWPA	**American Wood Preservers Association**
C.F.	**Cubic Feet**
CO	**Contracting Officer**
C.Y	**Cubic Yards**
DQ	**Design Quantities**
EA	**Each**
f ()	**feet**
HDPE	**High-Density Polyethylene**
gal	**gallon**
hr	**hour**
in (")	**inches**
lb	**pounds**
L.F.	**Linear Feet**
LS	**Lump Sum**
LSQ	**Lump Sum Quantities**
mi	**miles**
NBS	**National Bureau of Standards**
NCMA	**National Concrete Masonry Association**
PE	**polyethylene**

PS	Product Standard issued by the U.S. Department of Commerce
PVC	polyvinyl chloride
S.F.	square feet
SQ	Staked Quantifies
S.Y	Square Yards
WCLIB	West Coast Lumber Inspection Bureau
W WPA	Western Wood Products Association

(c) Slope notation (horizontal: vertical).

Section 902-Definitions

When the following terms, or pronouns in place of them, are used in these specifications or in other contract documents, the intent and meaning are as follows:

Base Course. The layer or layers of specified material of designed thickness placed on a trailbed to support surfacing.

Batter. A backward and upward slope of the face of a wall.

Berm. The ridge of material formed on the outer edge of the trail that projects higher than the tread.

Borrow. Suitable materials taken from approved sources designated on the drawings or on the ground, to be used for embankments and backfilling.

Bridge. A structure, including supports, erected over a depression or stream, and having a deck for carry traffic.

Cap Rock Rock placed in the top or uppermost layer in a constructed rock structure, such as a talus or rubble rock section or rock retaining wall.

Catch Point. The outer limits of a trailway where the excavation and/or embankment intersect with the ground line.

Clearing Limit. The area over and beside the trail that is cleared of trees, limbs, and other obstructions.

Climbing Tern. A reverse in direction of trail grade without a level landing used to change elevation on a steep slope.

Compacted. Consolidation that is obtained by tamping or rolling suitable material until no noticeable displacement of material is observed.

Contracting Officer (CO). An official of the Government with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized represen-tatives of the CO acting within the limits of their authority as delegated by the CO.

Culvert. A drainage structure composed of rock, metal, or wood that is placed approximately perpendicular to and under the trailway.

Cushion Material. Native or imported .material, generally placed over rocky section of unsurfaced trail to provide a usable and maintained traveled way.

Danger Eree. An unstable tree 5" or greater in diameter at breast height that is likely to fall across the trail.

Designated on the :Ground. The location of materials, work areas, and construction items, including lines and grades, marked on the ground with stakes, flagging, tags, or paint.

Drawings. **Documents showing details for construction of a facility, including but not limited to straight-line diagrams, trail logs, standard drawings, construction logs, plan and profile sheets, cross-sections, diagrams, layouts, schematics, descriptive literature, and similar materials.**

Duff. **Organic material overlying rock or mineral soil.**

Embankment. A structure of suitable material placed on the prepared ground surface and constructed to the trailbed elevation.

Excess Excavation. Material in the trailway in excess of that needed for construction of designed trailways.

Ford. **A water-level stream crossing constructed to provide a level surface for safe traffic passage.**

Full Bench. Trailbed constructed entirely on **undisturbed material.**

Grade. The verticaldistance of ascent or descent of the trail expressed as a percentage of the horizontal distance.

Header Rock. Rock laid with the narrow end towards the face of the wall.

Inslope. **Where the trail tread is sloped downward toward the backslope.**

Mineral Soil. Soil or aggregate that is free from organic substances and contains no particles larger than 2" at their greatest dimension.

Outslope. **Where the trail tread is sloped downward toward the embankment or daylight side of the trailway.**

Sideslope. The natural slope of the ground, usually expressed as a percentage.

Slough. **That material from the backslope or the area of the backslope that has raveled onto the trailbed**

Slump. **Where the trailbed material has moved downward, causing a dip in the trail grade.**

Special Project Specification. Specifications that detail the conditions and requirements peculiar to an individual project, including additions and revisions to the standard specifications.

Surfacing. Material placed on top of the trailbed or base course that provides the desired tread.

Suitable Material. Rock that can be accommodated in the trail structure, and soil free of duff with a recognizable granular texture.

Switchback. A reverse in direction of trail grade with a level landing used to change elevation on a steep slope, usually involving special treatment of the approaches, barriers, and drainages.

Trailbed. The finished surface on which base course or surfacing may be constructed. For trails without surfacing the trailbed is the tread.

Trailway. The portion of **the trail within the limits of the excavation** and embankment.

Tread. The surface portion of the trail upon which traffic moves.

Turnout. A short section of extra trail width to provide for passage of trail users.

Waterbar. A structure used for turning water off the trail, usually made of logs or stones.

Water Courses. Any natural or **constructed channel where water naturally flows or will collect and flow during spring runoff,** rainstorms, etc.

Section 903-Intent of Contract

903.01 **Intent.** The intent is to provide for the completion of the project described in the contract. Furnish all labor, materials, equipment, tools, transportation, and supplies and perform all work required to complete the project in accordance with drawings, specifications, and provisions of the contract.

Section 904-Maintenance for Traffic

904.01 General. Keep existing trails that are undergoing improvements open and maintained in such a condition as to safely accommodate traffic. Provide and maintain temporary detours, approaches, or crossings and intersections with trails, roads, businesses, parking lots, and campgrounds in a safe and passable condition. Perform no work that interferes or conflicts with traffic until a plan for handling traffic has been submitted and approved. Specific requirements for detours or closures are SHOWN ON THE DRAWINGS or in the SPECIAL PROJECT SPECIFICATIONS.

Before any suspension of work take precautions necessary to prevent damage to the project, such as temporary detours, approaches, crossings, or intersections, and make provisions for normal drainage and to minimize erosion. Leave all trailways in a condition suitable for traffic unless otherwise specified.

The Government may permit use of portions of the project during periods when operations are shut down. All maintenance attributable to permitted. use during periods of work suspension will be provided by the Government. The contractor is responsible for any maintenance that is not attributable to use or that is necessary during suspensions resulting from fault or negligence of the contractor.

Section 905-Control of Materials

905.01 Handling Materials. Transport and handle all materials to preserve their quality and fitness for the work Stockpile, load, and transport aggregates in a manner that will preserve specified gradation and avoid contamination.

Store materials to assure the preservation of their quality and fitness for the work Locate stored materials to facilitate their prompt inspection. Sites on Government-administered land that are not already designated may be used for storage purposes and for placing of equipment only when approved in advance by the CO. Restore all storage sites in accordance with requirements SHOWN ON THE DRAWINGS or as otherwise specified. Arrangements for storage on other than designated sites are the responsibility of the contractor.

905.02 Material Sources

(a) Designated Sources. Sources for materials such as, but not limited to, soil, rock, or logs that are not available from trailway excavation or clearing operations will be designated. Sources of local materials designated in the SPECIAL PROJECT SPECIFICATIONS or SHOWN ON THE DRAWINGS are guaranteed by the Government for the quality and quantity of material in the source.

Use all needed suitable material from the source. The designation of a source includes the right to use areas SHOWN ON THE DRAWINGS for the purposes designated (such as plant sites, stockpiles, haul roads). Operations are restricted to the confines of the area(s) designated.

(b) Contractor-Furnished Sources. Furnish material that produces an end product equivalent in performance to that specified.

905.03 Restoration. Shape and grade borrow areas on Government-administered land to make them stable and to minimize future erosion. Dispose of debris resulting from development of material sources by scattering, unless otherwise specified. Do not scatter debris within the clearing limits of trails or within roadsides. Cut off stumps to less than 1' above the ground as measured on the uphill side of the stump.

Section 906-Measurement and Payment

906.01 General. Measurement and payment for contract work will be made only for and under those pay items included in the SCHEDULE OF ITEMS. All other work and materials will be considered incidental and included in the payment of the PAY ITEMS in the SCHEDULE OF ITEMS.

When more than one class, size, or thickness is specified in the SCHEDULE OF ITEMS for any PAY ITEM, suffixes will be added to the item number to differentiate between the items.

906.02 Determination of Quantities. The following measurements and calculations are to be used to determine contract quantities for payment:

Make measurements for seeding, geotextiles, and erosion control blankets along slope lines.

For retaining walls, measure by the square meter of front wall face.

Measure structures according to neat lines SHOWN ON THE DRAWINGS or as altered by the CO in writing to fit field conditions. Make measurements along the centerline and parallel to the specified grade or foundation or as SHOWN ON THE DRAWINGS.

Deduct lengths for stairways, turnpike, puncheon, retaining walls, wire baskets, switchbacks, bridges, and bridge approaches from the measurement of excavation in Section 912 unless these items are specified as incidental to excavation in Section 912.

For standard manufactured items, such as fence, wire, plates, rolled shapes, and pipe conduits identified by gage, weight, section dimensions, and the like, such identification shall be considered the nominal weights or dimensions. Manufacturer's tolerances will be accepted unless controlled by tolerances in the cited specifications.

906.03 Units of Measurement. Payment will be made by units defined and determined according to standard metric measure and by the following:

(a) Cubic Yard. A measurement computed by one of the following methods:

(1) Excavation, embankment, or borrow. The measurement computed by the average-end-area method from measurements made longitudinally along a centerline or other reference line.

(2) Material in place or stockpiled The measurement computed with the dimensions of the in place material using average-end-area method or prismodial formula.

(3) Material in the Delivery Vehicle. The measurement computed using measurements of material in the hauling vehicles at the point of delivery. Vehicles shall be loaded to at least their water-level capacity. Leveling of the loads may be required when vehicles arrive at the delivery point.

(b) Each (EA). One complete unit, which may consist of one or more parts.

(c) Lump Sum (LS). The quantities that denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete. thejob.

906.04 Methods of Measurement. One of the following methods of measurement for determining final payment is DESIGNATED ON THE SCHEDULE OF ITEMS for each PAY ITEM:

(a) Designed Quantities. These quantities denote the final number of units to be paid for under the terms of the contract. They are based upon the original design data available prior to advertising the project. Original design data include the preliminary survey information, design assumptions, calculations, and drawings. Changes in the number of units DESIGNATED IN THE SCHEDULE OF ITEMS may be authorized under the following conditions:

(1) As a result of changes in the work approved by the CO.

(2) As a result of the CO determining that errors exist in the original design that cause a PAY ITEM quantity to change by 15 percent or more.

(3) As a result of the contractor submitting to the CO a written request showing evidence of errors in the original design that cause a PAY ITEM quantity to change by 15 percent or more. The evidence must be verifiable and consist of calculations, drawings, or other data that show how the designed quantity is believed to be in error. -

(b) Staked Quantities (SQ). These quantities are determined from staked measurements prior to the construction.

(c) Actual Quantities (AQ). These quantities are determined from measure-ment of completed work.

(d) Vehicle Quantities. These quantities are measured or weighed in hauling vehicles:

(e) Lump Sum Quantities (LSQ). These quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job.

906.05 Government-Furnished Materials. When materials are furnished by the Forest Service, the note "Government-Furnished Materials" will be added to the description of the PAY ITEM.

Section 907-Quality Assurance and Quantity Measurement

Description

907.01 Work. Work consists of providing certification that the quality and quantity of construction conform to the drawings, specifications, and requirements of the contract.

Construction

907.02 Certification and Measurements

(a) Offsite-Produced Materials. Furnish signed certificates executed by the manufacturer, supplier, or vendor, stipulating that all offsite-produced materials incorporated in the work meet applicable requirements SHOWN ON THE DRAWINGS or stated in the specifications. Furnish a certificate for each commodity or invoice.

(b) Quantity Measurements. Submit quantities to the CO for periodic progress payments, and the CO will compute payments. Quantities are subject to verification.

907.03 Records. Maintain a set of contract drawings depicting as-built conditions resulting from approved changes. Maintain the drawings in a current condition and indicate changes from the original contract drawings in red. Give the drawings to the CO upon the completion of the contract work.

Measurement

907.04 Method. There will be no separate measurement for this item.

Payment

907.05 Basis. Payment will be considered incidental to other pay items in this contract.

Section 908-Staking, Flagging, and Cleanup

Description

908.01 Work. This work consists of establishing any control points needed in addition to existing staking, and removing and disposing of all construction stakes, tags, flagging, and plastic ribbon from the project area.

Construction

908.02 General. The Government will set initial construction stakes or flagging, and control points, and furnish the contractor with all necessary information relating to lines, slopes, and grades. These stakes and flagging constitute the field control.

Furnish and maintain all additional stakes, flagging, templates, batter boards, and other materials and supplies necessary for marking and maintaining points and lines established. Do not perform work in the absence of control points. If any-construction control points are destroyed, displaced, or erroneous, notify the CO. Uniformly contour alignment and construct grade from control point to control point.

Remove all construction stakes, tags, flagging, and plastic ribbon from the project area within 7 days after the final inspection of all other work on the project. Dispose of all stakes, tags, flagging, and plastic ribbon off Government-administered lands unless otherwise designated.

Measurement

908.03 Method. There will be no separate measurement for this item.

Payment

908.04 Basis. Trail staking, flagging and cleanup will be considered incidental to other pay items in this contract, and additional payment will not be made.

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Section 910
Earthwork

Section 911-Clearing and Grubbing

Description

911.01 Work. Work consists of clearing, grubbing, trimming, removing, and treating trees, logs, limbs, branches, brush, plants, and other vegetation within the clearing limits. Work includes the felling and treatment of designated trees outside the clearing limits. Also included are the protection from injury or defacement of trees and other objects not designated for removal and the treatment of damaged trees.

Construction

911.02 Clearing Limits. Clear to the dimensions SHOWN ON THE DRAWINGS or 12" beyond the fill and backslope catch points, whichever is greater.

911.03 Material to Be Cleared. Remove and dispose of trees, logs, limbs, branches, brush, herbaceous plants, and other vegetation within the clearing limits, except for the following:

a) Live, sound, and firmly rooted trees of the size SHOWN ON THE DRAWINGS.

b) Live brush, herbaceous plants, and trees between the trailway and the clearing limits that are less than 12" in height and less than %Z" in diameter at ground line.

Except as provided above, cut all limbs and branches more than i/2" in diameter that extend into the clearing limits. Cut limbs flush with the tree trunks or stems or cut at the ground surface as SHOWN ON THE DRAWINGS.

Fall and limb designated trees.

911.04.Damaged 1Yees. When felling, cutting, or trimming, do not cause bark damage to standing timber. If damage does occur to standing trees, treat the injured trees as SHOWN ON THE DRAWINGS. Remove and dispose of trees with major roots exposed by construction that are rendered unstable.

'911.05 Removal of Stumps. Remove all stumps within the trailbed. Remove stumps located between the edge of the trailbed and the edge of the tramway that cannot be cut flush with the finished slope or that are not tightly rooted.

911.06 Disposal of Clearing Slash, Logs, Stumps, Brush, and Roots. Limb all **felled trees to a 4" diameter top, including designated trees outside the clearing limits.**

Do not place clearing slash, logs, stumps, brush, or roots in concentrated piles. Scatter all **logs, limbs, lopped tops, brush, and grubbed stumps and roots below the trailway and outside the clearing limits, with the following exceptions:**

(a) Where the sideslope above the trail is less than 10 percent, material may be scattered above the trail.

(b) Logs may be left on the uphill side of the trail if they are placed so that they will not move into the clearing limits.

Do not place clearing and grubbing debris in water courses, snow ponds, lakes, meadows, or in locations where it could impede the flows to, through, or from drainage structures.

Measurement

911.07 Method. Measure the quantities in accordance with Section 906.

Payment

911.08 Basis.

Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
911(01)	Clearing and Grubbing.....	mi
911(62)	Clearing and Grubbing.....	L.F.
911(03)	Clearing and Grubbing.....	LS
911(04)	Clearing .....::.....	mi
911(05)	Clearing	L.F.
911(06)	Clearing	LS
911(07)	Grubbing.....	mi
911(08)	Grubbing.....	L.F.
911(09)	Grubbing.....	LS
911(10)	Individual Removal and Disposal	EA
911(11)	Individual Removal and Disposal	LS

Section 912-Excavation and Embankment

Description

912.01 Work. Work consists of the excavation and placement of excavated material, regardless of its nature, from within the trailway or from other sources, except for material included under other pay items SHOWN IN THE SCHEDULE OF ITEMS.

Includes excavation, embankment, and backfill construction required to shape and finish the trailbed, ditches, backslopes, fill slopes, drainage dips, trail passing sections, and turnouts. Also includes excavation and embankment work required to construct shallow stream fords and gully crossings, talus and rubble rock sections, and climbing turns.

Materials

912.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures
964 - Geo synthetics

Construction

912.03 Use and Disposal of Excavated Material. Conserve and use all suitable material for specified work Conserve excess excavated rock suitable for specified project work and use in place of materials from designated sources.

Remove all duff and debris from within trailway limits and uniformly spread outside the clearing limits, not more than 4" in depth (unless otherwise SHOWN ON THE DRAWINGS). Do not obstruct drainage or create piles, berms, or windrows of debris.

Place excess and unsuitable excavation beyond the downslope edge of the trailbed Do not obstruct drainage and spread to a depth not exceeding 4". This includes any material removed in the grubbing operation and deposited in the same area.

Place rocks over 4" in greatest dimension not used in construction beyond the hinge point on the downslope side. Place rocks so that the tops are at least 6" lower than the trailbed surface. Ensure that no blockage of drainage or creation of a windrow effect occurs.

912.04 Trailway Excavation and Embankment. Minor deviations of f 12" in vertical alignment and 36" in horizontal alignment with smooth transitions of at least 30' on each side of the deviation are acceptable unless otherwise SHOWN ON THE DRAWINGS.

Construct embankments with suitable compacted material. Compact all disturbed soil within the trailbed area.

Remove any rock within or above the backslopes that is unstable. Use or dispose of rock in accordance with Subsection 912.03.

Leave the finished slope in a uniform and roughened condition.

Make necessary adjustments of horizontal or vertical alignment, within the tolerances specified in this subsection, to produce the designed trailway section and balance earthwork. Such adjustments shall not be considered as changes.

912.05 Trailbed Finish. Fill holes with suitable material, compact, and cut high points to provide a uniform trailbed finish.

912.06 Talus or **Rubble Rock Sections. Through talus or rubble rock slide areas, fill all voids with suitable material to the depth SHOWN ON THE DRAWINGS. Use cap rocks that weigh a minimum of 130 lbs and have a length of at least twice their width. At least** 50 **percent of all hand placed outer rocks should weigh a minimum of 1301bs. Construct tread by building out rather than by removing material from the inner bank.**

912.07 Ditches. Construct ditches to be free of loose rocks, roots, sticks, and other obstructions.

912.08 Geosynthetics. Where SHOWN ON THE DRAWINGS, place geosynthetics flat and parallel to centerline of the trail before placing embankment. Overlap geosynthetics a minimum of 24". **Install anchors or fasteners as recommended by the geosynthetic manufacturer.**

Measurement

912.09 Method. Measure the quantities in accordance with Section 906.

Payment

912.10 Basis. Pay for the accepted quantities in accordance with Section 906 **at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.**

Make payment under:

PAY ITEM		**PAY UNIT**
912(01)	**Excavation ....**	**L.F.**
912(02)	**Excavation ....**	**mi**
912(03)	**Excavation ....**	**LS**
912(04)	**Trail Turnout .....:.....**	**L.F.**
912(05)	**Trail Turnout ....**	**EA**
912(06)	**Rolling Dip .....**	**EA**
912(07) .	**Shallow Stream Ford and Gully Crossing Structure .....:.....**	EA
912(08)	**Shallow Stream Ford and Gully Crossing Structure .....**	**LS**

912(09) Ditch .... L.F.

912(10) Borrow.....::..... C.Y.

912(11) Borrow..... LS

912(12) Grade Dip ..... FA

912(13) Geosynthetics, Type ..... S.Y.

912(14) Trail Passing Section..... L.F.

912(15) Talus or Rubble Rock Section..... L.F.

Section 913-Turnpike

Description

913.01 Work. Work consists of constructing turnpike sections, including excavation, embankment, retainers, geosynthetics, backfill, and drainage features.

Materials

913.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures
964 - Geosynthetics

Construction

913.03 Excavation and Embankment. Perform excavation and embankment in accordance with Section 912.

913.04 Retainers. Place log, sawn timber, or rock retainers in a continuous row along each shoulder of the turnpike section as SHOWN ON THE, DRAWINGS. Bed the parallel retainers so they are stable and at approximately the same top elevation. When retainers are constructed of logs or sawn timber use lengths greater than or equal to 10'.

913.05 Geosynthetics. Where SHOWN ON THE DRAWINGS, place geosynthetics flat and parallel to centerline of the trail before placing embankment. Overlap geosynthetics a minimum of 24". Install anchors or fasteners as recommended by the geosynthetic manufacturer.

913.06 Backfill. Backfill and compact with suitable material.

913.07 Drainage. Construct side ditches, cross-drainage, and culverts at locations SHOWN ON THE DRAWINGS and/or DESIGNATED ON THE GROUND. Provide leadoff ditches from side ditches on the lower side of trail at points DESIGNATED ON THE GROUND or SHOWN ON THE DRAWINGS.

Measurement

913.08 Method. Measure the quantities in accordance with Section 906.

Payment

913.09 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF rFEMS.

Make payment under:

PAY ETEM			PAY UNIT
913(01)	Turnpike -Retainer, Type	.....	L.F.
913(02)	Side Ditch .....:.....		L.F.
913(03)	Geosynthetics, Type	.....	S.Y.
913(04)	Leadoff Ditches ..... :.....	.....	L.F.
913(05)	Borrow		C.Y.
913(06)	Borrow .....:.....		LS

Section 914-Switchbacks

Description

914.01 Work Work consists of construction of switchbacks, including excavation, associated barriers, ditches, retaining walls, and approach sections.

Materials

914.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Construction

914.03 Excavation and Embankment. Perform excavation and embank-ment in accordance with Section 912.

914.04 Retaining Walls. When SHOWN ON THE DRAWINGS, construct retaining walls in accordance with Section 934 or Section 935.

914.05 Barriers. When SHOWN ON THE DRAWINGS, construct barriers at each switchback in accordance with Section 953.

914.06 Ditches.. When SHOWN ON THE DRAWINGS, construct ditches in accordance with Section 912.07.

914.07 Limits of Switchback Beginning and ending of switchback will be as SHOWN ON THE DRAWING or as DESIGNATED ON THE GROUND.

Measurement

914.08 Method. Measure the quantities in accordance with Section 906.

Payment

914.09 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
914(01)	Switchbacks, Type	Ea
914(03)	Ditch	L.F.
914(05)	Barriers, Type	L.F.
914(06)	Retaining Walls, Type	S.Y.

Section 915-Existing Trail Restoration

Description

915.01 Work Work consists of restoring the original trail template, including clearing, removing slough and berm, borrow, filling ruts and troughs, reshaping backslopes, excavation, reshaping trail tread, restoring drainage and other trail structures, constructing check dams, and removing protruding rocks, roots, stumps, slough, and berets.

Materials

915.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Construction

915.03 Clearing and Grubbing. Clear and grub in accordance with the requirements of Section 911 and as SHOWN ON THE DRAWINGS.

915.04 Excavation and Embankment. Excavate and place all excavated material in accordance with the requirements of Section 912 and as SHOWN ON THE DRAWINGS.

915.05 Rock and Root Removal. Uniformly scatter the removed rocks and roots below the trailway and distribute to ensure no blockage of watercourses or creation of a windrow. Fill holes with suitable material and compact.

915.06 Slough and Berm Removal and Excess Material. Use suitable slough and beret material within the trailway to restore the trailbed as SHOWN ON THE DRAWINGS. Place all unsuitable and excess material beyond the downslope edge of the trailbed and uniformly spread to a depth not exceeding 4" and so as not to obstruct drainage or interfere with the drainage of outsloped tread.

Remove berm when daylight can be obtained within a distance of 5' from the outslope edge of finished tread unless otherwise DESIGNATED ON THE GROUND or SHOWN ON THE DRAWINGS.

915.07 Fill Material and Borrow. Use suitable material to fill ruts, troughs, and potholes in the tread that cannot be leveled and outsloped through performance of work in Subsection 915.06. Compact and shape as SHOWN ON THE DRAWINGS.

Obtain borrow from areas SHOWN ON THE DRAWINGS or DESIG-NATED ON THE GROUND.

915.08 Drainage. Restore drainage dips and ditches to reestablish drainage as SHOWN ON THE DRAWINGS by removing obstructions such as rocks, roots, and sticks to make ditches and culverts free draining.

Restore rock spillways in accordance with Section 923 and as SHOWN ON THE DRAWINGS.

915.09 Stream Channel Cleaning. Clean channel of obstructions in areas SHOWN ON THE DRAWINGS. Remove debris and rocks from the stream channel and scatter outside of the side slopes of the stream channel and beyond the clearing limits.

915.10 Check Dams. When constructing check dams for gullies, use dimensional lumber, sound peeled logs, or a row of stones placed across the gully in the subgrade with the ends securely embedded in the banks as SHOWN ON THE DRAWINGS and at locations STAKED ON THE GROUND.

Use suitable material for backfill as SHOWN ON THE DRAWINGS. Place and compact backfill to meet the density of the existing trailbed and to form a smooth tread.

915.11 Switchbacks. Restore switchbacks in accordance with Section 914 and as SHOWN ONTHE DRAWINGS.

915.12 Waterbars. Restore waterbars in accordance with Section 922 and as SHOWN ON THE DRAWINGS. Reestablish drainage by removing accumulated material and replacing loose or missing rocks, unsuitable logs, and deteriorated rubber belting.

915.13 Turnpikes. Restore turnpikes in accordance with Section 913 and as SHOWN ON THE DRAWINGS by replacing missing, rotten, or loose retainer logs and stakes, or missing or loose retainer rocks. Backfill with suitable material.

915.14 Trail Structures. Restore all trail structures at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

915.15 Reshaping and Finishing Trailbed and Backslopes. Provide a firm and uniformly finished trailbed in accordance with cross-sections SHOWN ON THE DRAWINGS.

Provide a uniform and roughened surface on disturbed backslopes in accordance with cross-sections SHOWN ON THE DRAWINGS. Gut all roots flush.

Measurement

915.16 Method. Measure the quantities in accordance with Section 906.

Payment

915.17 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM	PAY UNIT
915(01) Trail Restoration.....	L.F.
915(02)Trail Restoration.....	LS
915(03) Check Dams	EA
915(04)Borrow.....	C.Y.

Section 916-Removal of Structures and Obstructions

Description

916.01 Work Work consists of removal and disposal of existing structures, including turnpikes, walkways, bridges, culverts, signs and posts, and other material within the trailway, above or below ground. Work also includes salvaging DESIGNATED materials and backfilling the resulting trenches, holes, and pits.

Construction

916.02 Removal of Culverts and Bridges. Remove existing culverts within embankment areas at locations SHOWN ON THE DRAWINGS.

Remove existing structures down to the natural stream bottom, and remove parts outside the water course to at least 12" below natural ground surface or finish ground surface, whichever is lower. Where portions of an existing structure he wholly, or in part, within the limits of a new structure, remove parts to accommodate the installation of the proposed structure.

Avoid damage to bridges being dismantled for salvage. Matchmark steel and/or wood members and prepare drawings showing the structural location of each member.

916.03 Signs and Posts. Remove signs, posts, and associated hardware at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Backfill post hole, compact, and contour area to match existing ground.

916.04 Removal of Other Obstructions. Remove other obstructions at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

916.05 Disposal. Dispose of native log and rock material by scattering below the trailway and outside clearing limits. Do not place debris in water courses, snow ponds, lakes, meadows, or locations where it could impede the flow to, through, or from the drainage structures. Dispose of metal, treated timber, and other manufactured products by removing from Government-administered lands and placing in approved waste disposal sites.

Measurement

916.06 Method. Measure the quantities in accordance with Section 906.

Payment

916.07 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for the PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
916(01)	Removal of Structures and Obstructions	LS
916(02)	Removal of	EA
916(03)	Removal of	L.F.

Section 920
Drainage

Section 921-Culverts

Description

921.01 Work Work consists of furnishing and installing culverts, including excavation and backfill, selecting and hauling of log and rock materials, and constructing catch basins, and headwalls.

Materials

921.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures
963 - Drainage Pipe
964 - Geo synthetics

Construction

921.03 Excavation and Embanl ment. Perform excavation and embank-ment in accordance with Section 912.

921.04 Placement. Place culverts to provide for unobstructed inlet and outlet flow. Remove logs, debris, soil, rock, and other obstructions above and below the culvert that would impede flow into the culvert or away from the trailway. Minimize disturbance to streambeds.

Construct a catch basin to facilitate flow from trail ditches into the culvert.
921.05 Pipe Culverts. Install pipe culverts at the locations SHOWN ON THE DRAWINGS or as DESIGNATED ON TILE GROUND.

(a) Placing. Skew ditch relief culverts as staked to provide a downgrade equal to or greater than the uphill ditch. Place culverts at stream crossings in the natural streambed on stream grade.

Attach end sections to the pipe by connecting bands or other means as recommended by the manufacturer.

(b) Bedding. Excavate and remove all unsuitable material and rocks over 3" to a minimum depth of 6" below the pipe invert and to a minimum width of 1.5 pipe diameters. Bed pipe with compacted suitable material free of rocks larger than 3" and in a stable foundation of undisturbed or compacted soil. Make the bed shaped to fit the lower quadrant of the pipe exterior and provide uniform continuous support along the entire length of the pipe.

921.06 Rock Culverts. Install rock culverts at the locations SHOWN ON THE DRAWINGS or as DESIGNATED ON THE **GROUND.**

Firmly embed selected sidewall rocks below the natural ground or streambed as SHOWN ON THE DRAWINGS. Use **flat cover rocks long enough to bridge between outside faces of the sidewalls. Select and place rocks so as to fit snugly with firm bearing on underlying rocks. Fill voids with small rock to prevent entry of soil into the culvert.**

921.07 Treated Timber Box Culverts. Install box culverts at the locations SHOWN IN THE DRAWINGS or as DESIGNATED ON THE GROUND.

Place the box culvert walls on a firm foundation of undisturbed or compacted suitable material shaped to fit the bottom of the culvert walls and free of rocks larger than 3" in size.

921.08 Backfilling Culverts. Backfill and compact around culverts with suitable material that is free of rocks over 3". Provide for the cover height as SHOWN ON THE DRAWINGS.

921.09 Headwalls. Install headwalls at the locations SHOWN ON THE DRAWINGS or as DESIGNATED ON THE GROUND.

Provide a compacted bench as **a foundation for the wall.**

Select rocks that have a general rectangular shape with flat top and bottom faces. Place the largest rocks on **the bottom. Lay each rock stable on the course that supports it, interlocking with surrounding rocks.** Do **not break, jar, or displace rocks already set. Place the exposed face of each rock parallel to the face of the wall. Stagger vertical joints** a **minimum** of 4" **horizontally from vertical joints in adjoining courses.**

Measurement

921.10 Method. Measure the quantities in accordance with Section 906.

Payment

921.11 Basis. Pay for **the accepted quantities in accordance with Section** 906 **at the contract unit price for each** PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
921(01)	**inches Corrugated, Type Pipe - inches Thickness.....**	**L.F.**
921(02)	**inches Non-Corrugated, Type Pipe -____inches Thickness .....**	**L.F.**
921(03)	**inches End Section, Type .....**	EA
921(04)	Rock Culverts	EA
921(05)	Rock Culverts	L.F.
921(06)	**Treated Timber Box Culverts .....**	EA

Section 922-Waterbars

Description

922.01 Work: This work consists of installing waterbars, including excavation and backfill; selecting log and rock materials; and furnishing treated timber, belting, and other materials.

Materials

922.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Use rubber belting that is single-ply, non-reinforced material 3/8" to 1/2" thick.

Construction

922.03 General. Install waterbars of the types and at the locations SHOWN ON_ THE DRAWINGS or as DESIGNATED ON THE GROUND.

922.04 Excavation and Embankment. Perform excavation and embank-ment in accordance with Section 912. Around waterbars, backfill and compact suitable material that is free of rocks larger than 3" in size. Compact material on the downgrade side of rock, log, and treated timber waterbars, flush with the top of waterbars.

Outslope the trailbed on the upgrade side of the waterbar with a slope equal to or greater than the trail grade leading into the waterbar. Provide a uniform outsloped plane that forms a gutter against the waterbar.

922.05 Rock Waterbar. Tightly embed selected rocks into the trailbed Place waterbar rocks with tops relatively even, with no sharp points. Use rocks with lengths greater than or equal to 1.5 times the width.

922.06 Log or Treated Waterbar. Embed peeled native logs or treated timbers into the trailbed to form a waterbar across the trail. Use anchor methods as SHOWN ON THE DRAWINGS at log or timber ends outside the trail tread. Pre-drill pilot holes (for steel pins) through timbers prior to treatment. Anchor stakes firmly in the ground, and tightly nail to the log without splitting. In the absence of a backslope, anchor the upgrade end of the log or timber waterbar in the same manner as the downgrade end.

922.07 Rubber Belting Waterbars: Tightly secure one continuous piece of rubber belting between treated timbers as SHOWN ON THE DRAWINGS.

Measurement

922.08 Method. Measure the quantities in accordance with Section 906.

Payment

922.09 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
922(01)	Native Log Waterbar	EA
922(02)	Rock Waterbar	EA
922(03)	Treated Timber Waterbar	EA
922(04)	Rubber Belting Waterbar	EA

Section 923-Rock Spillways

Description

923.01 Work. This work consists of constructing rock spillways, including selecting, excavating, and placing rock material.

Materials

923.02 Requirements. Use materials meeting the requirements of Section 961.

Construction

923.03 General. Construct rock spillways at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Construct spillways so the flow of water from the facility being drained is centered on and flows down the full length of the spillway.

923.04 Excavation. Excavate for the spillway in accordance with Section 912. Construct a horizontal bench into undisturbed material and compact it as a foundation for the toe of the rock spillway.

923.05 Rock Placement. Construct the spillway by hand-placing rock, with the larger rock in the bottom layers. Place each rock to provide a stable course. Interlock each rock with adjacent rocks, and minimize voids. Use small rocks to fill voids. Do not break, jar, or displace rocks already set.

Measurement

923.06 Method. Measure the quantities in accordance with Section 906.

Payment

923.07 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
923(01)	Rock Spillway .....:.....	EA
923(02)	Rock Spillway	S.Y.

Section 924-Underdrain

Description

924.01 Work This work consists of constructing underdrains and associated drainage ditches, including excavation and backfill and obtaining and installing filter rock, geosynthetics, and drainpipe with necessary fittings.

Materials

924.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
963 - Drainage Pipe
964 - Geo synthetics

Construction

924.03 General. Construct underdrains at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

924.04 Excavation and Embankment. Perform excavation and embank-ment in accordance with Section 912.

924.05 Trench Construction. Grade underdrain trenches to provide complete drainage of the underdrain system. Obtain CO approval of the trench system prior to placement of underdrain materials.

924.06 Pipe Installation. Ensure positive drainage from the underdrain pipes and drainage system. Place pipe in the trench with the perforations down.

Measurement

924.07 Method. Measure the quantities in accordance with Section 906.

Payment

924.08 Basis. Pay for the accepted quantifies in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
924(01)	Rock Underdrain	L:F.
924(02)	Rock Underdrain, Type Drain Pipe ..... " diameter	L.F.
924(03)	Geosynthetic,Type	S.Y.

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Section 930
Structures

Section 931-Log Stringer Bridge

Description

931.01 Work. This work consists of constructing log stringer bridges, including mud sills, bulkheads, rails, curbs, decking, excavation, backfill, and approach fills as SHOWN ON THE DRAWINGS.

Materials

931.02 Requirements. The location of trees for native timber materials will be SHOWN ON THE DRAWINGS and DESIGNATED ON THE GROUND. Use materials meeting the requirements of Section 962.

Construction

931.03 General. Construct log stringer bridges at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Pre-drill holes for fasteners when necessary to prevent splitting and drive spikes flush. Use washers with lag screws and bolts.

931.04 Excavation and Embankment. Perform excavation and embank-ment in accordance with Section 912.

931.05 Mud Sills. Construct mud sills at each end of the span in the location staked on the ground. Construct mud sills to be level, bedded evenly, and buried to the depth necessary for the bottom of the log stringers to clear the ground surface by a minimum of 6".

Hew sill logs to provide a bearing surface for the log stringers and to provide the log stringers with a level top surface. Do not hew sill logs more than one-third their diameter. Do not level the top surfaces of the log stringers by shimming or notching their ends.

931.06 Stringers. Fasten each log stringer to each mud sill with drift pins that penetrate a minimum of 4" into the mud sill.

When plank decking is used, hew the top surfaces of log stringers up to 2" deep, as necessary, to provide bearing surfaces for deck planks.

931.07 Decking. Spike decking evenly at right angles to each stringer, unless otherwise SHOWN ON THE DRAWINGS.

Lay split log decking alternately flat side down first, then round side down, ending with a flat side down. When the round side is down, provide a bearing surface that is between 1'/Z" and 2" wide.

Lay split and sawn deck planks on the stringer to provide bearing for the full width of the plank.

Trim protruding ends of the decking to give a straight-line appearance to the edges of the structure, except for decking that extends out to provide handrail support.

931.08 Curbs. Construct curbs with logs or sawn timber as SHOWN ON THE DRAWINGS. Use lengths greater than or equal to 10' and splice with a 6" half-lap joint at a spacer location. Match diameters of logs at lap joints and trim excess to provide a smooth transition between logs.

Counterbore lag screws in curbs so that heads are flush with the surface.

Finish curbs smooth and free from splinters and sharp projections.

931.09 Handrails. Construct rails with logs or sawn timber as SHOWN ON THE DRAWINGS and use lengths greater than or equal to 10'

When rails are constructed of logs, splice them with a 6" half-lap joint at a post location. Notch surfaces of posts and rails 5/8" at connections. Match diameters of rails at lap joints and trim excess to provide a smooth transition between rails. Counterbore lag screws in rails so that heads are flush with the surface. Counterbore lag screws in all round members to provide full bearing for washers.

When rails are constructed of sawn timber, splice them with a diagonal butt joint at a post location. Use S4S sawn timber, for all rails, posts, and top caps. Fasten each rail to each post with two 16d nails and fasten each top cap to the top rail with 16d nails spaced a maximum of 16" on center. Finish handrails and posts smooth and free from splinters and sharp projections.

931.10 Approach Fills. Construct the approach fills with compacted suitable material.

Measurement

931.11 Method. Measure the quantities in accordance with Section 906.

Payment

931.12 Basis. Pay for the accepted quantifies in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM .		PAY UNIT
931(01)	Log Stringer Bridge, Type	EA
931(02)	Log Stringer Bridge, Type	LS
931(03)	Log Stringer Bridge, Type	L.F.
931(04)	Approach Fills.....	L.F.

Section 932-Puncheon

Description

932.01 Work. Work consists of constructing puncheon, including excavation.

Materials

932.02 Requirements. Use materials meeting the requirements of Section 962. The location of trees for native timber materials will be SHOWN ON THE DRAWINGS and DESIGNATED ON THE GROUND.

Construction

932.03 General. Construct puncheon at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Pre-drill holes for fasteners when necessary to prevent splitting and drive spikes flush.

932.04 Excavation and Embankment. Perform excavation and embank-ment in accordance with the requirements of Section 912 and as SHOWN ON THE DRAWINGS.

932.05 Mud Sills. Bury mud sills to a depth that provides a finished walking surface that is less than or equal to 3' above the surrounding ground. Hew sill logs to provide a bearing surface for the log stringers and to provide the log stringers with a level top surface. Do not hew sill logs more than one-third their diameter. Do not level the top surfaces of the log stringers by shimming or notching their ends.

932.06 Log Stringers. Use logs greater than or equal to 10' in length. Use logs greater than or equal to 8" in diameter before the top is flattened. Fasten each stringer to each mud sill with drift pins that penetrate a minimum of 4" into the mud sill unless otherwise SHOWN ON THE DRAWINGS.

When plank decking is used, hew the top surfaces of log stringers up to 2" deep, as necessary, to provide bearing surfaces for deck planks.

932.07 Sawn Timber Stringers. Use sawn timber greater than or equal to 10' in length. Fasten each stringer to each mud sill with drift pins that penetrate a minimum of 4" into the mud sill unless otherwise SHOWN ON THE DRAWINGS.

932.08 Finished Walkway. Construct abutting ends of sections of log or plank puncheon flush with each other. Do not slope the surface of thecompleted walkway to either side. Construct the puncheon with a grade that does not exceed 6 percent and where no change in grade exceeds 6 percent unless otherwise SHOWN ON THE **DRAWINGS or DESIGNATED ON THE GROUND. Construct the finished walking surface of the puncheon flush with the trail grade at each end of the structure.**

932.09 Decking. Spike decking evenly at right angles to each stringer.

Lay split log decking alternately flat side down first, then round side down, ending with a flat side down. When round side is down, notch round log decking to provide a 2"-wide bearing surface.

Lay split and sawn deck planks on the stringer to provide bearing for the full width of the plank.

Trim protruding ends of the decking to give a straight-line appearance to the edges of the structure or as SHOWN ON THE DRAWINGS.

932.10 Curbs. Construct curbs with logs or sawn timber as SHOWN ON THE DRAWINGS. Use lengths greater than or equal to 10' and splice with a 6" half-lap joint at a spacer location. Match diameters of logs at lap joints and trim excess to provide a smooth transition between logs.

Counterbore lag screws in curbs so that heads are flush with the surface.

Finish curbs smooth and free from splinters and sharp projections.

932.11 Approach Fills. Construct the approach fills with compacted suitable material.

Measurement

932.12 Method. Measure the set quantities in accordance with Section 90.6.

Payment

932.13 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY REM	PAY UNIT		
932(01)	Puncheon. ___ Type	.....	.... L.F.
932(02)	Puncheon. ___ Type	.....	LS

Section 933-Trail Stairways

Description

933.01 Work. This work consists of excavation and placing embankment and constructing rock, log and treated timber riser, crib-ladder, and pinned stairways and handrails.

Materials

933.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Construction

933.03 General. Construct stairways at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

933.04 Excavation and Embankment. Excavate and place embankment in accordance with Section 912. Use and compact suitable material for backfill.

933.05 Overlapping Rock Stairways. Construct steps starting with the bottom rock. Form the entire tread and riser with single rocks and provide two or more contact points for stability.

933.06 Log or Treated Timber Riser Stairways. Use single logs or timbers for the entire riser.

933.07 Rock Riser Stairway. Lay rock with the greatest dimension horizontally and embed a minimum of one-third the height.of the rock. Use **single rocks to form the entire riser, unless otherwise DESIGNATED ON THE GROUND.**

933.08 Pinned Stairway. Provide a rock base clean of loose materials, roots, soil, and other obstructions.

Drill two ¾" **holes into the treads from the bottom side to match the positions of the holes in the rock and provide for the correct position of the step. Do not allow holes to penetrate the top of the tread. Hew the bottom of the tread to provide a firm, solid contact with the rock base. This contact does not need to be continuous but must provide** a firm **solid bearing.**

Place the timber tread on **the reinforcing bars and drive the tread down to its solid position.**

933.09 Crib Ladder Stairway. Construct by laying two carriages parallel to each other, firmly supported for their entire length. Backfill behind the riser with suitable compacted material.

933.10 Plank Stairway. Construct plank stairways by laying two continuous and parallel carriages. Firmly embed the bottom of each carriage in the ground. Support each carriage by a sill at each end.

Measurement

933.11 Method. When the quantity is measured by the linear foot, measure along the centerline of the **stairway from the front of the bottom** riser to the back of the top riser. Otherwise, measure in accordance with Section 906.

Payment

933.12 **Basis.** Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY TTEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNTT
933(01)	Stairway, Type	L.F.
933(02)	Stairway, Type	EA
933(03)	Stairway, Type	LS

Section 934-Log Retaining Walls

Description

934.01 Work. Work consists of constructing log or split timber retaining walls. Work includes excavation, notching, pre-drilling, pinning, borrow, backfilling, and trailbed and slope finishing.

Materials

934.02 Requirements. Use materials meeting the requirements of the following section:

962 - Material for Timber Structures
964 - Geosynthetics

The location of trees for native timber materials is SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

Construction

934.03 Excavation. Excavate in accordance with Section 912 to provide a full bench foundation of stable undisturbed soil or compacted suitable material. Construct the finished foundation grade parallel with the trail profile grade.

934.04 Log Notching. Notch logs only on bottom side.

Do not notch sill and filler logs. Individually notch all face, rear, and header logs to fit as the wall construction proceeds vertically. Do not pre-notch.

Provide a notch depth between one-fourth and one-third the log diameter. Vary notching depth and width as required to obtain a snug fit between interlocking logs of varying diameter. Do not exceed ½" of space between filler and face logs.

934.05 Backfill. Place filler logs before backfilling and compaction. Backfill and compact with suitable material.

Measurement

934.06 Method. Measure the quantities in accordance with Section 906.

Payment

934.07 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
934(01)	Retaining Wall	S.Y.
934(02)	Retaining Wall	EA
934(03)	Retaining Wall	LS
934(04)	Geosynthetics, Type.	S.Y.
934(05)	Borrow	C.Y.
934(06)	Borrow	LS

Section 935-Rock Retaining Walls

Description

935.01 Work Work consists of constructing rock retaining walls, including excavating, placing borrow, backfilling, and trailbed and slope finishing.

Materials

935.02 Requirements. Use materials meeting the requirements of the following section:

961 - Rock, Grid Pavement Units, and Aggregate
964 - Geo synthetics

Construction

935.03 Excavation. Excavate in accordance with Section 912 to provide a full bench foundation.

935.04 Wall Construction. Construct rock retaining walls at locations SHOWN ON THE DRAWINGS and DESIGNATED ON THE GROUND. Stagger vertical joints a minimum of 4" horizontally from vertical joints in adjoining courses.

Use uniformly distributed header rocks for at least 25 percent of the rocks in the front and rear faces of the wall each having a length at least 2.5 times its width. Place all header rocks with the greatest dimension extending into the wall (at right angle to trail centerline), except at corners. At corners, lay alternating courses containing headers with greatest dimension parallel with wall.

Place the exposed face of each rock parallel to the face of the wall in which it is set.

Stabilize each rock on the course that supports it. Do not break, loosen, or displace rocks already set.

Use **rocks of a general rectangular shape. Fill voids with small rock fragments or fine aggregate.**

Measurement

935.05 Method. Measure the quantities in accordance with Section 906.

Payment

935.06 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for the PAY UEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
935(01)	Rock Retaining Wall .....:.....	S.Y.
935(02)	Rock Retaining Wall	EA
935(03)	Rock Retaining Wall	LS
935(04)	Borrow .....i.....	C.Y.
935(05) .	Geosynthetics, Type	S.Y.

Section 936-Wire Baskets

Description

936.01 Work. Work consists of furnishing and constructing wire basket structures, including excavating, placing borrow, backfilling, and trailbed and slope finishing.

Materials

936.02 Requirements. Use materials meeting the requirements of the following subsections:

961 - Rock, Grid Pavement Units, and Aggregate
964 - Geo synthetics
965 - Wire Baskets

Construction

936.03 Basket Assembly. Do not damage wire coatings during basket assembly, structure erection, cell filling, or backfilling. Rotate the basket panels into position and join the vertical edges with fasteners. Where lacing wire is used, wrap the wire with alternating single and double loops every other mesh opening. Where spiral binders are used, crimp the ends to secure the binders in place. Where alternate fasteners are used, space the fasteners in every other mesh opening.

Rotate the diaphragms into position and join the vertical edges with fasteners, lacing wire, or spiral binders as specified above.

936.04 Structure Erection. Place the empty baskets on the foundation and interconnect the adjacent baskets along the top and vertical edges using fasteners.

Where lacing wire is used, wrap the wire with alternating single and double loops every other mesh opening. Install the other fasteners according to Subsection 936.03, but space alternate fasteners in every other mesh opening.

In the same manner, interconnect each horizontal layer of baskets to the underlying layer of baskets along the front, back, and sides. Stagger the vertical joints between the baskets of adjacent rows and layers by at least one cell length.

936.05 Cell Filling. Remove all kinks and folds in the wire mesh and properly align all the baskets. Place rock carefully in the basket cells to prevent the baskets from bulging and to minimize voids in the rock fill.

Maintain the basket alignment and shape by placing the basket in tension during the filling operation.

Place internal connecting wires in each unrestrained exterior basket cell greater than 12" in height. This includes interior basket cells left temporarily unrestrained. Place internal connecting wires concurrently with rock placement.

Fill the cells in any row or layer so that no cell is filled more than 12" above an adjacent cell. Repeat this process until the basket is full and the lid bears on the final rock layer.

Secure the lid to the sides, ends, and diaphragms according to Subsection 936.04. Make all exposed basket surfaces smooth and neat, with no sharp rock edges projecting through the wire mesh.

936.06 Geotextile Installation. Place the geotextile as SHOWN ON THE DRAWINGS. Ensure that the surfaces upon which geotextile is to be placed have a uniform slope and are reasonably smooth and free of obstructions, depressions, and debris that could damage the geotextile. Have the surface approved by the CO before placing geotextile.

Loosely lay the geotextile without wrinkles or creases. Sew or overlap adjacent strips a minimum of 12" at joints.

Insert securing pins through both strips of overlapped geotextile at maximum intervals of 36", but no closer than 2" to each edge, to prevent the geotextile from being displaced.

936.07 Basket Mattresses. Construct wire baskets for mattresses less than 12" thick according to Subsections 936.03 through 936.05. Note that alternate fasteners for basket assembly may be used for structure erection. Anchor the mattress in place as SHOWN ON THE DRAWINGS. Place geotextile against the vertical edges of the mattress and backfill against the geotextile, using structural backfill material or other approved material.

Measurement

936.08 Method. The method of measurement, as described in Section 906, will be SHOWN IN THE SCHEDULE OF ITEMS. Base area computations on surface measurements. Do not include overlap quantities.

Payment

936.09 Basis. Pay for the accepted quantities at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
936(01)	Baskets, galvanized or aluminized coated	S.F.
936(02)	Baskets, epoxy or polyvinylchloride coated	S.F.
936(03)	Baskets, galvanized or aluminized coated	C.F.
936(04)	Baskets, epoxy or polyvinylchloride coated	C.F.
936(05)	Geotextiles, Type.....	S.F.

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Section 940
Surfacing

Section 941-Aggregate Surfacing and Base Course

Description

941.01 Work. This work consists of furnishing, hauling, watering, placing, and compacting aggregate surfacing or **base course; furnishing and installing retainers; and geosynthetics.**

Materials

941.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures
964 - Goo synthetics

Produce aggregate by pit run, screening, or crushing. Obtain materials from sources SHOWN ON THE DRAWINGS or other sources approved by the CO in writing.

941.03 Handling Materials. Stockpile, remove, transport, and spread aggregates in a manner that will preserve specified gradation and avoid contamination. Do not intermingle stockpiles of aggregate having different gradations.

941.04 Sampling Aggregate. Submit test results and a Certificate of Compliance veri fying **that aggregate gradation meets contract requirements.**

Sample the material before incorporation into the work as follows:

(a) for onsite-produced materials at crushing or screening plants, after additions of any necessary blending material.

(b) for commercially produced aggregates, at the producer's plant or stockpile.

The sampling will **not be considered** a **final acceptance and will not preclude later sampling and testing after final processing of the material. Such sampling does not relieve the contractor of responsibility of providing quality control measures to ensure compliance with contract requirements.**

Construction

941.05 Preparation of Subgrade. Prepare and finish bailbed as required under Section 912. Obtain written approval of the CO before placing aggregate.

941.06 Spreading and Compacting. Use aggregate that is uniformly mixed at optimum moisture content and spread and compact in layers to the final thickness and width SHOWN ON THE DRAWINGS. The maximum thickness of any one layer shall be 3". Obtain compaction by one of the following methods as SHOWN IN THE SCHEDULE OF ITEMS:

(a) by hand, using non-mechanized compaction tools over the full area of each layer until visual displacement ceases;

(b) by mechanical vibratory compactors over the full area of each layer until visual displacement ceases, but not fewer than three complete passes;

(c) by using a roller or mechanical hand tamper until the density is at least 90 percent of the maximum density, as determined by AASHTO T 99, Method C or D.

Immediately following final spreading, smoothing, and compacting, correct any irregularities or depressions that develop by adding or removing material until the surface is smooth, uniform, and compacted.

941.07 Acceptance, Testing, Sampling, and Tolerances. Do not vary the total compacted thickness of the aggregate by more or less than ½" from the specified thickness or place it consistently below or above the specified depth.

Do not vary the aggregate width by more than ± 3" from the specified width or place it consistently narrower or wider than the specified width.

941.08 Timber, Log, or Rock Retainers. Bed retainers along their entire length and as SHOWN ON THE DRAWINGS.

Measurement

941.09 Method. Measure the quantities in accordance with Section 906.

Payment

941.10 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price of each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY UEM		PAY UNTr
941(01)	Aggregate Surfacing, Grading Compaction Method	L.F.
941(02)	. Aggregate Surfacing, Grading ..... Compaction Method	C.Y.
941(03)	Aggregate Surfacing, Grading ..... Compaction Method	Ton
941(04)	Aggregate Surfacing, Grading ..... Compaction Method	LS
941(05)	Base Course, Grading ..... Compaction Method	L.F.
941(06)	Base Course, Grading ..... Compaction Method	C.Y.
941(07)	Base Course, Grading ..... Compaction Method	Ton
941(08)	. . Base Course, Grading ..... Compaction Method	LS
941(09)	Watering.....:.....	LS
941(10)	Retainers, Type	L.F.
941(11)	Geosynthetics Type	S.Y.

Section 942-Hot Bituminous Plant Mix Trail Surfacing

Description

942.01 Work This work consists of constructing a single course of hot bituminous plant mix on a prepared base course or trailbed and furnishing or installing retainers and geosynthetics.

Materials

942.02 Requirements. Use materials meeting the requirements of the following sections:

962 - Material for Timber Structures
964--Geo synthetics

Use hot plant mix design that is currently in use by the local State department of transportation, the county, or city, and submit a certificate of compliance that the mix meets their requirements. Certify the locations of past projects for the CO's inspection prior to approval.

Construction

942.03 Weather Limitations. Do not place the bituminous mixture when weather conditions prevent the proper compaction of the mixture, the base course is frozen, or the average temperature of the underlying surface upon which the bituminous mixture is to be placed is less than 55°F. Do not place when it is raining or snowing.

942.04 Mixing. Do not allow the temperature of the mix to exceed 320°F when discharging from the mixer.

942.05 Surface Preparation. Remove loose aggregate, soil, or other deleterious materials from the surface to be paved. Prepare base or trailbed by shaping, watering, and compacting before placing plant mix. Obtain the CO's approval before placing plant mix on prepared base.

942.06 Placement and Compaction. Place and compact plant mix to meet the lines, grades, and thicknesses SHOWN ON THE DRAWINGS. Avoid segregation of the mix. Hand or small machine placement of mix is permitted, except where the use of bituminous paving machines is required for areas SHOWN ON THE DRAWINGS. Use only self-contained, power propelled paving machine units, provided with an adjustable activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix to the required widths and thicknesses.

Start compaction when the mix is above 230 °F. Compact the mix with at least three passes over the entire trail surface. Use a steel wheel power roller that is of a minimum weight of 1 ton. Use vibratory plate compactors in areas that are not accessible to rollers. Continue compaction over the full width of the layer until visible deformation of the layer ceases.

942.07 Thickness. Do not vary the thickness of the compacted hot mix by more or less than 15 percent from the thickness SHOWN ON THE DRAWINGS and not consistently above or below the specified thickness.

942.08 Retainers. Bed retainers along their entire length and as SHOWN ON THE DRAWINGS.

Measurement

942.09 Method Measure the quantities in accordance with Section 906.

Payment

942.10 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for the PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
942(01)	Hot Bituminous Plant Mix Trail Surfacing	S.Y.
942(02)	Hot Bituminous Plant Mix Trail Surfacing	Ton
942(03)	Retainers	L.F.
942(04)	Geosynthetics	S.Y.

Section 943-Cold Bituminous Mix Trail Surfacing

Description

943.01 Work This work consists of constructing a single course of cold bituminous mix on a prepared base course or trailbed and fiunishing and installing retainers.

Materials

943.02 Requirements. Use cold bituminous mix design that is currently in use by the local State department of transportation, the county, or city, and submit a certificate of compliance that the mix meets their requirements. Certify the locations of past projects for the CO's inspection prior to approval.

Use either MC250 liquid asphalt that conforms to AASHTO M 82 or CMS-2 emulsion that conforms to AASHTO M 208.

For the cold bituminous mix, use aggregate with a maximum size of ⅜" and no more than 10 percent by weight passing the.075 mm sieve.

Construction

943.03 Weather Limitations. Place cold asphalt concrete on an unfrozen, reasonably dry surface. Place when the air temperature in the shade is above 50°F, the temperature of the road surface is above 39°C, and it is not raining or snowing or predicted to rain or snow within 24 hours after placement.

943.04 Surface.Preparation. Clean the surface to be paved of all loose aggregate, soil, or other deleterious materials. Shape, water, and compact the base course or trailbed with a compactor to prepare the base and subgrade just before placing cold mix. Obtain the CO's approval before placing mix on prepared bases.

943.05 Mixing. If **liquid asphalt is used, use aggregate that contains no more than 3 percent moisture** and is **at a temperature between 59 and 221T during mixing. If emulsified asphalt** is **used, use aggregate that is at a temperature between 50 and 176°F during mixing.**

Mix the aggregate and bituminous material until the aggregates are thoroughly coated and the mass is a uniform color.

943.06 Placement and Compaction. Place and compact the mix to meet the lines, grades, and cross-section SHOWN ON THE DRAWINGS. Avoid segregation of the mix. Hand or small machine placement of mix is permitted, except where the use of bituminous paving machines is required for areas SHOWN ON THE DRAWINGS. Use self-contained, power-propelled paving machine units, provided with an adjustable activated screed or strike off assembly, heated if necessary, and capable of **spreading and finishing courses** of **bituminous plant mix to the required widths and thicknesses.**

Compact the mix with at least three passes over the entire trail surface. Use a steel wheel power roller that is of a minimum weight of 1 ton. **Use vibratory plate compactors in areas that are not accessible to rollers. Continue compaction over the full width of the layer until visible deformation of the layer ceases.**

943.07 Thickness. Do not vary the thickness of the compacted hot mix by more or less than 15 percent from the thickness SHOWN ON THE DRAWINGS and not consistently above or below the specified thickness.

Measurement

943.08 Method. Measure the quantities in accordance with Section 906.

Payment

943.09 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT .
943(01)	Cold Mix Trail Surfacing	S.Y.
943(02)	Cold Mix Trail Surfacing	Ton
943(03)	Geosynthetics.....:.....	S.Y.
943(04)	Retainers .....:.....	Ft

Section 944-Grid Pavement Units

Description

944.01 Work This work consists of furnishing and installing grid pavement units, including excavation, backfilling, and geosynthetics.

Materials

944.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
964 - Geo synthetics

Construction

944.03 Excavation and Embankment. Perform excavation and embank-ment in accordance with Section 912 and as SHOWN ON THE DRAW-INGS.

Excavate to the depth of the grid. pavement units to be installed after first removing all duff and debris.

Stockpile all excavated suitable material adjacent to the trail for later use as backfill.

Obtain approval before placing grid pavement units.

944.04 Laying Grid Block. Place and bed blocks so they interlock, are stable, and form a smooth and uniform tread surface. Fill void areas to full depth with fractured or cut pieces of block on curves or where needed to establish the grid pavement units in which native surface areas are no larger than 6" in greatest dimension. Bury beginning and ending blocks at a 30° angle to the tread.

Dispose of unused block material by removing from Government-adminis-tread lands to an appropriate. site or by burying it at a location DESIGNATED ON THE GROUND.

944.05 Backfilling. After approval of the grid block installation by the CO, place and compact suitable material into holes between and around grid pavement units. For block surfacing used in shallow stream fords and gully crossings, substitute native gravels for suitable materials.

Measurement

944.06 Method. Measure the quantities in accordance with Section 906.

Payment

944.07 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
944(01)	Grid Pavement Units, Type	S.F.
944(02)	Grid Pavement Units, Type	L.F.

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Section 950
Incidental Construction

Section 951-Mobilization

Description

951.01 Work. This work consists of moving personnel, equipment, material and incidentals to the project and performing all work necessary before beginning work at the project site. Mobilization includes the costs associated with obtaining permits, insurance, and bonds. Mobilization is not intended to pay for the costs of materials before they are used on the project site.

Payment

951.02 Basis. Pay for the accepted work at the contract unit price for the PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make progress payments for mobilization as follows:

(a) Reimburse for bond premiums before issuing the Notice to Proceed if evidence of payment is received.

(b) When 5 percent or more of the original contract amount is earned from other PAY ITEMS, pay mobilization at the rate of 50 percent, or up to 5 percent of the original contract amount, whichever is less.

(c) When 10 percent or more of the original contract amount is earned from other PAY ITEMS, **pay mobilization at the rate of 100 percent, or up to 10 percent of the original contract amount, whichever is less.**

(d) Pay any unpaid amount for mobilization upon final acceptance of all work items.

Make payment under:

PAY ITEM	**PAY** UNIT
951(01) Mobilization.....:.....	**LS**

Section 952-Sign, Post, and Cairn Installation

Description

952.01 Work This work consists of furnishing and installing signs and posts and constructing rock cairns:

Materials

952.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Construction

952.03 General. Erect signs, posts, and cairns at the locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

952.04 Sign Installation. Tighten hardware snug, but do not damage the.sign panel surface.

952.05 Post Installation. Dig post hole width not more than three times the width of the post and to the depth SHOWN ON THE DRAWINGS. If necessary because of obstacles, the post hole may be moved within the tolerances SHOWN ON THE DRAWINGS, or stabilize the post with concrete or rock mounds built in accordance with rock cairn specifications.

Compact suitable material between the post and the post hole in 4" layers to produce a solid and plumb installation..

952.06 Rock Cairn Construction. Slope each rock layer toward the center. Place each rock with at least three points of contact. Do not wedge small rocks into cracks between large rocks to stabilize the large rocks.

Measurement

952.07 Method. Measure the quantities in accordance with Section 906.

Rock cairns built to support signposts will be considered incidental to the PAY ITEM for signposts, and separate payment will not be made.

Payment

952.08 Basis. Pay for the accepted quantifies in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
952(01)	Install Sign Panel, Government-Furnished	EA
952(02)	Furnish and Install Sign Panel	EA
952(03)	Treated Posts, Length ' - Dia. "	EA
952(04)	Native Posts	
	Length '	FA
952(05)	Steel Posts, Type Length Gauge	EA
952(06)	Steel Tubing Posts, Type Length Gauge	EA
952(07)	Plastic Posts, Type Length	EA
952(08)	Composite Posts, Type Length '	FA
952(09)	Rock Cairns	EA

Section 953-Barriers

Description

953.01 Work Work consists of constructing barriers,. including subgrade widening, debris disposal, and excavation.

Materials

953.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, **Grid Pavement Units, and Aggregate**
962 - **Material for Timber Structures**

Construction

953.03 General. Construct barriers at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

Use logs in which the true centerline deviates no **more than** 4" **from the line between the centers of the ends of the log.**

Measurement

953.04 Method. **Measure the quantities in accordance with Section** 906 **and include spaces between individual units in each barrier section as SHOWN ON THE DRAWINGS.**

Payment

953.05 Basis. Pay for the accepted quantities in accordance with Section 906 **at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.**

Make payment under:

PAY ITEM		PAY UNIT
953(01)	**Barrier, Type**	L.F.

Section 954-Obliteration of Abandoned Trailways

Description

954.01 Work. This work consists of obliteration of trailways, construction of drainage structures, and reestablishment of natural drainage patterns and vegetation.

Construction

954.02 General. Obliterate trailways in locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

954.03 Trail Closure. Block trailway entrances to traffic by placing rocks, logs, tree branches, and duff across the trailway. Place rocks, logs, branches, and duff to conceal the abandoned trailway and discourage future use. Use rocks and other materials that are available in the areas to be obliterated.

954.04 Drainage Structures. Leave existing water bars on the abandoned trail segments in place unless designated for removal. Construct additional drainage structures in locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

954.05 Check Dams and Ditches. Construct check dams and ditches in locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

954.06 Scarify. Scarify the trail to promote the establishment of vegetation at locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Scarification is defined as breaking up the compacted soil to a depth and maximum clod size as SHOWN ON THE DRAWINGS.

954.07 Contour Restoration. Backfill trail sections where SHOWN ON THE DRAWINGS. On sidehill sections, pull fill material from the lower side of the trail, or the upper cut area, and place fill material in the original cut area to restore a natural-appearing contour and a natural drainage pattern.

954.08 Trench Backfill. Backfill trenched trail sections with compact suitable material until flush with the adjacent ground surface. Obtain backfill material from designated borrow sources.

Measurement

954.09 Method. Measure the quantities in accordance with Section 906.

Payment

954.10 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
954(01)	Obliteration	LS
954(02)	Obliteration	L.F.
954(03)	Closure.....	LS
954(04)	Closure.....:.....	L.F. .
954(05)	Drainage Structures, Removal	EA
954(06)	Scarify	L.F.
954(07)	Trench Backfill.....	L.F.
954(08)	Contour Restoration	L.F.

Section 955-Seeding and Mulching

Description

955.01 Work This work consists of preparing seedbeds and furnishing and placing required seed, fertilizer, mulch, net, and blanket material.

Materials

955.02 Seed. Do not use seed that is wet, moldy, or has been damaged in transit or storage.

Furnish seed, separately or in mixture, in standard containers with (1) seed name, (2) lot number, (3) net weight, (4) percentages of purity and germination, and (5) percentage of maximum weed seed content clearly marked for each kind of seed. Certify that seed meets the type as SHOWN ON THE DRAWINGS. Furnish the CO with duplicate copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of the date of delivery. Include in the certificate (1) name and address of the laboratory, (2) date of test, (3) lot number for each kind of seed, and (4) results of tests as to name, percentage of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of mixture, the proportions of each kind of seed.

955.03 Fertilizer. Use standard commercial-grade fertilizer and provide the minimum percentage of available nutrients as SHOWN ON THE DRAWINGS.

Furnish fertilizer in new, clean, and sealed containers with the name, weight, and guaranteed analysis of contents clearly marked. Fertilizer failing to meet the specified analysis may be used providing sufficient materials are applied to supply the specified nutrients without additional cost to the Government.

955.04 Mulch. Use commercially produced mulch as SHOWN ON THE DRAWINGS.

955.05 Erosion Control Blanket. Use erosion control materials of the type and in the locations SHOWN ON THE DRAWINGS.

(a) Burlap. Use burlap of standard weave with a weight of 4,±1/2 oz/SY.

(b) Excelsior Blanket. Use excelsior blanket consisting of a machine-produced mat or curled wood excelsior of 80-percent, 8" or longer fiber length with consistent thickness and the fiber evenly distributed over the entire area of the blanket. Use blanket with mesh dimensions of 1" by 2" f25 percent. Provide blanket with average weight of 8 oz/SY f10 percent at time of manufacture.

Construction

955.06 Seeding Seasons. Seed during the seeding dates as SHOWN ON THE DRAWINGS. Do not apply seeding materials during windy weather or when the ground is excessively wet or frozen.

955.07 Soil Preparation. Shape and finish cutslopes, fillslopes, embank-meets, or other areas to be seeded as required by other applicable sections or as SHOWN ON THE DRAWINGS. Prepare soil as specified in other sections.

955.08 Mulch. Spread mulch immediately after seeding, or after seeding and fertilizing, to a loose depth of 1" to 2" at locations SHOWN ON THE DRAWINGS.

955.09 Erosion Control Blankets. Install erosion control blankets in accordance with manufacturer's recommendations at locations SHOWN ON THE DRAWINGS.

Measurement

955.10 Method. Measure the quantities in accordance with Section 906.

Payment

955.11 Basis. Pay for the accepted quantities in accordance with Section 906 at the contract unit bid price for each PAY ITEM SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
955(01)	Seeding	acre
955(02)	Seeding	LS
955(03)	Fertilizer.....	LS
955(04)	Mulch	LS
955(05)	Erosion Control Blanket, Type.....	acre
955(06).	Seeding, Mulch, and Fertilizer	LS

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Section 960
Materials

Section 961-Rock, Grid Pavement Units, and Aggregate

961.01 Rock Use sound, durable rock free of rifts, seams, laminations, and minerals that could deteriorate as a result of weathering. Dress rock to remove thin or weak portions before use.

Furnish rock of the size, shape, weight, and face area necessary to produce the general characteristics and appearance SHOWN ON THE DRAWINGS.

961.02 Wire Basket Rock Ensure that rock conforms to the requirements of Section 961.01 and the following specifications.

(a) Unit weight of a filled basket: 3,5001b/C.Y. min.

(b) Gradation:

(1) Baskets 12" or greater in the vertical dimension:

- Maximum dimension of rock..... 8tv
- Minimum dimension of rock ..... 4"

(2) Baskets less than 12" in the vertical dimension:

- Maximum dimension of rock ..... 6"
- Minimum dimension of rock 311

961.03 Concrete Grid Pavement Units. Use concrete grid pavement units with a minimum compressive strength of 44951bf/in2 that meet the National Concrete Masonry Association (NCMA) Designation: A-15-82: Specifica-tions for Grid Pavers.

961.04 Pit-Run Aggregate. Use pit-run aggregates consisting of native materials that can be placed on the trail without crushing or screening. No gradation, other than a maximum size, will be required. Provide pit-run aggregate with a maximum size as SHOWN IN THE SCHEDULE OF ITEMS.

961.05 Screened Aggregate. Use screened material consisting of gravel, talus, rock, sand, shale, or other suitable material that is reasonably hard, durable, and free of organic material, mica, clay lumps, or other deleterious material. Use screened aggregate meeting the gradation requirements shown in table 961-1 and of the grading SHOWN IN THE SCHEDULE OF ITEMS.

961.06 Crushed Aggregate for Base or Surface Course. Use crushed aggregate meeting the requirements of tables 961-1 and 961-2 and SHOWN IN THE SCHEDULE OF ITEMS.

At least 50 percent, by weight, of the aggregate retained on the No.4 sieve is to have one fractured face. Naturally fractured faces may be included in the 50-percent requirement.

The CO may approve other gradations if they are similar to those specified Grade aggregate from coarse to fine within the gradation band.

Table 961-1-Crushed and screened aggregate grading requirements for base or surface courses.

Sieve	Percent Passing (AASHTO T 11 and T 27) Grading A	Grading B	Grading C	Grading D
1 ⅟				
⅜"	100	100		
'/z'	50-90	70-100		
3/8"			100	100
No.4	30-65	45-75	60-85	70-90
No.8	25-55	30-60	35-70	45-70
No.30		15-40		20-40
No.200	6-12	6-20	5-20	5-20

Table 961-2.-Crushed Aggregate Quality Requirements

Description	AASHTO Test Method	Requirement
Percent Wear	T 96	40 Max.
Durability Index, Coarse and Fine	T 211	35 Min.
Liquid Limit	T 89	35 Max.
Plasticity Index	T 91	2-11

Section 962-Material for Timber Structures

962.01 Timber. Select timber from designated sites on Government-administered land. Select the species and sizes of materials as SHOWN ON THE DRAWINGS. Select timber that is straight, sound, and free of defects. Obtain CO approval of logs and trees before felling or moving them to the site. Fell trees to prevent damage to standing timber and to minimise breakage of trees to be used. Buck logs from felled trees in such a way to minimize waste and to obtain the required length and diameter.

Peel logs, square the ends, and trim the knots and limbs flush unless otherwise SHOWN ON THE DRAWINGS. Scatter the debris from the processing of timber away from the trail and so it will not block the trail or plug water courses.

962.02 Structural Lumber. Use structural lumber meeting the requirements of AASHTO M 168.

962.03 Hardware. Use **drift pins and dowels meeting the requirements of the American Society for Testing and Material (ASTM) A307 and galvanized hardware meeting the requirements of AASHTO M 232.**

Use **nails of standard form or as SHOWN ON THE DRAWINGS.**

962.04 Preservative. Use wood preservative treatment methods meeting the requirements of AASHTO M 133 as **SHOWN ON THE DRAWINGS. Completely and accurately fabricate all treated timber before treatment. Provide treated timber that is clean and free of dripping treatment liquids.**

Submit a certified copy of the lot certification, by a qualified independent inspection and testing agency, to the CO for each charge of preservative, stating penetration in millimeters and retention in kilograms per cubic meter (assay method). In addition, provide a written certification from the producer of the treated products that "Best Management Practices for Treated Wood in Western Aquatic Environments," published by the Western Wood Preservers Institute and Canadian Institute of Treated Wood, were utilized. Include a description and appropriate documentation of the Best Management Practices used.

Except for pine, incise before treatment all surfaces greater than 2" in **width and all Douglas fir and western larch surfaces. Field treat, as SHOWN ON THE DRAWINGS, any area hewn, notched, cut, or drilled after the initial preservative treatment.**

Section 963-Drainage Pipe

963.01 General. Use pipe, coupling bands, and special sections such as elbows, tees, and wyes made of the same material and of the same thickness as the conduit to which they are joined, unless otherwise specified.

963.02 Corrugated Steel Pipe and Pipe Arches

(a) Riveted Pipe and Pipe Arches. Use pipes meeting the requirements of AASHTO M 36.

(b) **Welded Pipe and Pipe Arches. Use corrugated metal pipe and pipe arches fabricated by resistance spot welding meeting the applicable requirements of** AASHTO M 36.

(c) **Helical Pipe. Use un-perforated helically corrugated pipe with continuous lock or welded seams meeting the applicable requirements of** AASHTO M 36.

(d) Coupling Bands. **Use coupling bands meeting the requirements of** AA SHTO M 36.

(e) **Special Sections. Use special sections such as elbows, tees, and wyes meeting the same thickness as the conduit to which they are joined and meeting the applicable requirements of** AA SHTO M 36.

(f) Flared-End Sections. **Use flared-end sections for inlet and outlet ends of pipe and pipe arch culverts meeting the, applicable requirements of** AA SHTO M 36.

963.03 Corrugated Steel Pipe for Underdrains. Use perforated galvanized pipe meeting the requirements of AA SHTO M 3 6. **Use polymer-perfoated perforated underdrains meeting the requirements of** AASHTO M 245

963.04 Corrugated Aluminum Alloy Culvert Pipe, Pipe Arches, and Underdrains. Use pipe meeting the requirements of AASHTO M 196.

963.05 Aluminum-Coated (Aluminized Type 2). Use pipe and coupling bands meeting the requirements of AA SHTO M 36 **except that they must be made from material meeting the requirements of** AA SHTO M 274.

963.06 Polyvinylchloride (PVC) Pipe. Use PVC drain and perforated pipe meeting the requirements of AASHTO M 278.

963.07 Plain or Corrugated Polyethylene (PE) Pipe. Use corrugated PE pipe and connections 1' through 3' **in diameter meeting the requirements of** AASHTO M 294

963.08 Acrylonitrile-butadiene-styrene (ABS) and PVC Composite Pipe. Use ABS **and PVC pipe and connections meeting the requirements of** AASHTO M 264.

Section 964-Geosynthetics

Materials

964.01 Geotextiles

(a) Use geotextiles, alone or in combination with other geosynthetics, that meet the following Class B requirements for subsurface drainage as specified in AASHTO M288.

(1) Grab Strength at 50 percent elongation
ASTM D4632-91 ..... 0.355 kN min.

(2) Seam Strength,
ASTM D 4632 ..... 0.310 kN

(3) Puncture Strength,
ASTM D4833-88 ..... 0.110 kN min.

(4) Mullen Burst,
ASTM D 3786-87 ... . 130 lbf/in2 min.

(5) Trap Tear Strength,
ASTM D4533-91 ..... 0.110 kN

(b) Use geotextile meeting the following critical physical properties, unless otherwise SHOWN ON THE DRAWINGS.

(1) Material Structure ..... Nonwoven (all purposes) or Slit Film (for reinforcement or separation)

(2) Polymer Composition ..... Polypropylene

(3) Apparent Opening,
ASTM D 4751-87 ..... .01 in. max.

(4) Permittivity, ASTM
D4491-92 ..... 100 gal./minute/S.F. min.

(5) Ultraviolet Degradation..... 70 at150 hours

964.02 Geonet. Use geonet meeting the following critical physical proper ties unless otherwise SHOWN ON THE DRAWINGS.

(a) Polymer Composition of Core
(Net or Mesh)..... .... Medium PE or HDPE

(b) Permeability..... 004 in/second min.

(c) Geotextile ..... Must meet all Section 964.01 requirements

(d) Compressive Strength
of Core, ASTM D1621:..... 72.5 lbf/in2, min.

(e) Transmissivity with Gradient
at 0.1, Pressure at 1.5 lbf/in2..... 0.01 S.F./second min.

964.03 Geogrids. Use geogrids made from polypropylene or coated polyester that meet the following critical physical properties.

(a) Polymer Type ..... HDPE, Polypropylene, or Polyester with Acrylic or PVC coating

(b) Mass per Unit Area, ASTM D5261-92 .....: 175 g/m² min.

(c) Maximum Aperture Size

(1) Direction (MD) ..... 4"

(2) Cross-Direction (XD) ..... 3°

(d) Wide-Width Strip Tensile Strength at 5 percent Strain, ASTM D4595-86

(1) Machine Direction (MD) ..... 8 kN/m min.

(2) Cross-Direction (XD) ..... 6 kN/m max.

964.04 Geocells. Use geocells meeting the following physical properties.

(a) Composition ..... PE or HDPE

(b) Geocell Weight expanded: .....::.....:.. 1.70 kghn² min.

(c) Minimum Cell Seam Peel Strength, U.S. Army Corps of Engineers Technical Report G:-86-19, Appendix A.,..... 800 N mm.

(d) Expanded Dimensional Properties.-..... AS SHOWN ON DRAWINGS

964.05 Sheet Drains. Use sheet drains meeting the following critical physical properties.

(a) Core Polymer Composition ..... Polystyrene, HDPE, or polypropylene attached

(b) Geotextile ..... Nonwoven on one side if core solid; on both sides if core perforated. Must meet all Section 964.01 requirements

(c) Core Thickness, ASTM D5199 ..... ½" min.

(d) Core Compressive Strength at Yield, ASTM D1621 ..... 650 kPa max.

964.06 Fasteners. Use anchors or fasteners of the design recommended by the manufacturer, and install per manufacturer's specifications.

964.07 Certification. Furnish a certificate or affidavit signed by an official from the company manufacturing the geosynthetic, verifying that the geosynthetic meets specifications.

964.08 Delivery, Storage, and Handling. During shipment and storage, wrap all geosynthetics to protect them from sunlight. When storing geosynthetics, protect them from mud, soil, dust, and debris. If materials are not installed immediately after delivery to site, do not store them in direct sunlight.

Section 965-Wire Baskets

Materials

965.01 Baskets. Twist or weld the mesh from galvanized steel wire, Class 3, soft temper, conforming to ASTM A641M, or aluminized steel wire, soft temper, conforming to ASTM A 809. Use wire with a minimum tensile strength of 400 megapascals when tested in accordance with ASTM A 370. The zinc or aluminum coating may be applied after the mesh fabrication.

Fabricate baskets from either twisted wire mesh or welded wire mesh. Make the mesh openings with a maximum dimension of less than 5" and an area of less than 7,000 mm?. Furnish baskets in the dimensions required with a dimension tolerance of + 5 percent.

Where the length of the basket exceeds 1.5 times its width, equally divide the basket into cells less than or equal to the basket width using diaphragms of the same type and size mesh as the basket panels. Prefabricate each basket with the necessary panels and diaphragms secured so they rotate into place.

(a) Wire Baskets 0.3 M or Greater in the Vertical Dimension. Fabricate the mesh for galvanized or aluminized coated basket from wire with a diameter of 3.0 mm or greater in nominal size, and fabricate the mesh for epoxy or PVC-coated baskets from wire with a diameter of 2.7 mm or greater in nominal size.

(1) Twisted Wire Mesh. Form the mesh in a uniform hexagonal pattern with nonraveling double twists. Tie the perimeter edges of the mesh for each panel to a selvage wire with a diameter of 3.9 mm or greater, or a selvage wire with a diameter of 3.4 mm or greater for epoxy- or PVC-coated baskets, so that the selvage is at least the same strength as the body of the mesh. Furnish selvage wire from the same kind and type of material used for the wire mesh.

(2) Welded Wire Mesh. For mesh from galvanized or aluminized wire with a diameter of 12" or greater in nominal size, weld each connection to obtain a minimum average weld shear strength of 2,600 N, with no value less than 2,000 N. For mesh for epoxy-or PVC-coated baskets from wire with a diameter of 2.7 mm in nominal size, weld each connection to obtain a minimum average weld shear strength of 2,100 N, with no value less than 1,600 N.

(b) Wire Baskets Less Than 12 Inches in the Vertical Dimension. Fabricate the mesh from wire with a diameter of 2.2 mm or greater in nominal size.

(1) Twisted Wire Mesh. Form the mesh in a uniform hexagonal pattern with nonraveling double twists. Tie the perimeter edges of the mesh for each panel to a selvedge wire with a diameter of 2.7 mm or greater so that the selvedge is at least the same strength as the body of the mesh. Furnish selvedge wire from the same kind and type of material used for the wire mesh.

(2) Welded Wire Mesh. Weld each connection to obtain a minimum average weld shear strength of 1,300 N, with no value less than 1,000 N.

(c) Epoxy-or-PVC-Coated Baskets. Use either the fusion bonding or extrusion coating process to coat the galvanized or aluminized mesh.

Make the coating at least 0.18 mm in thickness for epoxy, and 0.38 mm in thickness for PVC. Make the color black or gray and conform to the following:

(1) For epoxy coating meet:

- Abrasion resistance, ASTM D 1242, maximum weight loss 0.19 g.
- Salt crock, ASTM G 8, maximum disbondment diameter 45 mm, and at 90 days, 1.5 volts, and 3 percent solution.
- Chemical resistance, ASTM G 20, with 45 days at 70°F, 3 molar CaCl, 3 molar NaOH, saturate Ca(OH)⎕, and no coating loss.
- Weatherometer, ASTM G 23, with a surface chalk and 2,000 hours.

(2) For PVC coating meet:

- Specific vi ASTM D 792 1.20 to 1.40
- Tensile strength, ASTM D 638 ..... 15.7 MPa, min.
- Modulus of elasticity, ASTM D 638 ..... 13.7 MPa, min. at 100 strain
- Hardness-shore "A," ASTM D 2240 ..... 75 min.
- Brittleness temperature, ASTM D 746 ..... 15°F max.
- Abrasion resistance, ASTM D 1242 ..... 12 percent maximum method B, at 200 cycles, weight loss CSI-A abrader tape, 80 grit
- Salt spray (ASTM B 117) and ..... No visual effect
  Ultraviolet Light exposure (c) D < 6 percent
  (ASTM D 1499 and G 23 using (d) D < 25 percent
  apparatus type E and 145°F) for (e) D < 25 percent
  3,000 hours (h) D < 10 percent

-Mandrel bend, 360° bend at 0°F. No breaks or cracks in coating around a mandrel 10 times the wire diameter.

965.02 Fasteners. For lacing wire, use wire with a diameter of 2.2 mm in nominal size that is of the same type, strength, and coating as the basket mesh.

For welded wire mesh panels, form the spiral binders with wire that has at least the same thickness and coating as the basket mesh.

Furnish alternate fasteners that are acceptable to the basket manufacturer and that remain closed when subjected to a 2,600-N tensile force when confining the maximum number of wires to be confined. Submit installation procedures and fastener test results.

965.03 Internal Connecting Wire. Use lacing wire as described in Subsection 965.02 to reinforce side panels. Alternate stiffeners that are acceptable to the basket manufacturer may also be used

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Maintenance Sections

Section 981-Brush Cutting

Description

981.01 Work. This work consists of removing brush, trees less than 100 mm in diameter, and shrubs within the clearing limits.

Requirements

981.02 General. Remove all limbs of shrubs and trees that extend across or into the clearing limits as SHOWN ON THE DRAWINGS. Saw or cut limbs flush with the tree trunk. Make cuts in a manner that will not tear or strip bark from the trees.

Gut and remove from the clearing limits all woody plants exceeding %" in stem diameter or 12" in height. The maximum size material to be cut under this specification is 4" in diameter when measured at a height of 6" above the ground on the uphill side of the stump.

Cut all brush and small, woody plants as near flush to the ground surface as possible. When impractical to cut plants flush, the maximum stem length shall be 2".

Remove all woody material for a minimum of 3" below the trail tread surface. Fill holes in the trail tread caused by removing woody material with suitable material.

Scatter the clearing debris removed from the clearing limits outside and below the clearing limits. Do not place materials in stream channels, drainageways, ditches, culvert inlets, or other locations where they would prevent the free flow of water away from the trailbed.

Measurement

981.03 Method. Determine the quantity of brush cutting units by measuring the slope distance along the trail centerline.

Payment

981.04 Basis. Make payments, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
981(01)	Brush Cutting.....	mi
981(02)	Brush Cutting	L.F.
981(03)	Brush Cutting .....::.....	LS

Section 982-Logging Out

Description

982.01 Work. This work consists of removing brush, logs, and down trees from the clearing limits.

Requirements

982.02 Clearing Out. Cut and remove all logs that extend across or into the clearing , limits. The portions of cut logs that remain on the upper side of the trail shall be either firmly anchored to prevent sliding or rolling onto the trailway or moved across the trail to the lower side and scattered outside the clearing limits.

Fell all trees over 4" in diameter that are leaning into the clearing limits and that are within 10' above the trailbed. Stump height of leaning trees that are cut outside the clearing limits shall not exceed 12" as measured on the uphill side of the stump. Disposal and payment for the leaning trees described above will be the same as for down logs and trees.

Remove roots and stumps from trees within the trailway that have been uprooted.

Rerouting the trail around windfalls, uprooted trees, and other obstacles will not be permitted. Ramp or reroute sections of the trail tread that have been damaged by uprooted stumps as necessary to provide safe passage on the trail. Payment for such work will be incidental to the specified work item, and no extra payment will be made.

Remove sticks or wood chunks exceeding 2" in diameter and 12" in length that have fallen onto the trailbed.

Scatter the down trees on the lower side of the trailway outside the clearing limits. Do not place such materials in stream channels, drainageways, ditches, culvert catch basins or other locations where they would prevent the free flow of water away from the trailbed.

Measurement

982.03 Method. Determine the quantity of logging out units by measuring the slope distance along the trail centerline or by actual count of those units designated for removal.

Payment

982.04 Basis. Make payment, for all units inspected and accepted, at the unit prices SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
982(01)	Logging Out	mi
982(02)	Logging Out Diameter.....	EA
982(03)	Logging Out	L.F.
982(03)	Logging Out	LS

Section 983-Danger Tree Removal

Description

983.01 Work. This work consists of felling, bucking, and limbing trees and scattering slash.

Requirements

983.02 Danger Trees. Remove trees and snags that are broken off or that are in a leaning, unstable position over the trailway to designated areas as SHOWN ON THE DRAWINGS. Cut designated danger trees so that stump heights do not exceed 12" as measured on **the uphill side of the stump. Maximum stump height of designated trees within 4' of the trail centerline is 4". Do not leave felled trees parallel with the trail unless there are sufficient barriers to keep them from rolling or sliding onto the trail. Lop limbs to reduce slash concentration and scatter the clearing debris outside and below the clearing limits. If the trunk, or a portion thereof, falls within the trailway, remove that portion within 4' of either side of the trail centerline and scatter a minimum distance of 4' beyond and below the trail centerline.**

Measurement

983.03 Method. **Determine the quantity of danger tree removal units by actual count of those trees marked.**

Payment

983.04 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM	**PAY UNIT**
983(01) Danger Tree Removal .....:.....	EA

Section 984-Loose Rock Removal

Description

984.01 Work. This work consists of removal and disposal of loose rock from the trail tread.

Requirements

984.02 General. Remove loose rocks that are larger than 2" at their greatest dimension from the trailbed. Remove any loose rock in drainage dips or ditches that may impede water flow off the trail. Loose rocks are rocks that are not firmly embedded in the trail and can **be removed by hand. Where the trailbed consists predominantly of rock with little or no soil present, remove all loose rock larger than 3".**

Fill any **holes remaining from rock removal with suitable material and compact. If the rock removed is not needed for other items of main-tenance work, scatter the rock by side-casting to the lower side of trailway beyond the clearing limits, and distribute rock to ensure that** no **blockage of drainage or creation of a windrow occurs. Do not dispose of waste materials in water courses.**

Measurement

984.03 Method. Determine the quantity of loose rock removal units by measuring the slope distance along the trail centerline.

Payment

984.04 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM	PAY UNIT
984(01) Loose Rock Removal	**L.F.**

Section 985-Rock and Root Removal

Description

985.01 Work. This work consists of removal and disposal of rocks and roots from the tread.

Requirements

985.02 Rock Removal. Remove surface rocks that are larger than 2" at their greatest dimension, and rocks that project more than 2" above the surface of the trail tread, when removal can be accomplished by hand or when rocks can be pried out with a pick mattock, shovel, pry bar, or similar tool. Where the trailbed consists predominantly of rock with little or no soil present, remove loose rock in excess of 3".

Shatter any protruding rocks in trail tread that are too large to be pried out with a pick and bar by using either a rock sledge or explosives. Remove the protrusion down to the level of the tread surface. Fill any resulting depressions with suitable material and compact by tamping. If rock removed is not needed for other items of maintenance work, scatter the rock by side-casting to the lower side of the trailway and beyond the clearing limits and distribute rock to ensure that no blockage of drainage or creation of windrow occurs. Do not dispose any waste material in water courses.

985.03 Root Removal. Remove exposed tree roots on or in the trail tread that are greater than 1" in diameter. Cut embedded roots that project more than 2" above the trail tread flush with the trail tread. Scatter removed roots on the lower side of the trailway beyond the clearing limits and outside of water courses.

Fill holes caused by rock and root removal with suitable material and compact to form a smooth trail tread.

Maintain trail tread to the width as SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

Measurement

985.04 Method. Determine the quantity of rock and root removal units by measuring the slope distance along the trail centerline.

Payment

985.05 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE

Make payment under:

PAY ITEM	PAY UNIT
985(01) Rock and Root Removal	L.F.

Section 986-Borrow

Description

986.01 Work. This work consists of placing select borrow material on the trailbed.

Materials

986.02 Requirements. Obtain borrow materials from locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND. Obtain CO's approval before using borrow from other locations. Suitable material from slough and berm removal may also be used as borrow. material. **Use suitable borrow material and aggregate under 50 mm in the greatest dimension.**

Requirements

986.03 General. On sideslopes where water can drain away from the trailbed, provide a sufficient depth of borrow material to obtain the outslope as SHOWN ON THE DRAWINGS.

Across meadows and on **turnpike sections, provide a sufficient depth of borrow material to produce a crowned trailbed as SHOWN ON THE DRAWINGS.**

Compact all material placed. Compact borrow material placed on the approaches of bridges and puncheon to provide a smooth surface and a smooth transition from the structure to the adjoining trail tread surface.

Cover any culvert surfaces that have become exposed with a minimum depth of 6" of suitable material over the full length of the exposed culvert and of sufficient length along the trail to present a uniform trail grade.

Provide free-draining borrow sites and backslopes no steeper than 1'/3:1.

Measurement

986.04 Method. Determine the quantity of borrow units by measuring the slope distance along the trail centerline.

Payment

986.05 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
986(01)	**Borrow.....**	**L.F.**
986(02)	**Borrow.....**	**C.Y.**

Section 987-Slide Maintenance

Description

987.01 Work. Work consists of the removal and disposal of slide material from the trailbed and the restoration of all sections of trail that have been damaged.

Requirements

987.02 General. Conserve and use suitable material from the slide on the trailbed for tread surfacing. Spread this material at a maximum depth of 3" for a distance not exceeding 100' in each direction from the site of the slide unless otherwise SHOWN ON THE DRAWINGS.

Place all excess and unsuitable material beyond the downslope edge of the trailbed. Uniformly spread unsuitable material to a depth not exceeding 4" and do not obstruct drainage.

Reshape the backslope that contributed to the slide to reduce future sloughing and to conform to adjacent undamaged sections unless otherwise SHOWN ON THE DRAWINGS.

Re-grade sections of trailbed that have been damaged to. a width and finish that conform to adjacent undamaged sections unless otherwise SHOWN ON THE DRAWINGS.

Measurement

987.03 Method. Determine the quantity of slide maintenance units by measuring the slope distance along the trail centerline. The measured distance will be that portion of the trail that is covered by slide material.

Payment

987.04 Basis. Pay for the accepted quantities at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

PAY ITEM		PAY UNIT
987(01)	Slide Maintenance.....	L.F.
987(02)	Slide Maintenance	LS

Section 988-Slough and Berm Removal

Description

988.01 Work. Work consists of the removal and disposal of slough and berm material that has accumulated on the trailway.

Requirements

988.02 Slough and Berm Removal and Excess Material. Remove all slough material within the trailway. Remove all material from the trailbed when daylight can be obtained within a distance of 4' from the outslope edge of the finished tread unless otherwise DESIGNATED ON THE GROUND or SHOWN ON THE DRAWINGS. Conserve and use suitable material to restore the trail tread as SHOWN ON THE DRAWINGS.

Place all excess and unsuitable material beyond the downslope edge of the trailbed. Uniformly spread to a depth not exceeding 4" and do not obstruct drainage or interfere with the drainage of outsloped tread.

Measurement

988.03 Method. Determine the quantity of slough and berm removal units by measuring the slope distance along the trail centerline.

Payment

988.04 Basis. Pay for the accepted quantities at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

PAY ITEM		PAY UNIT
988(01)	Slough and Berm Removal	L.F.
988(02)	Slough and Berm Removal.....	LS

Section 989-Turnpike Maintenance

Description

989.01 Work. This work consists of maintaining trail turnpike sections.

Materials

989.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures
964 - Geosynthetics

Requirements

989.03 General. Obtain logs, staking material, and suitable material for backfill from locations SHOWN ON THE DRAWINGS or DESIGNATED ON THE GROUND.

Replace missing rocks, or missing or decayed retaining logs or lumber, with rocks, logs, or dimensional lumber as SHOWN ON THE DRAW-INGS. Secure loose or dislocated retainers. Drive stakes 2-3" in diameter and 18-24" in length along the outside edge of each log or lumber retainer to hold them in place. Shape the trailway with suitable material to provide a 2" crown measured from the top of the crown at the centerline to the top of the retainers.

Clear all drainage structures of obstructions, silt, and debris so as to permit the free flow of water away from the trail. If. necessary, use suitable material removed from the drainage structures to build up the crown.

Measurement

989.04 Method. Determine the quantity of maintain trail turnpike units by measuring the slope distance along the trail centerline.

Payment

989.05 Basis. Make payment for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

PAY ITEM		PAY UNIT
989(01)	Maintain Trail Turnpike.....	L.F.
989(02)	Maintain Trail Turnpike.....	LS

Section 990-Switchback Maintenance

Description

990.01 Work. This work consists of replacing or maintaining retaining walls, trail tread, barriers, and drain ditches on existing switchbacks.

Materials

990.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Material for Timber Structures

Requirements

990.03 Retaining Walls. When needed in rock retaining wall maintenance, use replacement rock that is sound, durable, and free from rifts, seams, laminations, and minerals that could cause deterioration through weathering.

990.04 Barriers. Perform barrier maintenance where needed. Use the same type of materials as in the original construction.

990.05 Ditches. Clear switchback ditches to permit the free flow of water. Construct ditches as SHOWN ON THE DRAWINGS.

990.06 Tread. Maintain trail tread to the original designed tread width.

Measurement

990.07 Method. Determine the quantity of switchback units by actual count.

Payment

990.08 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
990(01)	Maintain Switchbacks	EA
990(02)	Switchback Ditches.....	L.F.

Section 991-Drainage Maintenance

Description

991.01 Work. This work consists of cleaning culverts, waterbars, drainage dips, ditches, rock spillways, stream fords, and gully crossings; directing water from the trail where washing of the trailbed is or has been occurring; and draining low spots in the trailbed that tend to hold water.

Materials

991.02 Requirements. Use materials meeting the requirements of the following sections:

961 - Rock, Grid Pavement Units, and Aggregate
962 - Materials for Timber Structures

Requirements

991.03 General. Where trail drainage facilities have been plugged and the water has been diverted from the intended channel, remove the debris causing the diversion and return the drainage to the channel. Divert water off and away from the tailbed. If washing or ponding of water has been or is occurring, dig a shallow ditch sloped 2 percent to 5 percent to the downstream side of the trail and 3" minimum deep and 12" minimum wide across the trail at the point where water enters the trail.

Clean ditches to permit the free flow of water into culverts and away from the trail.

Scatter all unusable or unneeded material that is cleared from the drainage structures 3' or more beyond and below the trail or drainage facility and out of water courses.

991.04 Culverts. Remove debris and soil from catch basins and inlet and outlet ditches and inside culverts to permit the unobstructed flow of water into, through, and away from the culvert. Replace any missing or loose rocks or logs in culvert headwalls.

Fit replacement rocks for rock culverts so that they have a firm bearing on adjacent and underlying rocks. Place rocks snugly and fill voids with small rocks to prevent material from sifting into the drain. Fill and compact with suitable material all disturbed areas in the trail tread over or adjacent to rock culverts.

991.05 Waterbars. Clean the upgrade side of all existing waterbars and maintain them as SHOWN ON THE DRAWINGS. Remove material accumulated against rubber belting waterbars. Use and compact suitable material removed from the upgrade side of all waterbars to bring the trail tread flush with the top of those waterbars on the downgrade side. Remove all debris from the lead-off area of all waterbars that restricts the free flow of water away from the trail. Firmly embed replacement rocks for rock waterbars into the trailbed and fit the rocks together. Make the tops of the rocks even, with no sharp points. Peel native replacement logs before using them. Anchor stakes tightly in the ground without splits and nail tightly to the log.

991.06 Drainage Dips. Clean deposited material and restore drainage dips as SHOWN ON THE DRAWINGS. Remove all debris from the lead-off area of dips that restricts the free flow of water away from the trail. Use suitable material obtained by cleaning dips

for fill on the downgrade side, removing rock more than 3" at its greatest dimension. . Compact all material placed in the trail tread.

991.07 Rock Spillways. Maintain rock spillways to conform as SHOWN ON THE DRAWINGS. Replace missing rocks, interlocking each rock with adjacent rocks. Place the rocks to ensure that the water flows down the spillway and away from the facility being drained. Use small rocks to fill voids. Clean all material from the spillway that restricts the flow of water away from the trail.

991.08 Stream Fords and Gully Crossings. Maintain stream fords and gully crossings as SHOWN ON THE DRAWINGS. Remove debris and loose rocks over 3" from existing stream crossings to provide the tread width. Maintain and replace missing or rotted log or rock barriers that form the dam at fords and gully crossings. Level and smooth the stream bottom with gravel or rock less than 3" in greatest dimension to provide a crossing.

Re-grade or fill the approaches to the stream fords and gully crossings to provide for safe use. Replace missing stepping-stones.

Measurement

991.09 Method. Determine the quantity of drainage maintenance units by measuring the slope distance along the centerline. Measure other items by a count of those designated.

Payment

991.10 Basis. Make payment for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

Make payment under:

PAY ITEM		PAY UNIT
991(01)	Drainage Maintenance	mi
991(02)	Drainage Maintenance	LS
991(03)	Maintain Waterbars	EA
991(04)	Maintain Drainage Dips.....	EA
991(05)	Rock Spillways	EA
991(06)	Stream Fords and Gully Crossings.....	EA

Section 992-Rock Retaining Wall

Description

992.01 Work. This work consists of replacing rock that has become displaced from rock retaining walls.

Materials

992.02 Requirements. Use materials meeting the requirements Section 961.

Requirements

992.03 General. Repair walls back to a height that will provide a uniform grade consistent with segments of **trail adjacent to each side of the damaged wall.**

Stagger joints at least 4" horizontally from the adjacent joint in the next course.

Use **uniformly distributed header rocks for at least 25 percent of the rocks in the front and rear facing walls, each with a length at least 2.5 times its width. Place header rocks with the greatest dimension extending into the wall (at right angle to trail centerline), except at corners. At comers, place alternating courses containing headers parallel with wall.**

Measurement

992.04 Method. Measure the quantity of rock retaining wall units by the square meter of front wall face.

Payment

992.05 Basis. Make payment for all units inspected and accepted at the unit price.

Make payment under:

PAY ITEM		PAY UNIT
993(01)	**Rock Retaining Wall .....**	L.F.
993(02)	**Rock Retaining Wall .....**	**LS**

Section 993-Sign Repair and Replacement

Description

993.01 Work. This work consists of refastening existing signs to existing sign support posts, resetting existing sign support posts, and installing new replacement signs and new sign support posts.

Materials

993.02 Requirements. Use materials meeting the requirements of Section 962.

Requirements

993.03 General. Repair signs at locations SHOWN ON THE DRAW-INGS or DESIGNATED ON THE GROUND. Reattach designated signs that are out of their original position so that the lines of the sign legend are horizontal. Reset sign support posts to a plumb position and firmly tamp in place. Set sign posts designated for replacement in the ground to a depth of 30" to 36" at the approximate location of the original post.

Tighten sign mounting bolts or lag screws to hold the sign snugly in place. Do not damage sign surface.

Reset existing posts that are out of plumb and firmly tamp in place. Set posts that need to be reset and new replacement posts in a plumb position and to a depth of 30" to 36".

For signs mounted on trees, remove obstructing limbs and notch the outer bark to provide a flat surface at the sign mounting position. Avoid removing the inner bark or cutting the cambium.

Use 50-penny galvanized nails or spikes to refasten signs to trees.

Pre-drill replacement signs before mounting.

Backfill and tamp holes from which posts are removed.

Measurement

993.04 Method. Determine the quantity of sign repair and replacement units by actual count of those designated by the Government.

Payment

993.05 Basis. Make payment, for all units inspected and accepted, at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

PAY ITEM		PAY UNIT
993(01)	Sign Repair.....	EA
993(02)	Sign Replacement	EA
993(03)	Post Replacement.....	EA

Section 994-Barrier Maintenance

Description

994.01 Work. Work consists of maintaining rock, log, and timber barriers.

Materials

994.02 Requirements. Use **materials meeting the requirements of the following sections:**

961 - Rock, Grid Pavement Units, and Aggregate

962 - Material for Timber Structures

Requirements

994.03 General. Restore rock, log, and timber barriers to their original lines and grades unless otherwise SHOWN ON THE DRAWINGS.

994.04 Rock Barriers. Replace missing rocks, using rocks of general rectangular shape between 45 lb. and 120 lb., with the larger rocks placed on the bottom. Use rock chips to wedge larger rocks in place to form a stable wall. Stagger all vertical joints.

Stabilize and reset loose rocks.

Form a continuous grade with the top of the restored barrier consistent with adjacent segments of the barrier.

994.05 Log or Timber Barriers. Replace missing, damaged, and unsound logs or timbers using material similar to that used in the original barrier unless otherwise SHOWN ON THE DRAWINGS. The location of trees for native timber materials will be DESIGNATED ON THE GROUND.

Stabilize and re-attach loose logs or timbers that are in sound condition.

Measurement

994.06 Method. Determine the quantity of rock, log, and timber barrier units by measuring the slope distance along the barrier centerline.

Payment

994.07 Basis. Pay for the accepted quantities at the unit price SHOWN IN THE SCHEDULE OF ITEMS.

PAY ITEM		PAY UNIT
994(01)	Barrier Maintenance, Type	L.F.
994(02)	Barrier Maintenance, Type	LS

5-3 APPENDIX

MOU BETWEEN RAYONIER AND KITSAP COUNTY

MEMORANDUM OF AGREEMENT

REGARDING COLLABORATION ON TRAILS AND OPEN SPACE IN NORTH KITSAP

This Memorandum of Agreement ("Agreement") is entered into on the date of the last signature below (the "Effective Date"), by and among POPE RESOURCES, a Delaware limited partnership, OPG PROPERTIES LLC, a Washington limited liability company (collectively, "OPG") and KITSAP COUNTY, a municipal corporation organized and existing under the laws of the State of Washington ("County").

RECITALS

1. The County, through its Parks, Recreation and Open Space (PROS) Plan and its Comprehensive Plan, has established goals and policies for the expansion, enhancement and improvement of its parks system countywide.

2. To implement these goals and polices, the County has undergone planning, acquisition, and construction efforts in regional and community parks for more than two decades.

3. These efforts have required meaningful collaboration with federal, state, Tribal, community and private partners to plan improvements, gain funding, negotiate acquisitions and provide maintenance and stewardship.

4. Examples of these initiatives include: 1) the Kitsap Forest and Bay Project, which acquired the 3,500-acre Port Gamble Forest Heritage Park and portions of the Divide property, and expanded the North Kitsap Heritage Park, 2) planning, feasibility studies and design of the Sound to Olympics regional trail connecting the east side of the Puget Sound to the Olympic Peninsula, 3) the Hansville Greenway and 4) the Kitsap Peninsula Water Trail System.

5. Important private partners in these efforts have been the undersigned private entities, collectively called OPG, which own large areas of land, including the Port Gamble Town site, the Arborwood planned development in Kingston, and substantial lands in the Gamble block, the Divide, and near Hansville, which are generally depicted in Attachment A to this Agreement. These lands were previously controlled by Pope Resources, prior to Rayonier Inc.'s acquisition of its assets through a merger completed in May of 2020 (the "Merger").

6. Beginning in 2007, Olympic Property Group and Pope Resources partnered with Kitsap County and the community to create a vision for north Kitsap County referred to as the North Kitsap String of Pearls. In 2011, Kitsap

County officially adopted the North Kitsap String of Pearls Trail Plan into the County Comprehensive Plan. Central to that vision was a network of connected open spaces and trails linking north Kitsap communities and a regional paved trail called the Sound to Olympics Trail. Some of these trails are on the above-referenced companies' north Kitsap County lands. That partnership resulted in a decade-long conservation effort called the Kitsap Forest and Bay Partnership, and a series of County land acquisitions including a total of 4,000 acres. For five years prior to the Merger, the County and Pope Resources were in active discussions regarding the terms of possible cooperative efforts to improve public access, trail connections, recreational opportunities, and other benefits in the development of Pope Resources' holdings in the County. In addition to assisting in past and current County efforts intended to advance these goals, Pope Resources initiated and participated in large-scale community planning efforts, including the initiative known as the String of Pearls with the goal of connecting its holdings with new and existing trails and open space systems throughout north Kitsap County. OPG desires to continue these cooperative planning efforts with the County in the interest of advancing the parties' shared goals in high-quality development of these lands.

7. To continue this collaboration and memorialize agreements regarding future efforts to advance these shared goals, the County and OPG wish to enter into this Agreement to work towards a robust, connected and consistent parks, open space and trail system for the future public benefit of the parties as well as communities within Kitsap County and the region.

AGREEMENT

A. **Purpose.** The purpose of this Agreement is to set forth the activities each party is willing to perform on and after the Effective Date in the advancement of a robust, connected, and consistent parks, open space, and trail system within Kitsap County. The above recitals are also incorporated herein by this reference.

B. **County commitments.** The County agrees to employ diligent, commercially reasonable good faith efforts to initiate or continue the planning, design and construction activities as set forth below.

1. Sound to Olympics Trail (STO): The County will continue planning, design and construction efforts related to the STO Trail, connecting the Hood Canal Bridge to the WSDOT Kingston Ferry Terminal. This trail is currently anticipated to traverse through or near the North Kitsap Heritage Park (NKHP), across the Divide and Port Gamble Forest Heritage Park properties and into Port Gamble. These efforts by the County shall include advocacy for funding at the federal, state and local levels, oversight of feasibility, design and construction of funded

non-motorized transportation elements, and long-term maintenance after construction, each of which shall be considered in the parties' cooperative work, pursuant to Section D hereof, to determine the final terms and location for the property transfer to the County for the STO Trail, as set forth in Section C. Phase 1 of the STO Trail, which is currently anticipated to traverse through the northern portion of the Port Gamble town site, is estimated for design by March 31, 2023 and construction by December 31, 2024. The County's feasibility study of NKHP STO Trail route and vicinity connections will be completed in 2023, and the County's decision on its preferred route across the Divide property will be made by December 31, 2024.

2. Port Gamble Mountain Biking Ride Park: The County will continue planning, design, construction and maintenance of the Mountain Biking Ride Park located in the Port Gamble Forest Heritage Park, which will include a County connection to the STO Trail. The Ride Park is estimated for construction no later than 30 days from final construction of the Port Gamble Mountain Biking Ride Park Access Road from Carver Drive or September 1, 2022 whichever comes last.

3. Stottlemeyer Trailhead. The County will continue planning, design, construction and maintenance of the Stottlemeyer Trailhead located at the southern end of the Port Gamble Forest Heritage Park, which will include a connection to the STO Trail. The Stottlemeyer Trailhead is estimated for construction no later than September 1, 2022.

4. Port Gamble Forest Heritage Park Master Plan. The County will review and adopt the Port Gamble Forest Heritage Park Master Plan, which will include details for potential expansion of recreational uses and trail races and events, as well as conservation and restoration activities. The Master Plan will also include proposals for additional parking, trailheads and other amenities throughout the Park, subject to OPG's review and approval of the location of any trail connections into the property subject to the Port Gamble Redevelopment Plan under Permits 13-00165 and 13-00164. The Master Plan is estimated for completion no later than April 30, 2022.

5. Waterfront trail. The County agrees to complete the planning, permitting, and construction of the proposed Port Gamble Heritage Park Waterfront Trail no later than October 1, 2023 or completion of a Shoreline Bluff Parking lot, whichever comes last. The final design and location of the Port Gamble Heritage Park Waterfront Trail is at the discretion of the County, although the parties' goal is to maintain a separated trail where possible. The parties acknowledge and agree

that this work may not include bridges and culverts needed to cross ravines, but instead, the trail may run up to the shoulders and along SR104 to avoid ravines and other severe topography. The parties further acknowledge and agree that the existing paved area across from the Model Airplane Field ("MAF") road entry could serve as limited parking.

6. Gamble Way NE Intersection Improvements. The parties acknowledge that OPG's currently approved development plans in and around the Port Gamble town site (the "**Port Gamble Redevelopment**") will not generate traffic in quantities sufficient to require improvements to the intersection of SR 104 and Gamble Way NE (the "**Intersection**"), either by State Transportation Warrant or otherwise. However, the addition of traffic expected to be generated as a result of the expansion of the Mountain Biking Ride Park discussed below beyond its currently permitted size (165 acres with a 75-stall parking lot), in combination with the traffic associated with the Port Gamble Redevelopment, may result in improvements being required in and around the Intersection. Except with respect to any traffic associated with the currently permitted Mountain Biking Ride Park described above, the County hereby agrees to construct, or contribute funds to the construction of, its proportionate share of any intersection improvements required as a result of future development in the Port Gamble Forest Heritage Park (including any expansion that increases the size of the Mountain Biking Ride Park beyond its currently-permitted 165 acres, or increases its parking capacity beyond its currently-permitted 75-stall parking lot).

7. Cooperation; Public Information Regarding Cooperative Efforts. The County agrees to participate in good faith in all negotiations, delineations and agreements on all easements, land transfers, land use review and permitting matters, and other commitments detailed in this Agreement. The parties will work cooperatively on the dissemination of information to the public regarding the history of the parties' partnership on the matters addressed in this Agreement. The County shall install signs containing mutually-agreed-to content at each of the trailhead entries discussed in Section C, below, on or before December 31, 2022, at the parties' shared expense. The County and OPG will hold a public meeting within three months of signing this Agreement regarding plans for completing the vision of the North Kitsap String of Pearls and progress on the Sound to Olympics Trail.

8. Park Impact Fee Credits. In accordance with Chapter 4.110, KCC, OPG will request credits to park impact fees for improvements

provided by OPG under this Agreement, including OPG's contributions and commitments to build the Port Gamble Mountain Biking Ride Park Access Road and other dedications for trailheads and Port Gamble trailhead parking to Kitsap County for parks and trail facilities, as set forth in Section C, below. The County shall process the request and issue credits as allowed in chapter 4.110 KCC.

9. Project Development; Schedule. The parties acknowledge and agree that OPG's ability to advance the development of its land in Kitsap County and meet each of its commitments contained in this Agreement depends in part on the County's prompt review of development applications. Through third-party review allowed by Kitsap County Code, OPG may ask the County to conduct expedited reviews of all permit applications currently under review or submitted by OPG in the future. The County agrees to provide the County personnel and other resources necessary to coordinate an expedited review of the above-described permits and approvals by a third party reviewer contracted by the County at OPG's expense.

C. **OPG commitments.** OPG agrees to employ diligent, commercially reasonable good faith efforts to initiate or continue the planning, design and construction activities, and the proposed transfers of land and / or easements to the County, all as set forth below.

1. Cash Contribution by OPG. OPG agrees to pay Seventy-Five Thousand and 00/100s Dollars ($75,000.00) to the County no later than January 30, 2022. This cash transfer is intended to help the County defray the costs associated with (a) the transfers described in this Section C; (b) the County's future development of the land transferred in furtherance of this Agreement; and (c) ongoing maintenance and land stewardship activities by the County, all of which shall be at the County's sole cost and expense without any further reimbursement or contribution by OPG. For the avoidance of doubt, unless expressly provided otherwise herein, the County shall bear any and all expenses associated with the County's design, permitting, and construction of improvements (including without limitation the cost of necessary studies and reports as well as permitting and review fees) for parking areas, trailheads, shoreline and other trails, signs, and related improvements and amenities proposed or installed on any portion of the Reserved Lands (as defined in Section D below), as well as any utilities, stormwater facilities, and/or mitigation measures convenient or necessary as a result of said development. Any funds not expended during the Term of this Agreement (as defined below) shall be refunded to OPG.

2. Port Gamble Master Plan Open Space: OPG agrees to transfer to the County a portion of the forested open space related to the Port Gamble Master Plan directly south of the Port Gamble town site as generally depicted in Attachment B, reserving to OPG its water rights associated with the parcel, and a road and utility easement between the MAF and the Port Gamble townsite; provided, however, the parties acknowledge and agree that this reserved easement is unlikely to be suitable for motorized vehicular access in the future. The parties currently anticipate that the transfer of land to the County pursuant to this Section will be completed in two separate phases. Phase 1 is anticipated to include approximately 52 acres of forest and wetlands generally located to the south of the Port Gamble town site, and Phase 2 may include approximately five to fifteen additional acres, each as generally depicted on Attachment B hereto. OPG's rights to the merchantable timber on this tract shall be included in the transfer, without the expectation of any further payment or commitment from the County; provided, however, that Kitsap County commits to preserve this mature forest as an amenity for the community and Port Gamble. Any timber management of the Open Space will solely focus on habitat management and trail development. The County's development and use of this area will be limited by the conditions of approval of Port Gamble Redevelopment Plan, and any matters of record existing as of the Effective Date hereof. On and after the Effective Date, OPG shall not impose any additional title restrictions on the use or development of this area, in Covenants, Conditions and Restrictions or otherwise; except for the access and utilities easements and water rights to be reserved to OPG pursuant to this Agreement. The transfer to the County is currently anticipated to be made at the conclusion of the final plat process for the Port Gamble Master Plan; or, alternatively, at an earlier date once the relevant tracts are segregated into parcels that may be transferred to the County consistent with applicable subdivision regulations. In any case, the Parties intend that the transfer of open space to the County pursuant to this Section will count toward OPG's satisfaction of open space obligations under the land use approvals for future development in and around the Port Gamble town site. The parties further acknowledge and agree that the West Sound Wildlife Shelter tract will retain seasonal temporary construction access to the south portion of its future property from the Teekalet gate along road #1100, unless and until the County provides separate temporary seasonal construction access from the south.

3. Port Gamble Mill Site Open Space: The parties acknowledge that OPG has sold development rights on a 16-acre portion of the former mill site

with a conservation easement over the land generally depicted in Attachment C (the “Mill Site”) in a transaction utilizing funding from the Washington Recreation and Wildlife Program. The Mill Site is also subject to an environmental clean-up and natural resource damages restoration project under the authority of the Washington State Department of Ecology. While the long-term plan for the Mill Site is currently under development, the parties agree to work in good faith to explore the potential for creating a waterfront park on the Mill Site to be owned by Kitsap County and open to the public for passive recreation. Such future discussions of County ownership shall include the parties’ mutual agreement on liability protections for any existing soil, groundwater and/or other contaminants discovered in the future.

4. Port Gamble Mountain Biking Ride Park Access Road: OPG agrees to construct a 20-foot-wide temporary gravel roadway connecting NE Carver Drive and the Port Gamble Forest Heritage Park in the location generally depicted in Attachment D. This roadway will connect to an access road to be located on Port Gamble Forest Heritage Park property for vehicular and non-motorized public access to the Port Gamble Mountain Biking Ride Park. The temporary roadway will be constructed no later than October 30, 2022 so long as County approvals are obtained and issued on the parties’ currently contemplated timeline set forth below, and so long as the stormwater can be handled through dispersion without the use of water quality or flow control facilities. OPG agrees to submit complete, accurate, and timely permit applications for the Road Approvals on or before January 15, 2022. If this date is met, the County agrees to review all final construction approvals required for the construction of the roadway (the “Road Approvals”) to allow for issuance of the construction permit on or before May 15, 2022.

   Instead of constructing a temporary roadway, OPG may elect to construct a finished, paved, permanent roadway in the above-described location; provided, however, OPG shall notify the County of its election in writing on or before February 15, 2022. If this date is met, the County agrees to review the applications for the Road Approvals for the paved road, to allow for issuance of the construction permit on or before March 31, 2023. The permanent roadway will then be constructed no later than October 30, 2023. The road, if and when it is paved, will be made public so long as it is built consistent with applicable County road standards.

5. Port Gamble Shoreline Trail and Bluff Parking Area: OPG agrees to transfer ownership of the portion of the east bluff south of the LAMIRD

boundary, which is generally depicted in Attachment E and is estimated to contain approximately 4.48 acres and approximately 1,200 lineal feet of shoreline, to the County. A potential parking area has been shown as Tract 512 in the Port Gamble Master Plan documents. Parking facilities or other uses on this tract will be coordinated with those on the west side of SR104 to avoid unnecessary traffic impacts. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of this land no later than June 1, 2022, with a possible reservation of utility easements by OPG. In the event that the transfer occurs prior to final plat stage, the relevant tracts shall be segregated into parcels that may be transferred to the County consistent with applicable subdivision regulations. In any case, the Parties intend that the transfer of open space to the County pursuant to this Section will count toward OPG's satisfaction of open space obligations under the land use approvals for future development in and around the Port Gamble town site.

6. Port Gamble "Model Airplane Field" ("MAF") Parking Area: OPG agrees to transfer land to the County for the construction, operation and maintenance of the parking area, public access routes thereto, and any accessory parks uses as generally depicted in Attachment F. This land is estimated to be approximately .8 to .9 acres in area and generally fronts SR 104 between the Port Gamble Forest Heritage Park and the existing gravel entry road to the MAF. The transfer documents shall provide that OPG reserves the ability to close public access from the existing entry road during times of landfill construction activity associated with the cleanup or restoration of the Mill Site. The County may consider a separate direct road access from SR104 on the south end of the property. The County and OPG, in cooperation, shall determine if the area will be suitable for cost-effective facility construction, and the County will, at its sole cost and expense, provide any stormwater treatment and systems needed on-site. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of this land no later than June 1, 2022. In the event that the transfer occurs prior to final plat stage, the relevant tracts shall be segregated into parcels that may be transferred to the County consistent with applicable subdivision regulations. The Parties intend that the transfer of property to the County pursuant to this Section will count toward OPG's satisfaction of open space obligations under the land use approvals for future development in and around the Port Gamble town site, in the event that said approvals are amended, modified, or interpreted to recognize or qualify said property as eligible open space under controlling law.

7. Port Gamble "Sand Pit" Parking Area: OPG agrees to transfer (a) approximately one acre of land to the County for trailhead parking, including road frontage north of the existing sand pit entry road, plus (b) additional area in a mutually agreed location for a new trail connection that includes a corridor approximately 25 feet wide planned near the north boundary line between the trailhead parking and the County park, as generally depicted in Attachment G. OPG will retain the right to relocate the trail at its own cost. OPG will retain the ownership of trees within the land to be transferred pursuant to this section, which OPG plans to harvest by 2023. If the county determines the area is not suitable for cost-effective facility construction, alternative locations will be mutually considered by the parties. The County shall provide OPG with 12 months' prior written notice of its intention to construct any facilities in these areas. Upon receipt of the County's notice, OPG may elect, in its sole and absolute discretion, to either remove any trees required for the construction of the County's planned facilities or allow the County to remove the trees without any reimbursement to OPG. In no event shall any park, public access, or other County use interfere with the future development or commercial use of the adjacent sandpit for timber operations or any other legal use. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of this land no later than June 1, 2023.

8. Port Gamble STO Trail South and North:
   a. South: OPG agrees to transfer land to the County, to be generally located between the portion of the south end of the Port Gamble Forest Heritage Park property detailed in the Sound to Olympic Trail feasibility study and Stottlemeyer Road/SR 307 for public ingress, egress and utilities, as generally depicted in Attachment H. The parties currently anticipate that the land will include: (1) a strip approximately 20 feet wide to expand Stottlemeyer Road, (2) an additional strip approximately 20 feet wide by approximately 250 feet in length in the area of existing gravel parking on Stottlemeyer to expand trailhead parking, and (3) a strip approximately 50 feet wide for a possible trail connection to Stevens Uhler road via pedestrian tunnel. Prior to the transfer of this land paralleling Stottlemeyer, OPG will grant a license for temporary construction activities in a mutually agreed form over land approximately 50 feet in width with the same center line. Prior to the transfer of the strip of approximately 50 feet in width, OPG will grant a license for temporary construction activities in a mutually agreed form over land approximately 100 feet in width with the same center line. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of the land referenced in Subsections

8(a)(1) and 8(a)(2) to occur no later than October 1, 2023.

b. North: OPG agrees to transfer land to the County, to be generally located between the portion of the north end of the Port Gamble Forest Heritage Park property detailed in the Sound to Olympic Trail feasibility study and SR104 for public ingress, egress and utilities, as generally depicted in Attachment H. While the final location is yet to be determined as of the Effective Date, the parties currently contemplate the route following existing logging road no. 1100 to an intersection with Carver Drive, and an alignment on either side of Carver Drive to SR 104. Due to lot constrictions and other development limitations within Port Gamble, the strip of land will be the minimum necessary for trail uses and may include the constructed trail improvement width only, which may allow for paving over a width of approximately 10 feet. Prior to the transfer of this strip of land, OPG will grant a license for temporary construction activities in a mutually agreed form over land approximately 30 feet in width.

c. Ownership of Trees; Timber Harvest: OPG will retain ownership of the trees within the land to be transferred pursuant to this section, which it may harvest in the future. The County shall provide OPG with 12 months' prior written notice of its intention to construct any facilities in these areas. Upon receipt of the County's notice, OPG may elect, in its sole and absolute discretion, to either remove any trees required for the construction of the County's planned facilities or allow the County to remove the trees without any reimbursement to OPG. OPG and the County hereby acknowledge and agree that the Sound to Olympic Trail will require federal as well as local permits and approvals (referred to herein, collectively, as the "STO Permits"). If OPG exercises its right to harvest trees pursuant to this Section prior to the issuance of the STO Permits, OPG shall apply for Class IV forest practices approvals so as to avoid causing a harvest moratorium in this area.

9. Stottlemeyer Trailhead Timber Rights: OPG agrees to rescind its timber rights to the 2 acres of land related to the Stottlemeyer Trailhead and Parking area as generally depicted in Attachment I. Rescission of these rights will be recorded no later than January 14, 2022.

10. The Divide STO Trail: OPG agrees to transfer to the County a 30-foot wide strip of land generally located between the "Speed property" on Port Gamble/Suquamish Road and the Great Peninsula Conservancy

property or public right of way (e.g. Orseth or Miller Bay Roads) for public ingress, egress and utilities, as generally depicted in Attachment J. The parties currently anticipate that this land will include a strip approximately 30 feet wide. Prior to the conveyance of this land, OPG will grant a license for temporary construction activities in a mutually agreed form over land approximately 50 feet in width with the same center line. OPG will retain ownership of the trees within the areas to be transferred pursuant to this Section, but will apply for Class IV forest practices approvals so as to avoid causing a harvest moratorium in this area. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of land to connect SR307 with Miller Bay Road no later two (2) years after the County's formal adoption of the final STO route.

11. Hansville North-South Trail: OPG agrees to transfer to the County a strip of land approximately 25 feet in width for public ingress, egress and utilities, as generally depicted in Attachment K. OPG will retain ownership of the trees within the areas to be transferred pursuant to this Section. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of this land no later than December 15, 2022, with an easement for vehicular and pedestrian access reserved to OPG. The parties acknowledge and agree that, among other matters of record, the transfer described in this section will be subject and subordinate to the Port Gamble S'Klallam Tribe's rights to ongoing use and improvements to the existing roadway crossing this strip. The parties further acknowledge and agree that, pursuant to the cooperative process outlined in Section D, below, the parties will need to ensure that the location and terms of the land transfer described in this Section C.11 is consistent with utility easements that OPG plans to grant to PSE in this general location, which may limit grading activities by their terms.

12. Hansville Greenways Parking Area: OPG agrees to transfer the following land to the County: (a) a strip of land approximately 100 feet in width on the north boundary where the County owns Conservation and Trail easements, (b) a strip of land approximately 25 feet wide along the west side of Hansville Road to connect to the planned parking area, and (c) approximately one acre for construction, operation and maintenance of the parking area, public access routes thereto, and any accessory parks uses generally depicted in Attachment L. The County shall determine if the area will be suitable for cost-effective facility construction. If not, alternative locations will be considered by the parties. Pursuant to the process outlined in Section D, below, the parties currently anticipate a transfer of this land no later

than December 15, 2022. The parties acknowledge and agree that, among other matters of record, the transfer described in this section will be subject and subordinate to the Port Gamble S'Klallam Tribe's rights to ongoing use and improvements to the existing roadway crossing this strip. The parties further acknowledge and agree that, pursuant to the cooperative process outlined in Section D, below, the parties will need to ensure that the location and terms of the land transfer described in this Section C.12 is consistent with utility easements that OPG plans to grant to PSE in this general location, which may limit grading activities by their terms.

D. **Form and Detail of Commitments; Land Reservations.** The parties acknowledge and agree that the parties' commitments pursuant to this Agreement contemplate the execution and delivery of several future documents, including conveyance documents ("Implementing Documents") that are not yet in final form. The parties agree to provide the necessary resources and to work in good faith to develop the Implementing Documents, and to execute and deliver the same promptly after mutual agreement on their final form. The parties agree to cooperate in completing conveyances of land from OPG to the County that substantially conform to the general descriptions of lands for use as public trails, parking areas, and access facilities in Section C, above (referred to herein, collectively, as the "Reserved Lands"). As of the Effective Date of this Agreement, OPG hereby reserves the Reserved Lands for future transfers to the County. The parties acknowledge their shared preference that each of these transfers be accomplished by a quit claim deed conveying a fee simple interest in the relevant portion(s) of the Reserved Lands to the County; provided, however, that any transfer of Reserved Lands to the County at OPG's election may be subject to easements reserved in favor of OPG and its affiliates for their ongoing and future use of the Reserved Lands for access to and from these entities' retained properties, other easements, and public rights-of-way for any legal purpose, including without limitation timber-related activities. The easements to be reserved pursuant to this section may include, without limitation, driveways, roads, utility, stormwater, and any other facilities that are necessary of convenient for the ongoing use of OPG's land and easement rights in and around Port Gamble. The parties further acknowledge and agree that sheet flow shall be allowed on and around any access facilities existing or to be established by OPG on the Reserved Lands. The Implementing Documents shall be subject and subordinate to any and all matters of record affecting the Reserved Lands, including without limitation any third-party rights in easements, existing as of the date of the relevant transfers. Promptly after the Effective Date, OPG shall record one or more memoranda of agreement on title to the land generally described above in Sections C.2 and C.3 (together, the "Open Space Tracts"), and the land generally described above in Sections C.5, 6, 7, and 12 (collectively the "Parking

Tracts") stating that OPG shall not grant any rights to any third party that would be inconsistent with the use of the Open Space Tracts as open space, or the use of the Parking Tracts for parking and trail access purposes. The parties shall, promptly upon written request from the other party, execute and record amendments to said memoranda in order to adjust the location of the land encumbered as Open Space Tracts or Parking Tracts consistent with the parties' cooperative work to finalize the locations of said tracts pursuant to Section D of this Agreement. Promptly after the transfer of any Open Space Tract or Parking Tract to the County, the parties shall execute and record a termination of the relevant memorandum of agreement. Any conveyance of land to the County shall include OPG's interest in any trees remaining on the lands transferred except as expressly provided above. The parties shall also work cooperatively to process and complete any code amendments, land use applications, lot adjustments, subdivisions, boundary line adjustments, land use approvals or processes, and/or similar code relief, as may be necessary or convenient to ensure that the Reserved Lands, as well as OPG's remaining "parent" parcels, comply with all state and local subdivision regulations, retain the dimensions necessary to ensure adequate access and future developability of the parcels, and are not otherwise substandard or nonconforming in any way. Accordingly, the locations, areas, and dimensions of the Reserved Lands described herein are approximate and conceptual. If any fee simple transfer of any portion of the Reserved Lands becomes impracticable or infeasible as specifically described herein, or cannot be accomplished without ensuring that the Reserved Lands, as well as OPG's remaining or "parent" parcels, comply with all state and local subdivision regulations, retain the dimensions necessary to ensure adequate access and future developability of the parcels, and are not otherwise substandard or nonconforming, the parties shall work cooperatively and in good faith to revise the Implementing Documents to reflect an alternative, mutually agreeable transfer of the applicable portions of the Reserved Lands, which might include the grant of an easement rather than a transfer in fee simple; provided, however, that in the event OPG transfers easements over any portion of the Reserved Lands, the County shall provide any assurances, releases, and indemnities to OPG substantially similar those provided in Section J of this Agreement to ensure that OPG takes on no additional liability risk associated with future County ownership or public use of the Reserved Lands.

E. **Execution and Duration.** This Agreement shall take effect upon the Effective Date and will remain in effect for ten years from that date (the "Term"), unless terminated or extended. In no event will the Agreement become effective unless and until it is approved and executed by duly authorized representatives of each party.

F. **Party Representatives**. The persons identified below shall be the point of contact for each party and shall receive all notices or other communications in

the performance of this Agreement. Notice will be effective if personally served on the party or three days after mailing of a properly addressed letter with postage prepaid in the certified mails of the United States, return receipt requested. Party representatives may be changed by providing 15-days' prior notice to the other party.

1. County's Representative

Name:	Eric Baker
Title:	Policy Manager
Address:	614 Division Street, MS 4 Port Orchard WA 98366
Phone:	(360) 337-4495
Email:	ebaker@co.kitsap.wa.us

With a copy to:

Name:	Alex Wisniewski
Title:	Parks Director
Address:	614 Division Street MS-1
Phone:	(360) 337-5777
Email:	AWisniewski@co.kitsap.wa.us

2. OPG's Representative

Name:	Linda Berry-Maraist
Title:	Project Manager
Address:	Raydient Places + Properties 19950 7th Avenue NE, Suite 200 Poulsbo, WA 98370
Phone:	(360) 394-0574
Email:	linda.berrymaraist@raydient.com

With a copy to:

Name:	John R. Campbell
Title:	Senior Counsel
Address:	1 Rayonier Way Wildlight, Florida 32097
Phone:	(904) 441-1360
Email:	john.campbell@rayonier.com

G. **Extension, Amendment or Termination.** This Agreement may be

extended, amended or terminated prior to the Term set forth herein only by written agreement of both parties executed by the authorized representatives of the parties.

H. **Records**. Original records resulting from this Agreement will be kept in the office of origin of those records. Upon request, copies of the original record will be provided to the office of the other party without cost. Further, all records associated with the Agreement may be subject to inspection and copying by the public pursuant to the Public Records Act, Chapter 42.56 RCW ("Act"), unless an exemption applies as determined by the County in its sole discretion. If the County receives a request under the Act to inspect or copy documents in the County's possession or control related to this Agreement, the County's sole obligation will be to make a reasonable effort to notify OPG of the request and the date that such protected information will be released to the requester unless OPG obtains a court order to enjoin disclosure pursuant to RCW 42.56.540 prior to the date of release. The County will have no obligation on behalf of OPG to claim any exemption and will not be liable for releasing records in compliance with the Act, this subsection or court order.

I. **Responsibility; No Third-Party Beneficiaries**. Each party to this Agreement shall be responsible for its own acts and omissions and those of its officials, officers, employees and agents. No party to this Agreement shall be responsible for the acts and omissions of any party, entity or person who is not a party to this Agreement. Notwithstanding any other provision hereof, this Agreement is entered into solely for the benefit of the specific undersigned parties to the Agreement, and shall not be construed as conferring any right, remedy or benefit of any kind or nature on any other party, entity or person.

J. **Indemnification for Transfers of Land to the County.** In all transfers of land to Kitsap County under this Agreement, the following indemnification language shall be included:

> Except as set forth below, Kitsap County hereby releases OPG, its parent and affiliated or related companies and their directors, officers, employees, contractors, and agents ("OPG"), and agrees to indemnify, defend, and hold harmless OPG to the extent permitted by law, from and against all third party claims, demands, liabilities and obligations, including without limitation reasonable attorneys' fees and costs, asserted against or suffered by OPG arising from or related to County's use and ownership of the Property on or after the date of transfer.
>
> OPG agrees to indemnify, defend and hold harmless Kitsap County, its directors, officers, employees, contractors and agents ("Kitsap

County") from and against all third party claims, demands, liabilities and obligations, including, without limitation, reasonable attorneys' fees and costs, asserted against or suffered by Kitsap County arising from OPG's operation or ownership of the Property prior to the date of its transfer to the County.

Except as stated herein or as otherwise mutually agreed in any Implementing Document, the County accepts any future transfer of the Reserved Lands pursuant to this Agreement on an "as-is" basis, with no representation or warranty whatsoever regarding the physical, environmental or other condition of the relevant portions said land.

K. **Cooperative Efforts**. The parties acknowledge and agree that the process described in this Agreement depends upon timely and open communication and cooperation between the parties. In this regard, communication of issues, changes, or problems that arise with any aspect of the cooperative work described herein should occur as early as possible in the process, and not wait for explicit due dates or deadlines. Each party agrees to work cooperatively and in good faith toward resolution of any such issues and allocate any resources necessary to reach a prompt and mutually agreeable resolution.

L. **Disputes**. In the event a dispute occurs between the parties regarding the performance of this Agreement, every effort shall be made to resolve the dispute informally and between the party representatives identified above. If either representative determines in good faith that the dispute cannot be resolved informally between them, that representative shall escalate the dispute to the next management level (Karen Goon, County Administrator for the County; Jon Rose for OPG) who, within one week of notification, shall ask the other party to discuss the dispute in an attempt to reach an agreeable solution. If a dispute still cannot be resolved, the dispute must be promptly submitted to a three-member dispute board. Each party will appoint one member to the dispute board. The two members so appointed will jointly appoint the third member. In accordance with procedures established by the board itself in consultation with the parties, the dispute board will review the facts, contract terms and law, and shall then render a non-binding determination on the dispute. Provided that both parties cooperate reasonably and in good faith, they agree to avail themselves of this dispute resolution process before resorting to litigation or formal mediation to resolve a dispute. Each party shall bear its own costs in the proceedings described in this Section L.

M. **General Provisions**

1. Assignments. Neither party shall assign or transfer, including by

merger (whether that party is the surviving or disappearing entity), consolidation, dissolution, or operation of law, any right, duty, obligation, or remedy under the Agreement without the prior written consent of the other party; provided, however, that OPG or any of OPG's affiliates or subsidiaries may transfer any portion of the Reserved Lands so long as said transfer is expressly made subject to OPG's obligations under this Agreement.

2. Entire Agreement. This Agreement, with any amendments and attachments, constitutes the entire Agreement of the parties. No other understandings, oral or otherwise, regarding this Agreement shall exist or bind the parties.

3. Headings/Captions. Headings and captions are for convenience only and are not a part of the Contract and do not limit or amplify the terms and provisions hereof.

4. Advertising. Neither party shall advertise or use the name, trademark, or logo of the other, without the other's prior written consent.

5. Governing Law; Venue. The Contract will be governed in all respects by the laws of the Washington State, both as to interpretation and performance, without regard to conflicts of law or choice of law provisions. Any action arising out of or in connection with the Contract may be instituted and maintained only in a court of competent jurisdiction in Kitsap County, Washington or as provided by RCW 36.01.050.

6. Severability. If any provision of this Agreement is determined to be invalid, the remaining provisions shall continue in full force and effect.

7. Counterparts. The Agreement may be executed in several counterparts, each of which will be deemed an original, but all of which together will constitute one and the same Agreement.

8. Survival. The provisions of this Agreement that by their sense and purpose should survive termination of the Agreement shall so survive.

9. Authorization. Each party signing below warrants to the other party, that they have the full power and authority to execute this Contract on behalf of the party for whom they sign.

10. No Waiver of Rights. Neither party shall be relieved of its obligations to comply promptly with any provision of this Agreement by reason of any

failure by the other party to enforce prompt compliance, and such failure to enforce shall not constitute a waiver of rights or acquiescence in the other party's conduct.

11. No Joint Venture. No joint venture or partnership is formed as a result of this Agreement. No employees, agents or subcontractors of one party shall be deemed, or represent themselves to be, employees of any other party.

12. Construction. This Agreement has been reviewed and revised by legal counsel for the parties and no presumption or rule that ambiguity shall be construed against the party drafting the document shall apply to the interpretation or enforcement of this Agreement. The Parties intend this Agreement to be interpreted to the full extent authorized by applicable law.

13. Costs and Legal Fees. Each Party shall be responsible for its own costs, including legal fees, incurred in negotiating or finalizing this Agreement, unless otherwise agreed in writing by the Parties.

14. Attachments. The attachments referenced in this Agreement are incorporated as if set forth in full herein; provided, however, the parties acknowledge and agree that the location, configuration, and size of any land areas or parcels shown in the attachments are intended to serve only as general depictions of said areas and parcels for the parties' discussion and convenience, and are not intended to bind the future ownership, use, or development of any such land.

[Signatures on following page.]

Executed this 24th day of November 2021

OPG
POPE RESOURCES,
a Delaware limited partnership

By: _____

Its: Vice President and Corp. Sec.

OPG PROPERTIES LLC,

a Washington limited liability company

By: _____

Its: Vice President

Executed this ____ day of November 2021

BOARD OF COUNTY COMMISSIONERS
Kitsap County, Washington

ROBERT GELDER, Chair

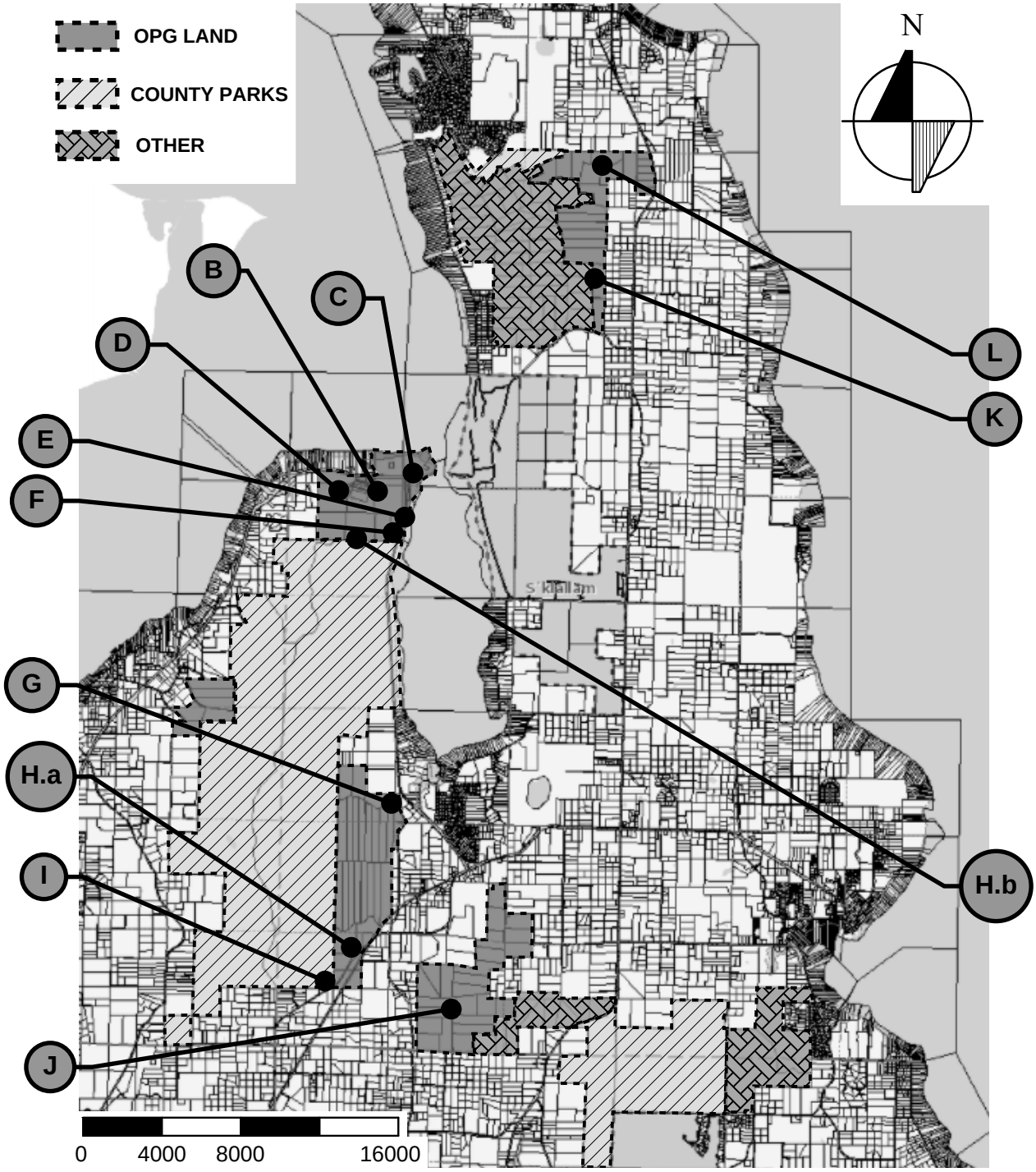
EDWARD E. WOLFE, Commissioner

CHARLOTTE GARRIDO, Commissioner

ATTEST:

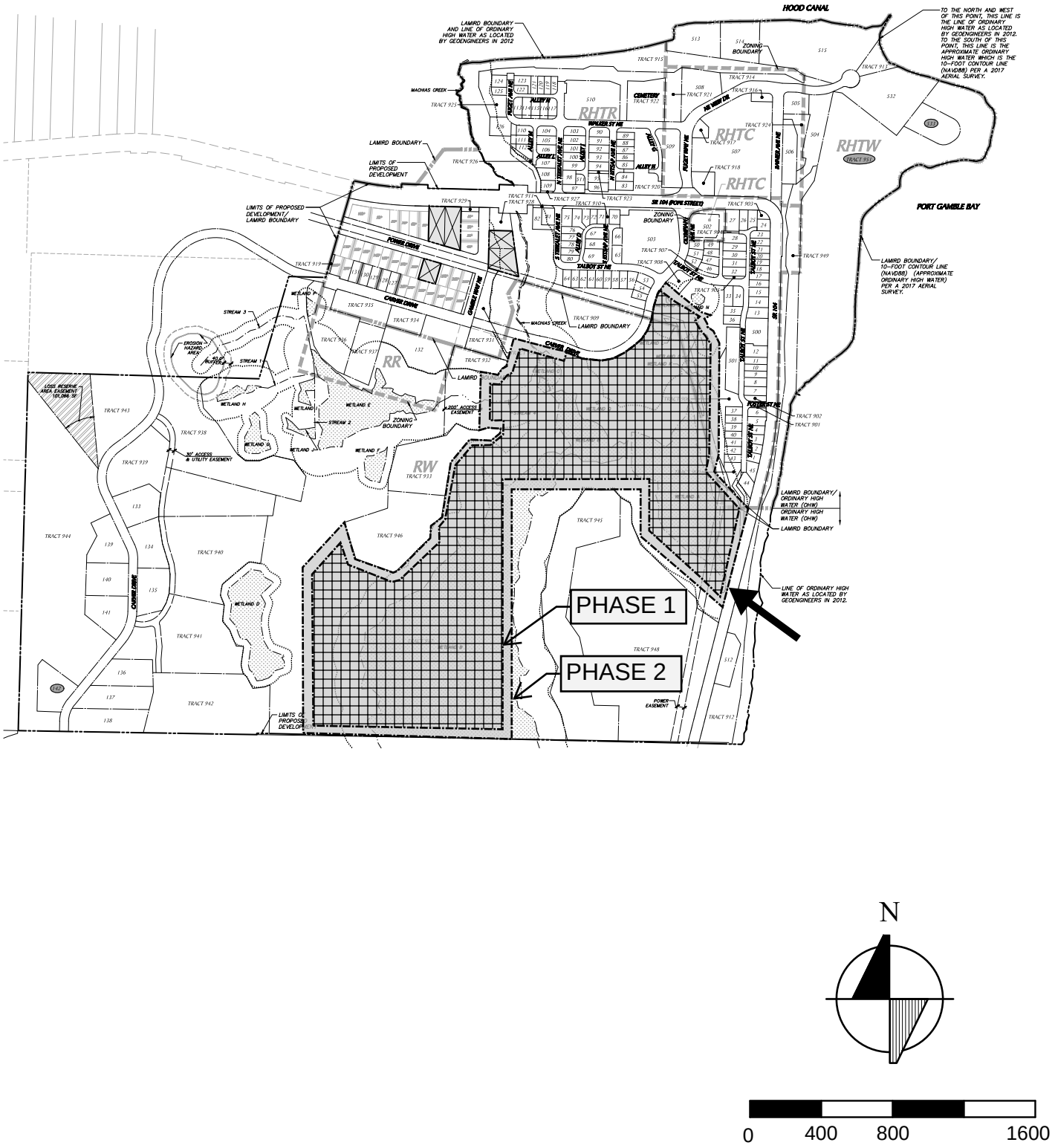
Dana Daniels, Clerk of the Board

ATTACHMENT A: GENERAL DEPICTION OF CURRENT AND PAST OPG LAND OWNERSHIP

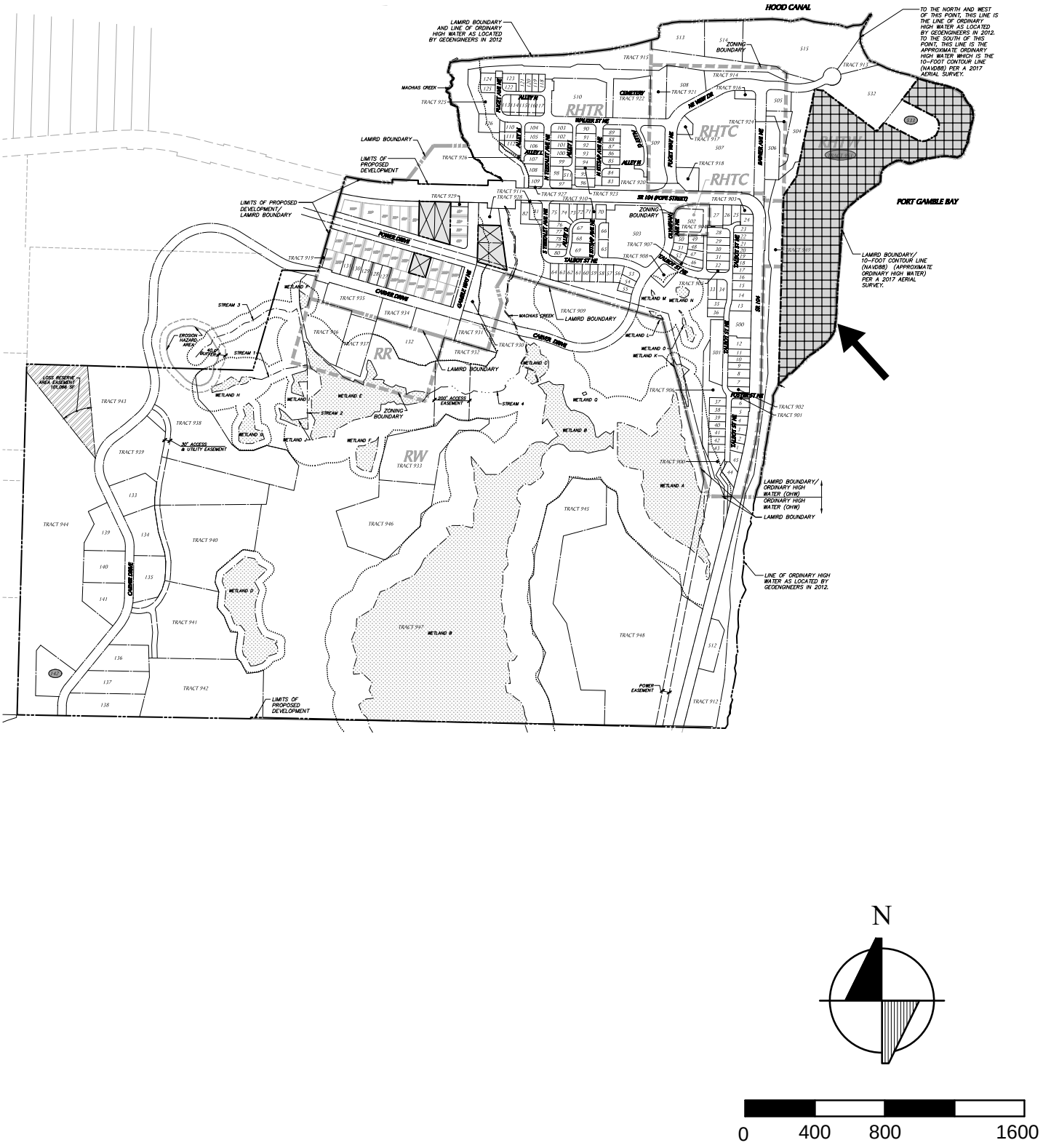


B	Forest & Wetland Open Space		H.a2	STO South 20'x250' Strip
C	Mill Site Open Space w/ Conservation Easement		H.a3	T for Stevens-Uhler
D	Mountain Bike Ride Park Road		H.b	STO to SR 104
E	Shoreline Trail & Bluff Parking		I	Stottlemeyer Timber Rights
F	Trail Head Parking at Model Air Field		J	Divide STO Trail
G	Sand Pit		K	Hansville N-S Trail - 25' Strip of Land
G.1	1 Acre Trail Head Parking		L	Hansville Greenway Parking & Trail
G.2	New North Trail Connection		La	100' at North Boundary
H	Sound to Olympics Trail (STO) North & South		Lb	25' Strip of Land at Road
H.a.1	STO Trail South 20' Strip		L.c	1 Acres Trail Head Parking

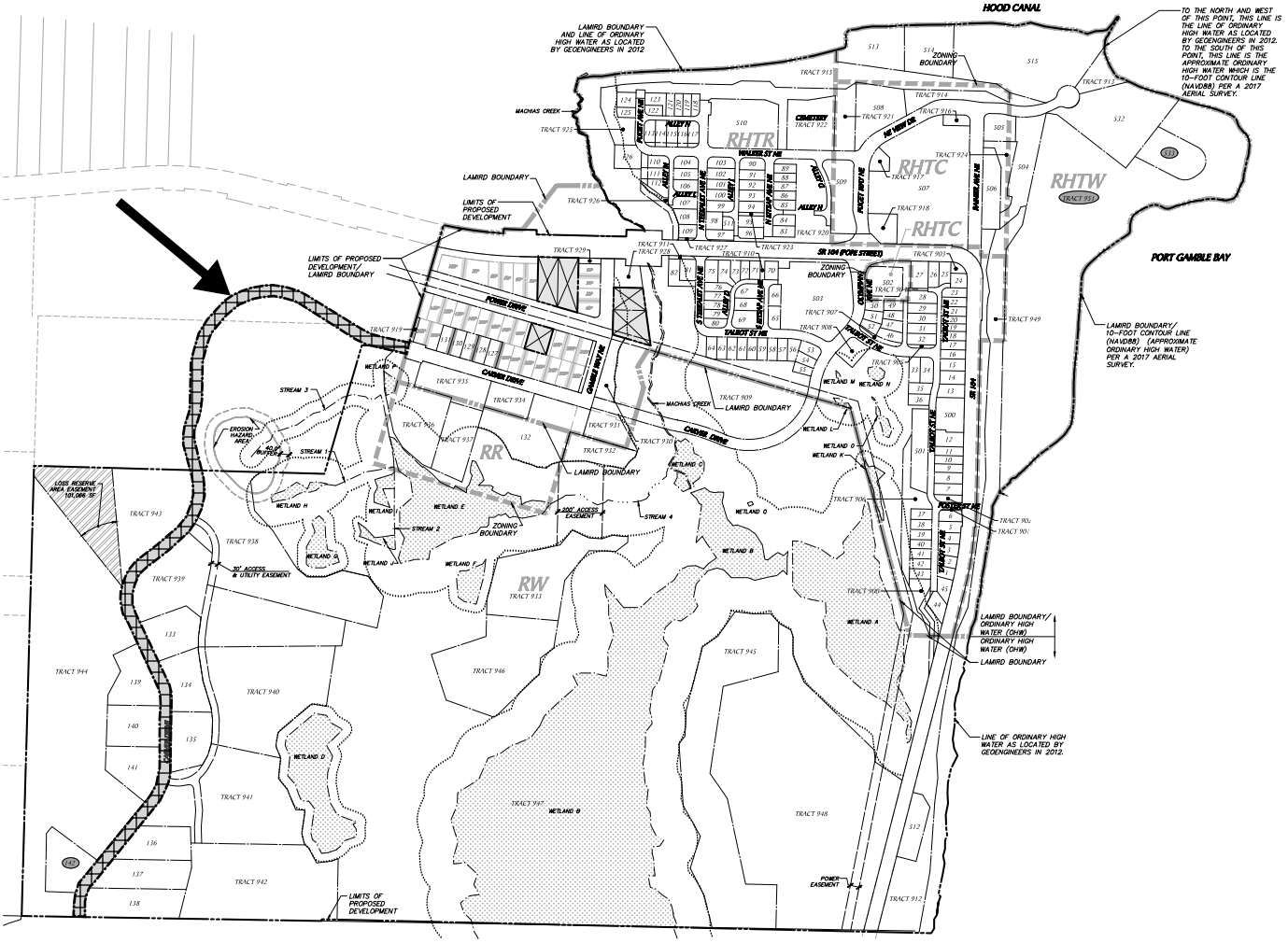
ATTACHMENT B: GENERAL DEPICTION OF PORTION OF PORT GAMBLE MASTER PLAN OPEN SPACE



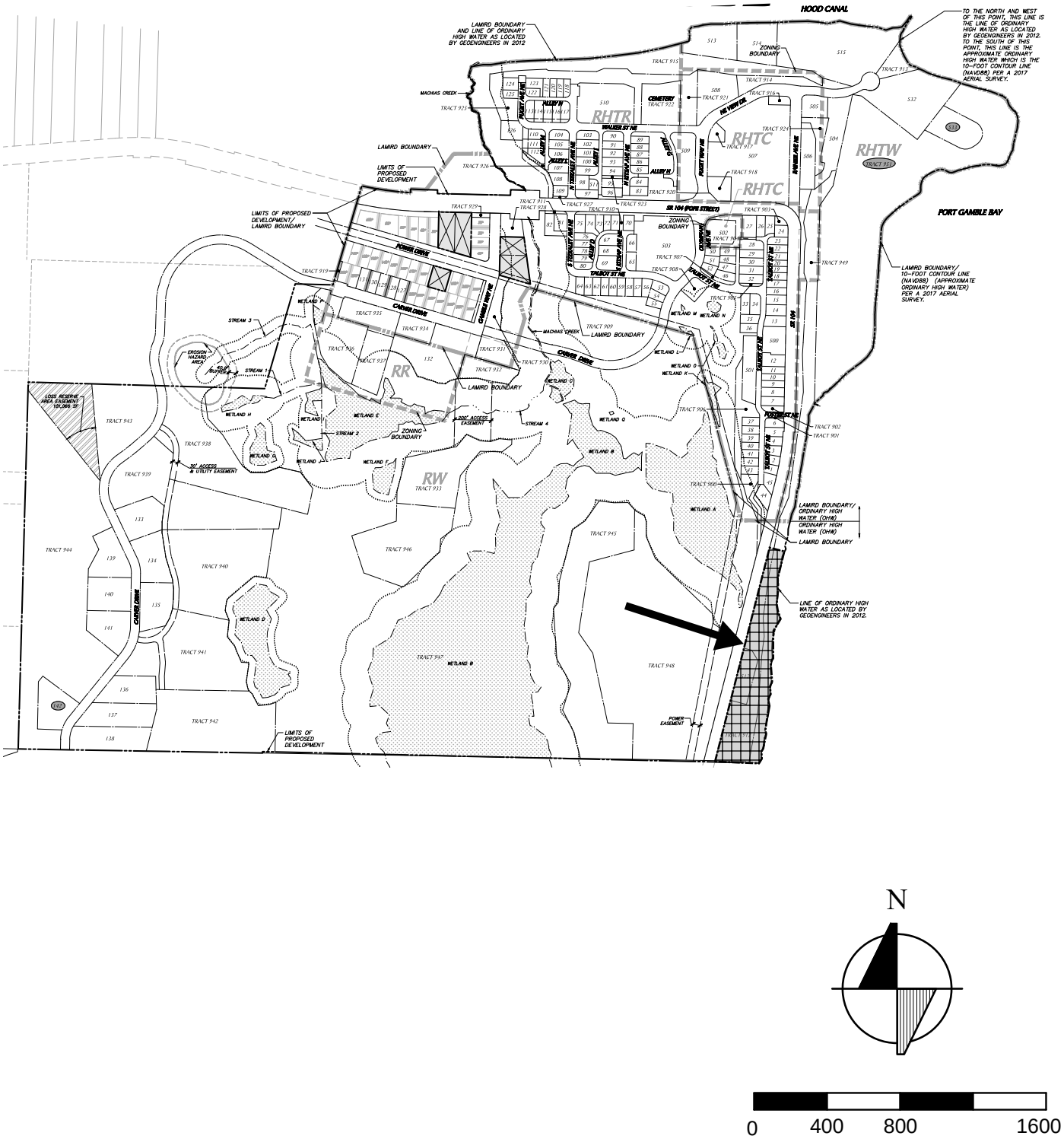
ATTACHMENT C: GENERAL DEPICTION OF PORT GAMBLE MILL SITE



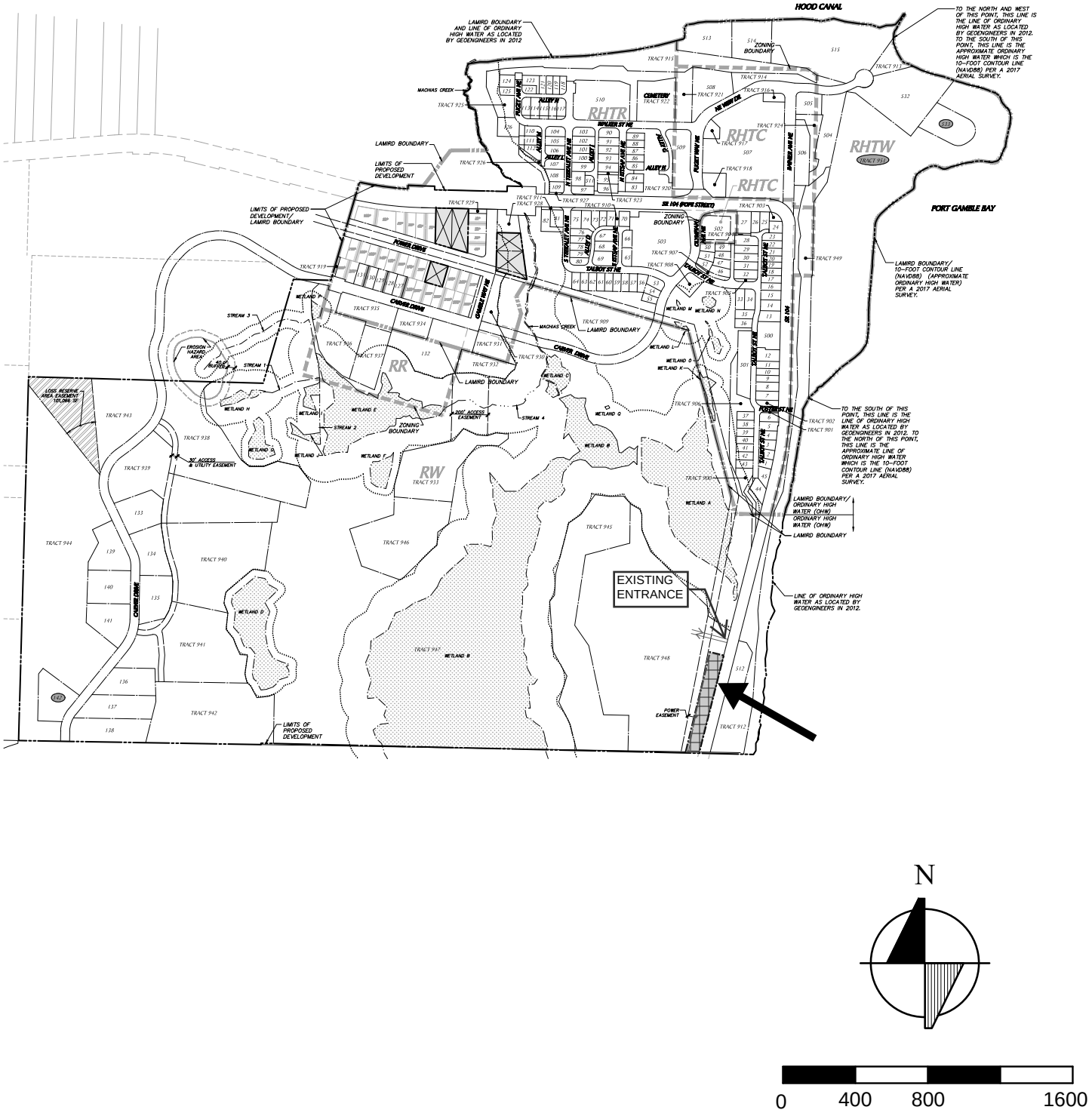
ATTACHMENT D: GENERAL DEPICTION OF PORT GAMBLE MOUNTAIN BIKE RIDE PARK ACCESS ROAD



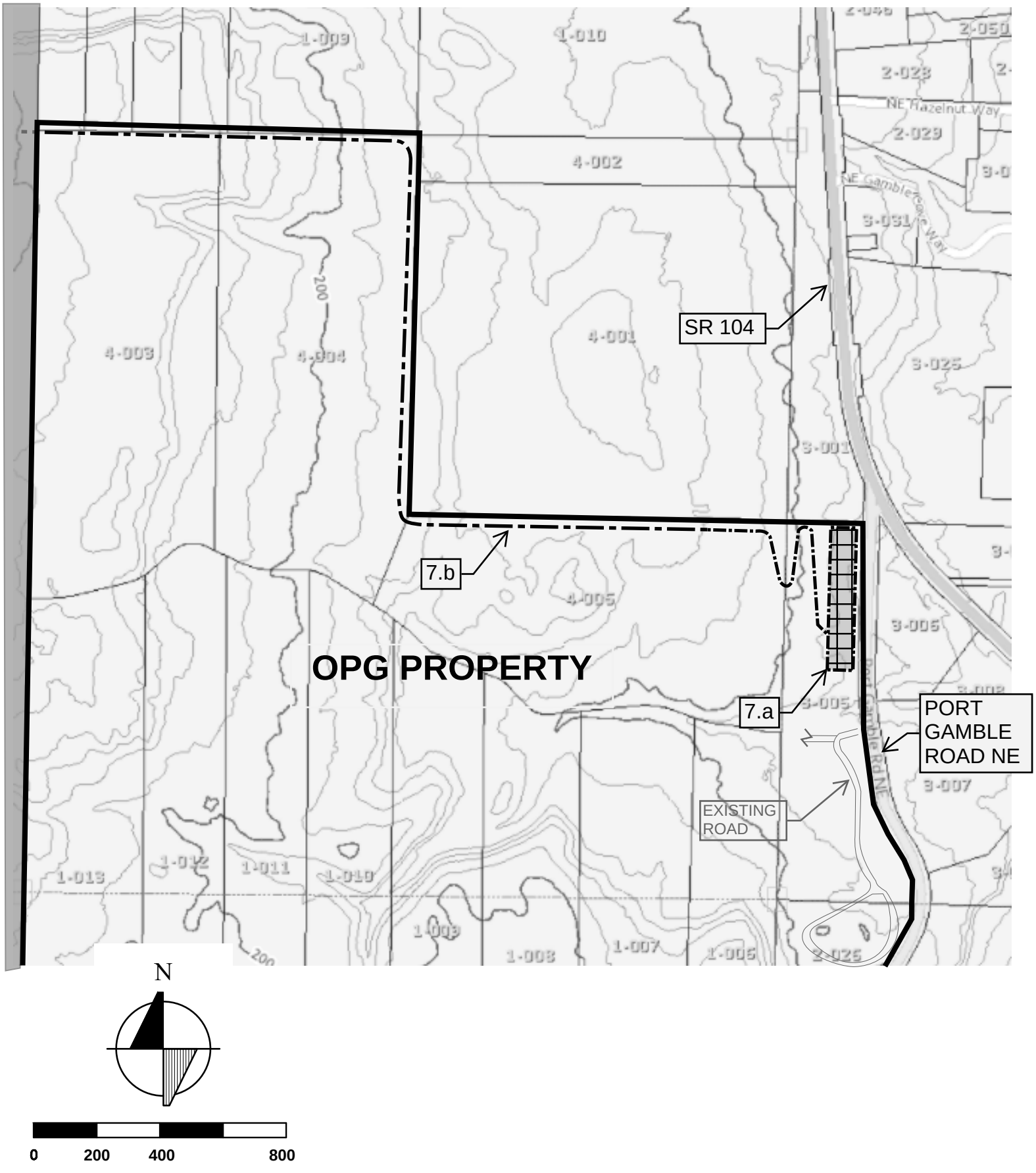
ATTACHMENT E: GENERAL DEPICTION OF PORT GAMBLE SHORELINE TRAIL AND BLUFF PARKING AREA



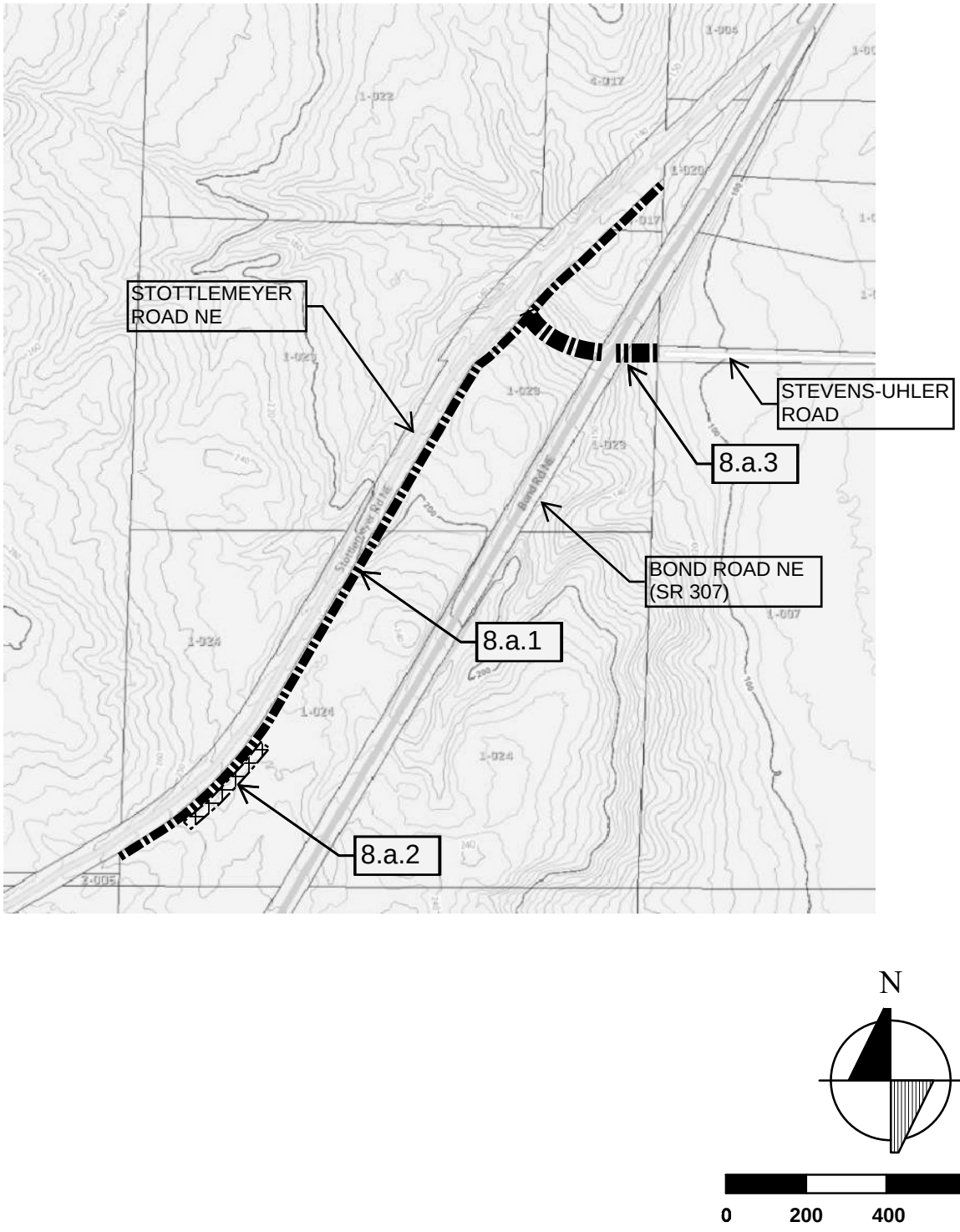
ATTACHMENT F: GENERAL DEPICTION OF PORT GAMBLE "MODEL AIRPLANE FIELD" PARKING AREA



ATTACHMENT G: GENERAL DEPICTION OF PORT GAMBLE "SAND PIT" PARKING AREA AND TRAIL CONNECTION

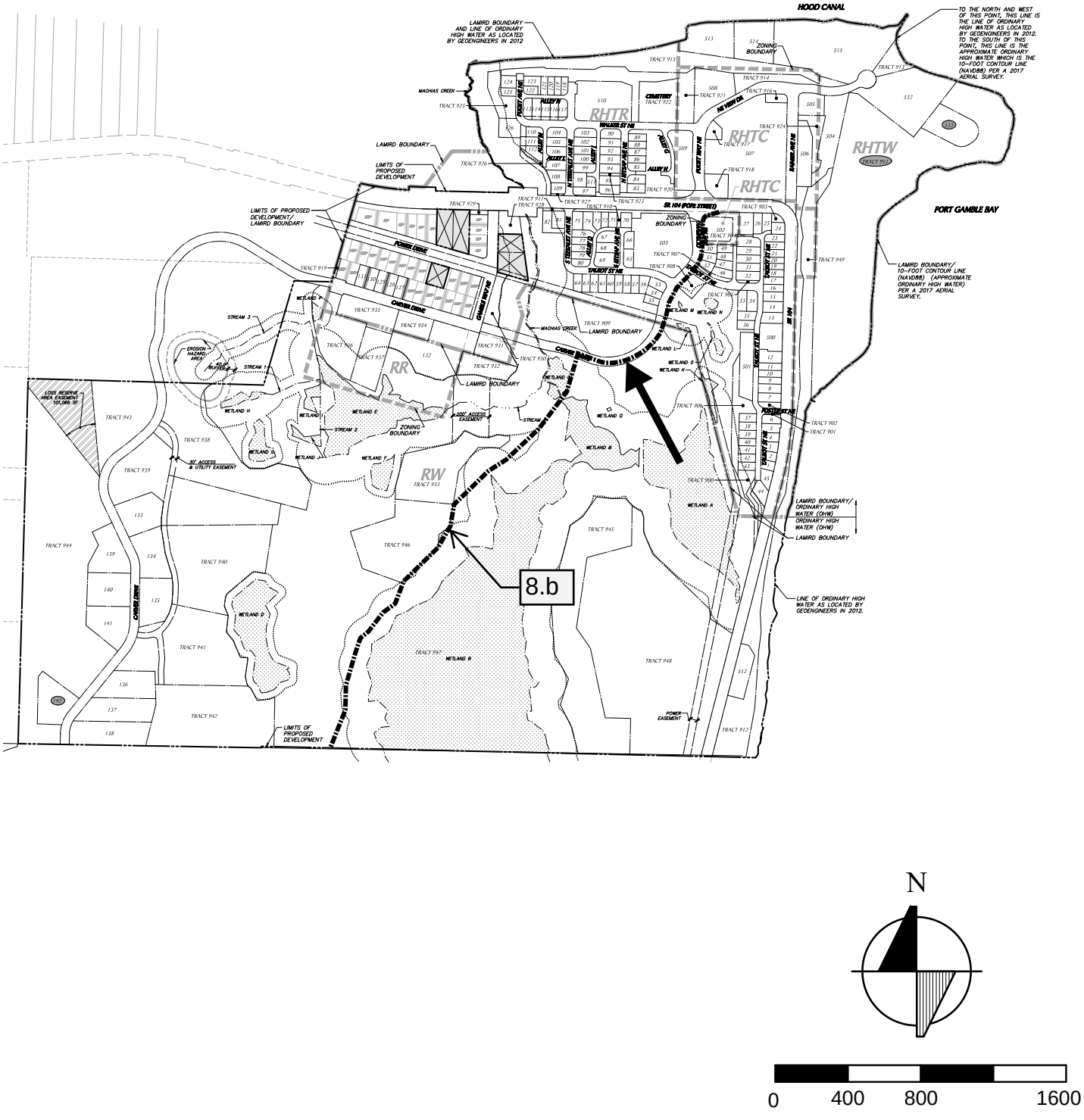


ATTACHMENT H: GENERAL DEPICTION OF PORT GAMBLE SOUND TO OLYMPICS TRAIL (STO) SOUTH (a) and NORTH (b)

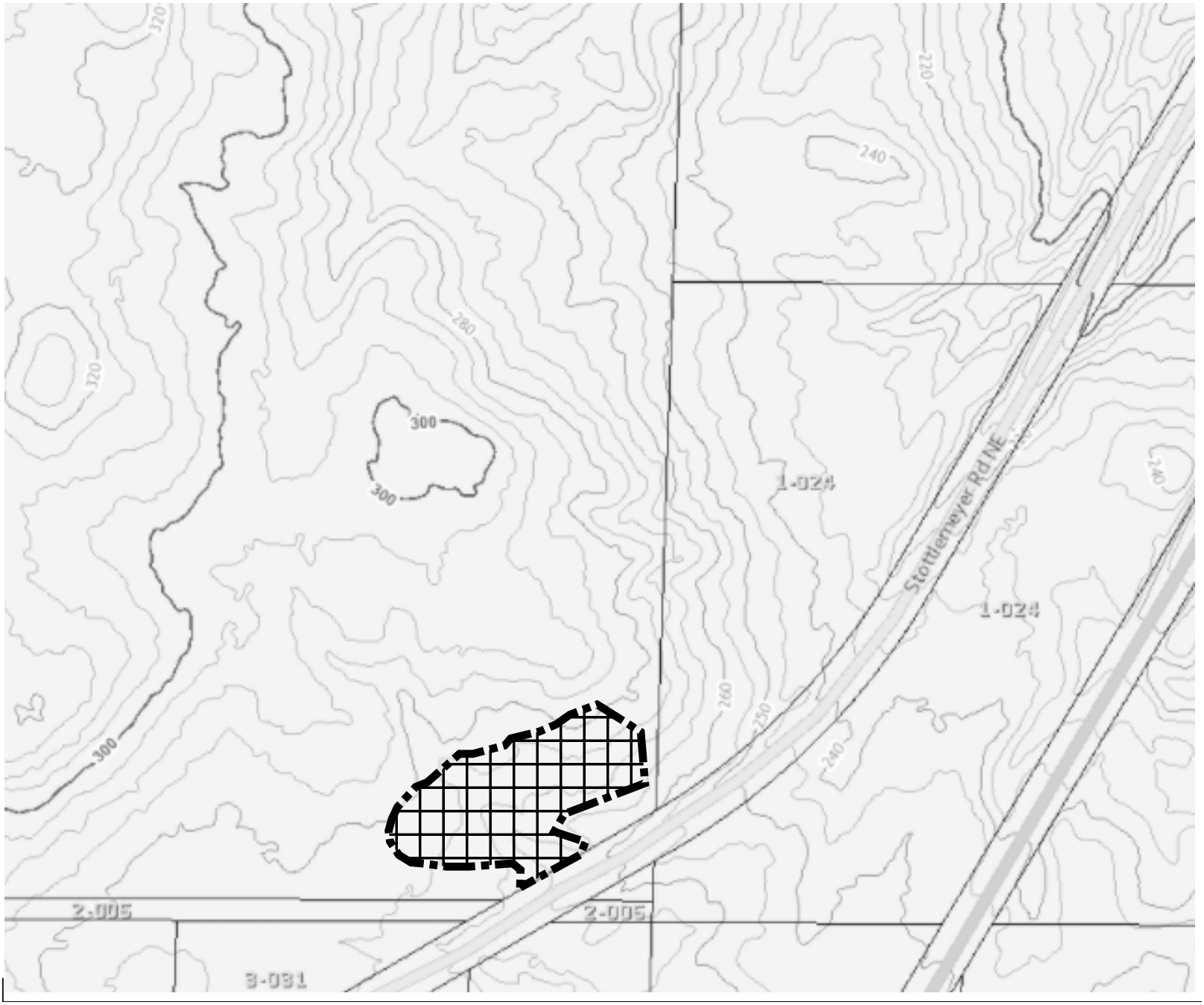


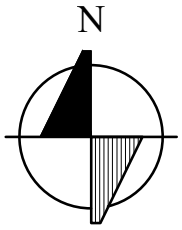
ATTACHMENT H CONTINUED

(FINAL ROUTE TO BE DETERMINED)



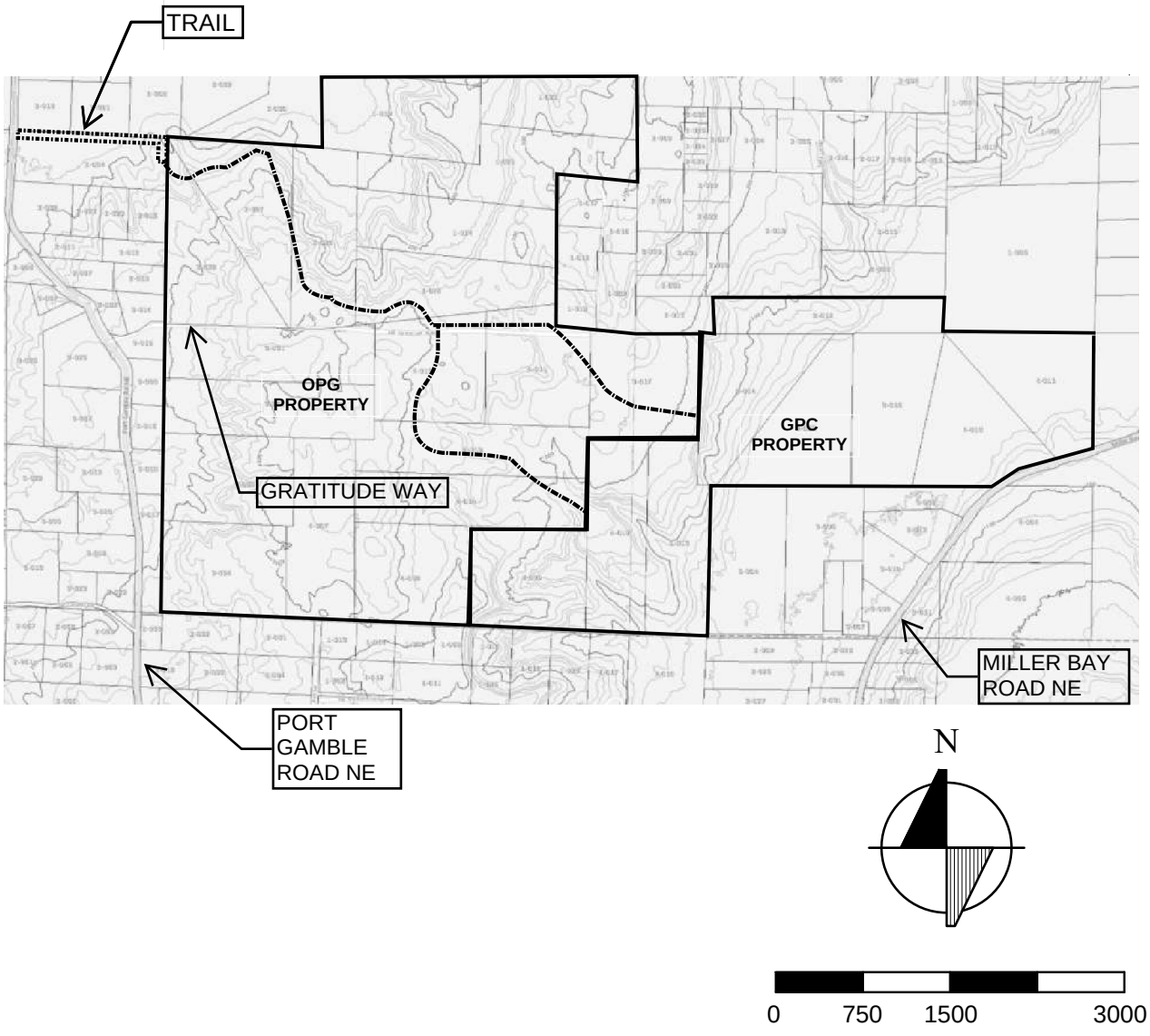
ATTACHMENT I: GENERAL DEPICTION OF PORT GAMBLE STOTTLEMEYER TRAILHEAD AND PARKING AREA TIMBER RIGHTS



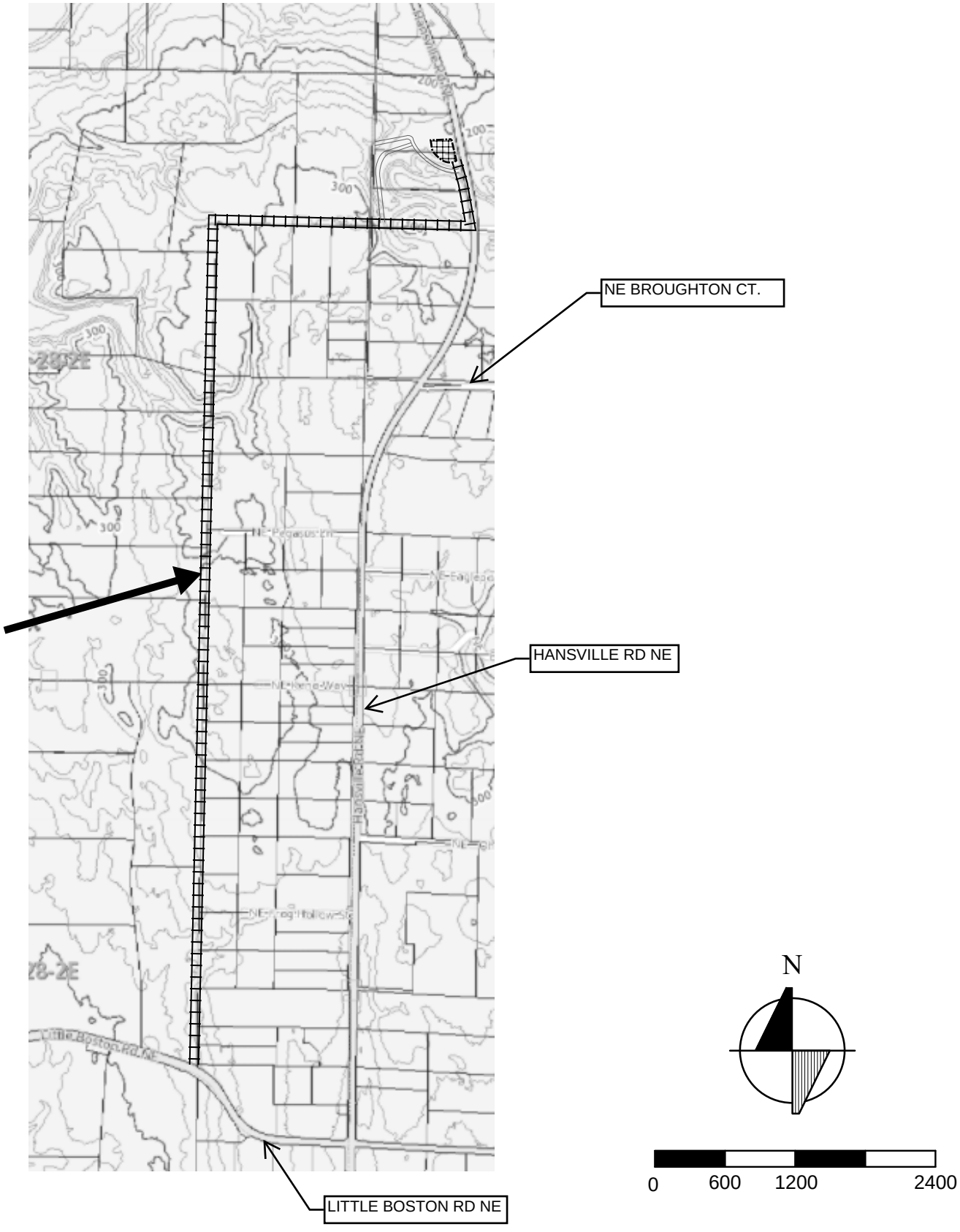




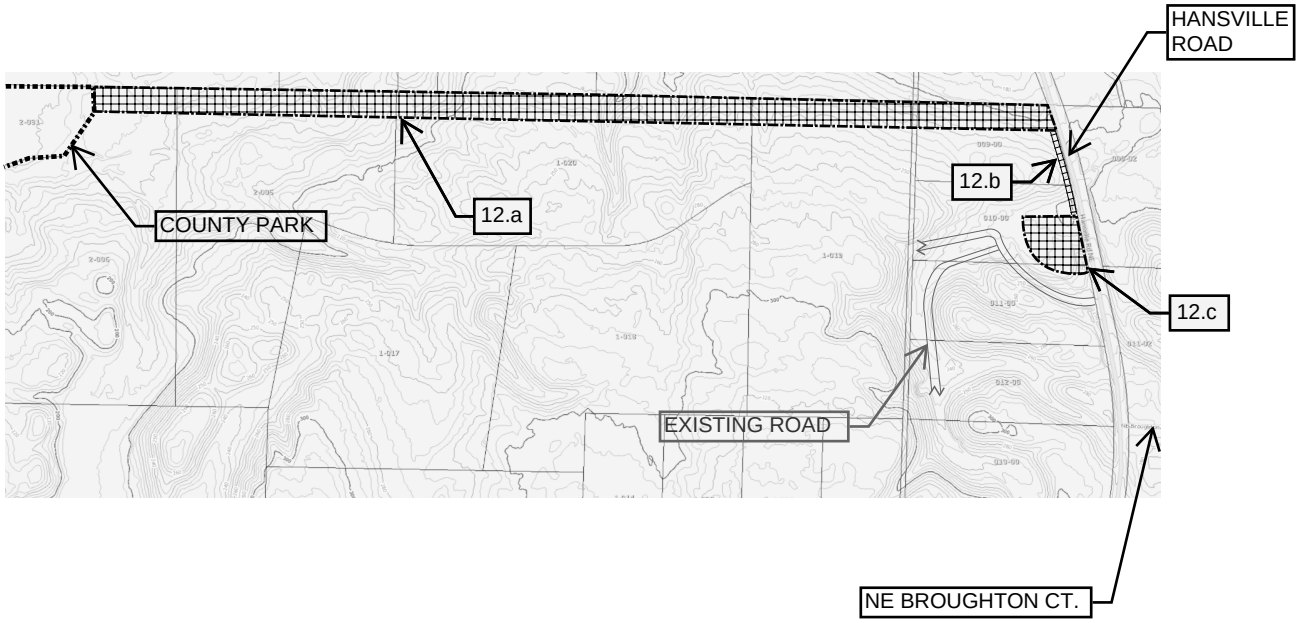
ATTACHMENT J: GENERAL DEPICTION OF STRIP ASSOCIATED WITH THE DIVIDE SOUND TO OLYMPICS (STO) TRAIL

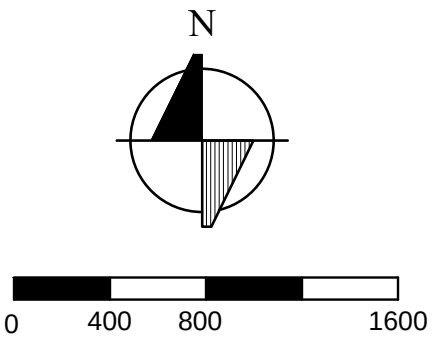


ATTACHMENT K: GENERAL DEPICTION OF STRIP ASSOCIATED WITH THE HANSVILLE NORTH-SOUTH TRAIL



ATTACHMENT L: GENERAL DEPICTION OF PLANNED HANSVILLE GREENWAY PARKING AREA AND TRAIL





5-4 APPENDIX

STEWARDSHIP GROUP TRAIL WORK PLAN (2022)

WORK PLAN

PARK NAME:_PORT GAMBLE FOREST HERITAGE PARK

2022 Goal	Estimated Completion Date	Estimated Funding Request	Comments/Coordination
TIER 1: HIGH PRIORITY			
1. Develop Master Plan	Mar 2022	PFD grant	4th public meeting – Jan 2022 presenting preferred alternative present to commissioners for approval 2/2022 Completion – 3/31/22
2. Complete parking lot at Stottlemeyer to accommodate horse/ hiker/ biker usage	Mar 2022	PDF grant	Design and permitting 1/22 Construction 3/22
2.1RE-route Hyperspace off of Rayonier land and connect to new Stottlemeyer Parking	May 2022 Dependent on Stottlemeyer trailhead parking finish	KC Parks NKTA $1280	Machine work - 16 hours = $1280 Volunteers – 120 hours- 1 work party 30 people

2022 Goal	Estimated Completion Date	Estimated Funding Request	Comments/Coordination
2.2 Horse trail off of Stottlemeyer parking lot	6/22	$640 BCH??	8 hours of Excavator work 120 volunteer hours – 2 work parties 15 persons
EMS access trail to 2100	8/23	$640	Evacator work to connect 1820 to 2100 possibly wait for STO design
3. Connect Hope/ET/EWOK/ Ranger/Downhell – through recent clear cut Trail needs a new name- Yellow color on map	Dec 2022	Machine time 24 hours $1920 REI grant to cover machine work	Continuing 2020 work plan element 4 work parties to complete Connect Hope, ET to Ranger and Lynx and possibly future parking area for Ride Park at junction of 1300/ 1310. This traverses through a clear cut area. It would also connect the climbing trail De Ranger and share route for approximately ¼ mile preventing duplication of trails. Volunteer hours - 320
4. Phase 1 of Hood extension – connecting Hood to Mirkwood through recent clear cut Pink color on map	May 2023	Machine time 36 hours $2880	Trail connection to link up the south end trail system with the north end as per trail plan. This will traverse through a recent clear cut. The trail serves as a re- route of Ankle Biter. 4 work parties- 480 volunteer hours,
5. Signage through park- phase 1 signs	12/22 Phase 1	$640 signs $120 for decals	In accordance with the Master Plan – begin signage -40 carsonite post (green) and lettering /decals to improve signage of trials in the Port Gamble Forest. Volunteer hours ; 240
Build out Kiosks through park	12/23	$1700 for kiosk	Design standards and installation of 1 kiosk using volunteer labor in 2022

2022 Goal	Estimated Completion Date	Estimated Funding Request	Comments/Coordination
6. Develop STO route	NEPA 3/22 Construction 2023-2024	PFD funding	Working with OAC/ Fischer Bouma to open first section of STO through the park with signage
7. STO temporary gravel route through park signage	Jun 2022	$256 posts Decals$120 Possible funding NKTA	10 hours volunteer time
8. Re build Forbidden Forest and Twisted Sister	Dependent on timber harvest		
8. Replant / reforestation effort	Dec 2022	$3000	Replant /revegetate area near view stand with greater variety of native plants. Volunteer hours 120

2022 Goal	Estimated Completion Date	Estimated Funding Request	Comments/Coordination
9. Re connect Maggie's Rock/ Twisted Sister to Hood extension after 2020 clear cut Orange color on map	12/22	$1280 machine work	Re-establish connections destroyed with clear cut to better connect – Hood Extension, Twisted Sister and Re- route of Maggies rock 16 hours of machine work 4 work parties-480 volunteer hours
Tessa's Trail	12/22		Route scouting and parks approval, signage Goal of construction in 2023 gating at entrance for clear ped. Use only
Evaluate access conditions to address mobility impaired community	12/22		Develop plan for access at PG townsite as well as trailheads
9. TIER 2: MODERATE PRIORITY			
TIER 3: LOW PRIORITY			
1. General trail brushing and drain clearing	Ongoing	None	

GOALS ON HOLD			
Goal	**Status**	**Year**	**Comments**
1.			

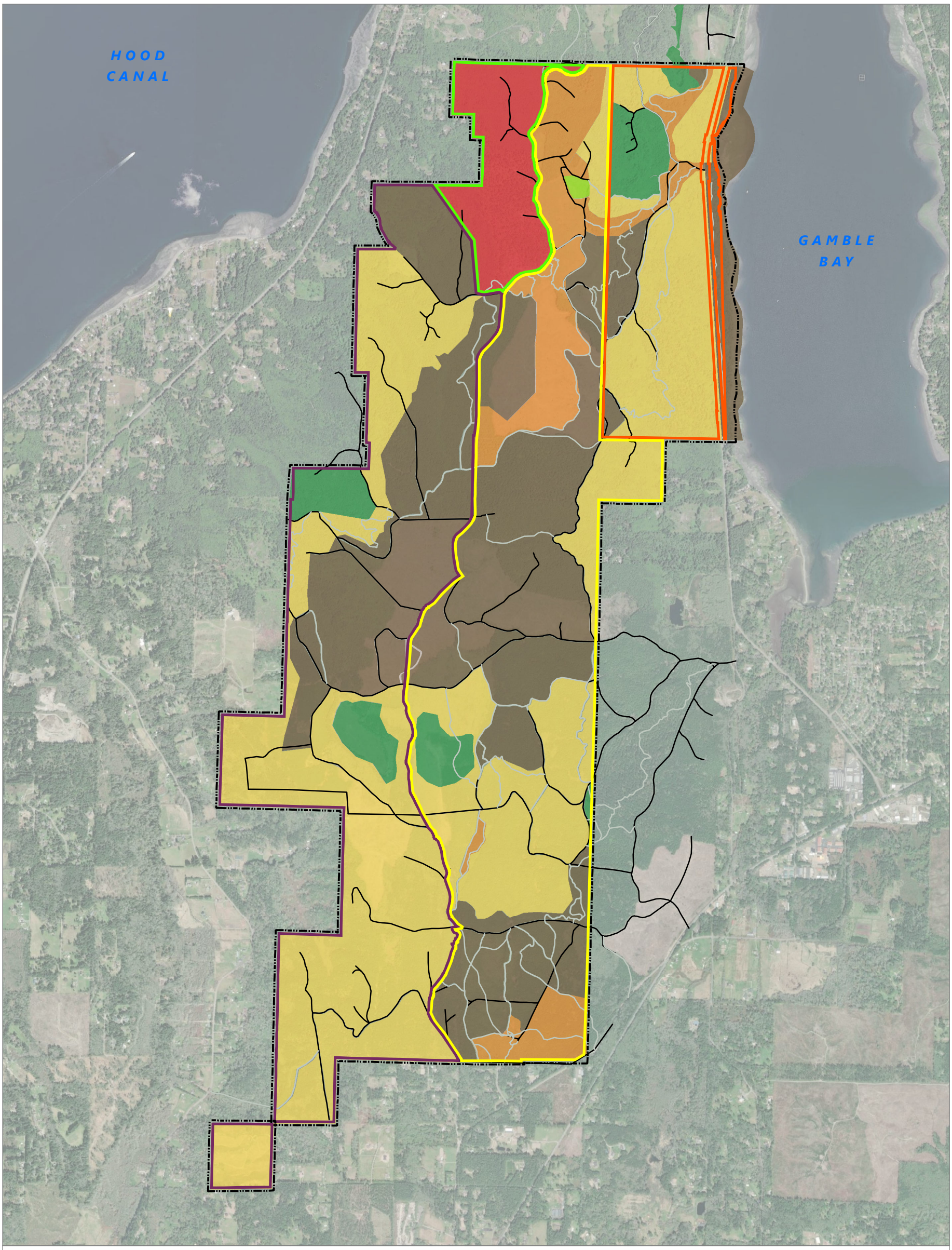
GOALS COMPLETED OR DELETED			
Goal	**Status**	**Year**	**Comments**
Phase 2 Secret Squirrel	complete	2019	One crossing still needs improvement. Trail is well used and beautiful as it traverses through forest that won't get cut.
Shoreline Trail Phase 1 2 and 3	complete	2019	Still needs railings at bluff overviews
6. Secret squirrel to top (Forbidden Forest/ Hope)	Deleted		From the to bottom of Hood Secret Squirrel will continue northwesterly to connect with Forbidden Forest at clear cut area. This will provide a continuous single track climbing trail to the view point and Ride Park. Volunteer hours - 270
7 . Horse hitching posts at locations	In accordance with master plan	$750 for Lumber and hardware	Place hitching posts through park at locations to be determined at least 3 locations Backcountry Horsemen to install volunteer hours- 27

Notes:

5-5 APPENDIX

LANDSCAPE CLASSIFICATION MAP

DRAFT



LEGEND:

- Existing Trail (SC)
- Existing Road (SC)

Land Use

- Active Recreation (SC)
- Conservation/Education (SC)
- Conservation (SC)
- Natural Area (SC)
- Passive (SC)
- Specialized Recreation (SC)

Purchase Agreement Parcels (C)

- Eastern Forest Block
- Ride Park Kitsap County
- Shoreline Block
- Western Forest Block

NOTES:

Data Sources:
SC: Stewardship Committee
C: Kitsap County

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Feet

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ANCHOR QEA

KITSAP COUNTY 18 57 WASHINGTON

KITSAP PUBLIC FACILITIES DISTRICT

Figure 3
Land Classification
Port Gamble Forest Heritage Park

6-1

APPENDIX

2016 FOREST STEWARDSHIP PLAN FOR THE ECOLOGICAL RESTORATION OF PORT GAMBLE FOREST HERITAGE PARK (BERGSTROM, ARNO 2016)

Forest Stewardship Plan for the Ecological Restoration of Port Gamble Forest Heritage Park

June 1, 2016

Prepared by:
Arno Bergstrom, Kitsap County Community Forester
With the involvement of community members, park stewards and stakeholders

ACKNOWLEDGEMENTS

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Kate Kuhlman

Kitsap Forest & Bay Coalition

North Kitsap Trails Association

Forest Stewardship Committee (a sub-committee of the Parks Advisory Board)

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Paul Larson

Art Schick

Frank Stricklin

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Other Partners & Stakeholders

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Washington Department of Fish & Wildlife Biologist – Gary Bell

American Forest Management Forester – Gus Gerrits

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FOREST RESTORATION - VISION FOR PORT GAMBLE FOREST HERITAGE PARK

VISION: The Port Gamble Forest Heritage Park (PGFHP) is an ecologically complex, diverse, and healthy forest that provides optimum wildlife habitat for a wide range of animal species.

Port Gamble Forest Heritage Park currently has a range of forest types from simple monoculture, tree farm plantations, to several complex natural second growth forests. These complex forests serve as reference stands as they support a diverse community of animals, high productivity for plants, and a replenishment of the water cycle. The approach will be to use forest ecosystem restoration, a process that considers the environment as a complex system functioning as a whole. Because this is a park that is extensively used by people, restoration must also consider the social values of the community. Forest ecosystem restoration will rely heavily on partnership with park stewards, as well as private, tribal, local, state, and federal government stakeholders. The ecosystem restoration approach will be to:

- Work *with* nature: Work with native plant species that have evolved and adapted to our temperate climate and are competitive and resistant to disease and insects.
- Enhance forest wildlife habitat: Structurally diverse forests provide the best habitat for the greatest number of wildlife species. A diverse forest habitat also includes dead and dying tree for snags and large woody debris.
- Diversify plant species: Forests comprised of mixed native tree species improve habitat, aesthetics, and the value of both timber and non-timber assets and better support diverse wildlife populations.
- Recognize the connection between all plants, fungi and animals: all creatures contribute to a healthy and dynamic forest ecosystem.
- Protect water as a vital resource: Healthy, vibrant forest ecosystems are the best and least costly option for maintaining high water quality and for the management of surface and storm water runoff.
- Consider that human park users are part of the system and critical to the decision making about the future of the park.

PGFHP Forest restoration Goals

A successfully implemented forest restoration program for the Port Gamble Forest Heritage Park will need to meet four basic goals, established in the 2012 Kitsap County Resolution 169 – Integrated Forest Stewardship Plan, and which are closely related and not mutually exclusive. These program goals are:

- Enhance natural forest ecosystem complexity and health
- Protect and enhance soil, water quality, and fish and wildlife habitat
- Be biologically, socially and economically self-sustaining
- Provide safe, reasonable and appropriate public access to County forestlands

The long range outcome of the forest restoration program is: Kitsap County will realize the full range of benefits and values of the Port Gamble Forest Heritage Park (PGFHP) in a manner consistent with the County's overarching goal of a growing community where natural resources and systems are sustained for the benefit of current and future generations. Because multiple funding sources were used for the acquisition of the Port Gamble Forest Heritage Park, all grant requirements, including two (2) deeds of right to land use, with covenants that must be followed.

PGFHP FOREST ECOSYSTEM RESTORATION STRATEGY

Most of the forest stands in the Port Gamble Forest Heritage Park were densely planted by the previous landowner, Pope and Talbot Lumber Company, and currently lack the vegetative diversity of a naturally developed forest in Western Washington. These dense stands lack significant understory vegetation because of commercial forestry practices which created a dense monoculture which totally shades out forest understory vegetation. The restoration strategy is to

increase the amount of light reaching the forest floor, enhance wildlife habitat and forest health by mitigating these past management practices. This will be accomplished by:

- Non-conventionally (restorative) thinning the over-stocked conifer stands.
- Planting a variety of shade tolerant tree species to improve forest habitat diversity.
- Controlling invasive species and noxious weeds.
- Monitoring and managing areas with diseased and danger trees.

PGFHP contains a high percentage of Douglas fir trees in the early, stem exclusion development stage (20-50 years). This is a critical growth period where these trees are under extreme stress and are vulnerable to root rot and catastrophic fire. Restoration thinning operations will preserve the largest trees, reduce stand density, and improve habitat diversity, tree health, resilience, longevity, and reduce wildfire risk.

WHY USE RESTORATION THINNING?

Restoration thinning is a recommended restoration practice for overstocked conifer plantations including those within riparian and wetland management zones in Western Washington[1]. Operationally called variable density thinning (VDT), restorative thinning is specifically recommended for young dense Douglas fir plantations.

Restoration thinning is most beneficial in Douglas fir stands that are less than 50 years of age because of anticipated high growth rates[2]. Unlike conventional thinning, restoration thinning can maintain or accelerate dead wood production[1]. This is accomplished by leaving all or most of the dead wood as part of the thinning prescription. The approach is to use VDT to create variation in the forest landscape by selecting strong individual trees, crafting tree clumps, skips and openings that closely mimic natural forest conditions[2]. As much as possible, non Douglas fir tree species in the park will be reserved as leave trees.

Healthy, diverse forests contain dead trees. Properly implemented, restoration thinning will result in sustained stand mortality that will continue to contribute dead wood within the forest uplands, riparian and wetland areas. Thinning prescriptions will also call for the artificial creation of snags. Snags can be potentially hazardous to park patrons in high use areas and require attention. However, downed trees and logs on the forest floor and remote snags provide important food, protective cover, and nesting sites for wildlife and are essential components of a forest ecosystem.

RESOURCE CATEGORY I: FOREST HEALTH

a) Existing resource condition: As indicated, historic management practices in the park have greatly diminished overall habitat and species diversity. In addition, laminated root rot, pine blister rust, bark beetle infestation, armillaria root rot, and heart rot can be found in many areas of the park. Invasive plant species, notably Scotch broom, Himalayan blackberry, English ivy and holly, infect many areas of the park.

b) Resources protection measures: Plot analyses have identified areas that need prophylactic care and/or diseased tree removal. Fire risk will also be addressed, see Appendix 5: Fire Risk Reduction.

1 Spies, Thomas, Michael Pollock, Gordon Reeves and Tim Beechie. 2013. Effects of Riparian Thinning on Wood Recruitment: A scientific Synthesis. Science Review Team Wood Recruitment Subgroup, Forest Sciences Laboratory, Corvallis, OR

2 Kerr, Andy, and Derek Churchill. 2012. Ecological Appropriate Restoration Thinning in the Northwest Forest Plan Area. Conservation Northwest, Geos Institute, Klamath-Siskiyou Wildlands Center and Oregon Wild. Seattle, WA.

c) Stewardship practice recommendations: Measurement and identification of root rot pockets is ongoing. With the help of the Kitsap County Noxious Weed Control Program, staff and stewards will manage invasive species. Refer to Appendix 2: Forest Stand Conditions/Prescriptions for detailed information about the health of individual mapping units (stands) in the park. Pre-commercial and restoration thinning will be employed to diversify the most of the park's pure 30-50 year old Douglas fir stands.

RESOURCE CATEGORY II: FOREST TREE INVENTORY

a) Existing resource condition: Mapping unit inventory data was provided by Olympic Resource Management. Some minor tree species that were not noted in the inventory do occur in small patches and in riparian areas.

b) Resources protection measures: Replanting/under-planting has and will continue to occur in areas where it is deemed appropriate. For instance, in a root rot pocket, after diseased trees are removed, resistant species would be planted. Where restoration thinning is done shade tolerant trees will be planted to increase tree diversity. If a meadow is desired, little replanting of trees would occur.

c) Stewardship practice recommendations: Restoration thinning will be required in most areas of the park due to the nature and condition of the Douglas fir plantations. The ultimate goal of the restoration thinning is to achieve more complex and diverse forest. There are currently seven forest habitat conditions are in the park:

CURRENT ECOLOGICAL CONDITION

Twenty-one forest mapping units have been delineated within the Port Gamble Stewardship project area of interest. These units are segmented based on age, species composition and past harvest history (Appendix 1). Walking through the forest, the changes in forest structure are sometimes subtle due to soils change or where human or natural disturbances have occurred. Each stand has been mapped, documented, inventoried and given an ecological classification/habitat listed in the following Table 1:

Table 1 – Forest Ecological Classification/Habitats

Simple Canopy	Trees of uniform age, spacing, height with a single canopy and lacking tree species diversity. Often single species plantations.
Complex or Differentiated Canopy	Trees of different height, age, species and spacing. Canopy stratification to some extent, some mature trees (70-200 years old)
Old Growth - Legacy	Defined as trees 200 years and older. Mix of shade tolerant understory trees and shrubs, decadent trees, snags, logs on the forest floor and canopy stratification
Meadow	Existing open areas, sometimes artificially maintained, as an ecotone for raptors and bats. Size often limited to 1-2 acres.
Hardwood Patch	Clumps of hardwood trees species including Red Alder, Big Leaf Maple, birch, Madrona, cascara, aspen and willow. Patches are small (1/4 to 1 acre) where conifers are removed to benefit wildlife.
Wetlands (WA Forest Practices wetland typing system) – Management Zone (WMZ)	TYPE A: An area of 1/4th acre or more covered by open water seven consecutive days between April 1 and October 1st TYPE B: An open area of 1/4th acre or more that is vegetated with water tolerant plants and or shrubs. Forested Wetland: A wetland with tree crown closure of 70% or more with mature trees.
Riparian - Management Zone (RMZ)	Those areas that interface land to streams. There are multiple unnamed stream, springs and tributaries in the park.

Restoration thinning is recommended for 14 out of 20 map units in the park due to the current overstocked condition of these Douglas fir plantations. Appendix 2 provides specific stand data, describes the current condition and provides a prescription.

RESOURCE CATEGORY III: PROTECTING SOILS

a) Existing resource condition: Soils vary greatly throughout the park. Refer to Appendix 3 for Soil Types for specific stand maps and information. This inventory shows that many areas of the park have some of the best known soils for growing large conifers (up to 160 feet of growth in 100 years)

b) Resources protection measures: Specify the use low ground pressure harvesting equipment to minimize site disturbance and soil compaction during restoration thinning. Monitor and maintain roads, ditches and culverts to protect against erosion. Use only existing roads; no new road construction.

c) Stewardship practice recommendations: It is recognize that some disturbance of the forest floor and surrounding trees is inevitable during restoration thinning. But all care will be taken to minimize these occurrences by utilizing preexisting forest roads and skid trails. Harvest contractors will be required to use low impact felling and forwarding methods to minimize damage to forest soils.

Restoration thinning will be done using low ground pressure harvesting equipment to minimize site disturbance and soil compaction. Roads, ditches and culverts will be monitored and maintained to guard against erosion. Operations will use only existing roads; no new roads will be constructed. See Appendix 4 – Roads and Culverts.

RESOURCE CATEGORY IV: WATER QUALITY, RIPARIAN, AND WETLAND AREAS

Streams

a) Existing resource condition: Port Gamble Forest Heritage Park has over 10 miles of streams. Appendix 4 contains a map of these features. Appendix 6 is map of streams and wetlands for the original Shoreline Block.

   To improve the accuracy of the historic stream typing by the Washington Department of Natural Resources, Wild Fish Conservancy has mapped all of the streams within the Park (http://wildfishconservancy.org/).

b) Resource protection measures: The Washington Forest Practices Act (FPA) requires riparian buffers, called Riparian Management Zones (RMZs), to protect riparian functions and resources along Type F (fish-bearing), Type Np (non fish-bearing, perennial) and Type Ns (non fish-bearing, seasonal) streams.

c) Stewardship practice recommendations: Follow the policy adopted by resolution by the Kitsap Board of Commissioner in June 2015: Policy for the Protection and Restoration of Riparian and Wetland Management Zones in Kitsap County Parks.

Wetlands

a) Existing resource condition: There are wetlands associated with stream channels, groundwater seeps, and enclosed landscape depressions within PGFHP. Many are shrub-dominated wetlands, and there is at least one large open-water wetland, created by a series of beaver dams, associated with a fish-bearing stream, and a forested wetland that is composed of western red cedar and red alder trees. See Appendix 6 – Map of streams and wetlands.

b) Resource protection measures: The Washington Forest Practices Act (FPA) requires wetland buffers, called Wetland Management Zones (WMZs), to protect wetlands greater than one-half acre with open water (Type A wetlands), and non-forested wetlands greater than one-half acre that are vegetated with water-tolerant plants (Type B wetlands). The FPA does not require a WMZ for forested wetlands. Additional resources protection will be provided to all wetlands in the park, exciding the minimum requirements under Washington FPA rules.

c) Stewardship practice recommendations: Follow the policy adopted by resolution by the Kitsap Board of Commissioner in June 2015: Policy for the Protection and Restoration of Riparian and Wetland Management Zones in Kitsap County Parks (Appendix 7).

RESOURCE CATEGORY V: FISH AND WILDLIFE HABITAT

a) Existing resource condition: Only Mapping Units 3, 4, 8, 13, and 18 have large diameter conifers (>20 inches) and are considered priority habitats by the Washington State Department of Fish and Wildlife as well as streams and wetlands. Most of the remaining mapping units are dominated by young, dense, Douglas fir stands. Most riparian and wetland areas are dominated by red alder and big leaf maple.

b) Resources protection measures: These priority habitats will be left undisturbed. RMZ and WMZ buffers will exclude log extraction operations. Restoration thinning (non-conventional) will be used exclusively outside of the RMZ and WMZ buffers.

c) Stewardship practice recommendations: The science behind the State's and County's protection of sensitive areas is adequate in most locations; however, we have the luxury of exceeding minimum requirements in the park. It is better to err on the side of caution when sensitive fish and wildlife habitat is at risk. Therefore restoration thinning will be conducted using a cut-to-length (CTL) harvesting system. CTL is ecologically the best harvesting system available; yet is less efficient and produces less net revenue return compared to conventional thinning systems.

RESTORATION THINNING FOR WILDLIFE

Thinning for wildlife involves creating more space between leave trees. The final number of leave trees per acre is based on established thinning guidelines (Table 2) for optimum wildlife habitat enhancement.

The number of leave tree per acre range (100 to 140) will be determined in the field using the average diameter of the leave trees to calculate the relative density (RD) to optimize the desired wildlife habitat condition. Larger trees need more space; and wide-spacing provides increased light to the forest floor stimulating understory plants and creating a more diverse habitat for wildlife.

RD will be used to determine the thinning density or the number of leave trees per acre. The density goal will be an average RD of 35. Leave trees will be sampled and measured to determine the RD using the following guideline and methodology:

Table 2: Thinning guidelines for Wildlife

Relative Density (RD) for Wildlife

	Lower Limit – RD 25		Upper Limit – RD 45	
Avg. Leave Tree DBH (inches)	**Trees/Acre (TPA)**	**Avg. Tree Spacing (Feet)**	**Trees/Acre (TPA)**	**Avg. Tree Spacing (Feet)**
6	312	11	561	8
7	248	13	446	8
8	203	14	365	10
9	170	16	306	10
10	145	17	261	11
11	126	18	226	12
12	110	19	198	13
13	98	21	176	14
14	88	22	158	15
15	79	23	142	15
16	72	24	129	16
17	65	25	118	17
18	60	26	108	18
19	55	28	100	18
20	51	29	92	19
21	48	30	86	20
22	44	31	80	21
23	42	32	75	21

Relative Density (RD) is a descriptive term that relates to the density of a timber stand to a fully stocked level. An ideal RD for wildlife habitat is between 25 and 45.
Mathematically, RD = Standing Basal Area (BA) in square feet per acre divided by the square root of the quadratic average of DBH in inches.
The quadratic average is the square root of the average squared diameters. For smaller areas, a simple average DBH can work about as well as the quadratic average in calculating RD.
Basal area (BA) is equal to the sum of the cross sectional area of trees at breast height on an acre of land. It is also equal to the BA of the average diameter multiplied by the trees per acre (TPA). To convert tree DBH to BA, square the DBH and multiply by 0.0054.
Thus an average tree diameter of 10 inches would have a basal area equal to (10 X 10 X 0.054) or 0.54 square feet.

Excerpted from Washington State University Extension EB2000 "Silviculture for Washington Family Forest"[3]

[3] Hanley, Donald P. and David Baumgartner. Silviculture for Washington Family Forests. 2005. Washington State University Extension Bulletin 2000. Pullman, WA.

RESOURCE CATEGORY VI: THREATENED AND ENDANGERED SPECIES

a) Existing resource condition: No endangered species have been noted in the park at this time. However, there are small areas that have been designated by the state as potential marbled murrelet habitat. Coho salmon, a threatened species, exist in the park.

b) Resources protection measures: Restoring the health of the park forests may provide scarce habitat for endangered or threatened species. Culvert replacement can provide viable, healthy salmon habitat within the park that is under-utilized due to blocking or perched culverts.

c) Stewardship practice recommendations: As per county policy, restoration thinning is recommended along with the management of diseased trees, under-planting with native tree species and removal of invasive species to improve forest health and to create habitat for endangered or threatened species. The RMAPS will be used to maintain forest roads and replace and repair culverts further protection critical habitat. Other existing forest roads in the park will be abandoned with culverts being removed to restore natural stream flows. This will require extensive resources and inter-agency cooperation.

RESOURCE CATEGORY VII: HISTORIC AND CULTURAL RESOURCES

a) Existing resource condition: The first humans to enjoy the beauty and natural resources of the North Kitsap Heritage Park were Native Americans, who arrived sometime between 10,000 and 15,000 years ago. While no evidence of Native American habitation has been found in the park, but it is known that the Port Gamble S'Klallam and Suquamish tribes have used the park shoreline and uplands for fishing, gathering and hunting.

Certainly the watersheds would have been crucial to salmonid rearing thousands of years ago. Salmon have been located by Washington Department of Fish and Wildlife (WDFW) in the streams that are crossed by WA State Hwy 104, but inadequate culverts and other obstructions currently block access to the park's beaver ponds, which are part of the headwaters. Ancient tribal members were grateful for the abundance of fish that used to migrate to these streams.

The next groups of humans to use the park were early loggers and pioneers in the 1850's in Kitsap County, taking advantage of homesteading acts to create farms. Hunters, trappers, and local outdoors enthusiasts have taken advantage of the service forest roads to access what is now a public park. Residents in the area recount using the Pope land for various recreational purposes for multiple generations of their families.

a) Resources protection measures: No evidence of sensitive historical or cultural use has been found in the park. Local Tribes have expressed interest in the management and harvesting of traditional plants and cedar bark.

b) Stewardship practice recommendations: Metal debris has been found and disturbed land harkening back to the early days of logging in the park. If the debris is innocuous, it is usually left in place as a reminder to visitors of the working forest that once echoed to the sounds of misery whips and double-bit axes. Other debris including garbage and abandoned car tires and parts have been removed by park volunteers. Old growth stumps with spring board notches can be found throughout the park.

RESOURCE CATEGORY VIII: AESTHETICS AND RECREATION

a) Existing resource condition: Besides being a sanctuary for wildlife, a valuable aquifer regenerator, and a protected place to grow late seral stage forests, PGFHP provides various opportunities for citizens to enjoy their park. It fills the county's need to provide a more rural setting than those found in some of the smaller, urban parks. While the park is closed to motorized vehicles, many people enjoy riding horses, hiking, and mountain biking. The park is also used by geocachers, mushroom hunters, long-distance runners, hikers and dog walkers.

b) Resources protection measures: Kiosks have been built at parking and trail access points. All forest roads will be maintained or abandoned according to state standards including culvert replacement or removal for abandoned sections. Since some of the trails are forest roads, maintaining the integrity of the forest will be needed to ensure culverts, water bars and ditches are functioning properly. Trails that have been built are subject to the same standard of public resource protection. Trails in PGFHP are varied and will be built and maintained to trail standards agreed to by Kitsap County Parks Department.

c) Stewardship practice recommendations: Continue to develop public access and parking at entry points to the park. Some of these old forest roads will be maintained for use during forest restoration thinning projects and for fire safety. Some portions of the forest roads maybe abandoned for use by vehicles and maintained as park trails. Efforts to control invasive and noxious weeds along park trails are a priority and will continue. Stewards will work with Dana Coggon to create an invasive species management plan. PGFHP Stewards have a trails subcommittee which is working to create a trail plan in order to deter un-authorized trail construction.

RESOURCE CATEGORY IX: SPECIAL FOREST PRODUCTS

a) Existing resource condition: Brush harvesting of salal and evergreen huckleberry provide a source of revenue for Kitsap County Parks, specifically PGFHP projects. Kitsap County maintains a contract with a brush harvesting company, which is up for bid every three years. Following County Policy, Citizens can also harvest mushrooms in the park for personal use.

b) Resources protection measures: Activities of illegal, non-permitted brush pickers have occasionally caused problems in the park. Litter and debris from pickers will to be managed through the enforcement of guidelines and rules by lease holder and Kitsap County Forester.

c) Stewardship practice recommendations: One of the best safeguards against illegal brush picking is to have an active contract with a legitimate brush harvesting company. After all, legitimate pickers only make money if the resource their company has paid for is not abused, which often happens in the case of illegal picking. Contractor activities will be monitored for impact on the park environment.

STEWARDSHIP TIMELINE

The goal is to conduct restoration management activates/practices over the entire park over a ten year period. Much of the park would benefit from restoration thinning. Under planting shade tolerant native trees will continue in red alder dominated riparian areas and in areas that have been restoratively thinned.

RESTORATION THINNING OPERATIONS

Kitsap County and its consultant, American Forest Management, work closely together to manage all aspects of the restoration thinning operations including estimating yield projections, selecting subcontractors and marketing the logs. The harvest contractors that work in the park will be selected based on several criteria including their ability to extract the logs with the least amount of disturbance to forest and existing forest road system. Contractors will exclusively use low-impact harvest machinery which will tread lightly on the forest floor. Logs will be harvested using the cut-to-length method which leaves tree slash evenly spread on the forest floor to decay. The slash also serves as a "carpet" for the machinery to drive on thus reducing soil disturbance.

All sensitive areas such as park trails, riparian areas, and wetlands will be marked with boundary tape. Blue paint will be used mark the trees for harvest. Parks staff and stewards will mark 100% of the take trees with the goal of leaving the best and strongest trees which will improve the overall health and habitat of the forest.

To enhance and preserve habitat the contractor will be required to leave snags, avoid disturbing stumps, and large woody debris that exist in the Park. The harvest contractor will also be required to create five snags per acre by topping trees at the maximum height their equipment will reach. Ideally snag trees will be at least 16" in diameter and a minimum of 20 feet tall.

10 Year - Restoration Thinning Schedule

Unit #	Year Scheduled for Thinning	Age (2015)	Unit Acres	Tree Per Acre	Volume Per Acre (MBF)	Estimated Current* Volume (MBF)	Leave Trees per Acre	Estimated Net Acres** Restored	Net Volume*** (MBF)
1	2019	25	35	380	<10	350	150	20	53
2	2019	25	85	380	<10	850	150	50	132
3	NA	80	3	140	35	105	NA	NA	NA
4	NA	80	24	143	35	840	NA	NA	NA
5	2023	29	16	360	10	160	150	12	60
6	2016	32	26	260	5	130	100 to 140	20	80
7	2021	32	10	260	5	50	100 to 140	20	70
8	NA	100	70	96	35	2,450	NA	NA	NA
9	2018	49	20	150	24	480	100	15	225
10	2016	30	20	260	12	240	100 to 140	15	75
11	2023	28	18	300	5	90	150	10	50
12	2017	32	70	360	13	910	150	50	250
13	2017/18	49	146	150	30	4,380	100	120	1,180
14	2016	30	20	260	12	240	100 to 140	15	75
15	2022	25	25	390	5	125	150	25	125
16	2017	31	170	570	14	2,380	160	160	740
17	2020	28	25	320	7	175	150	25	100
18	2016	47	130	220	28	3,640	100	40	400
19	2020	28	10	320	7	70	150	5	25
20	2023	25	18	360	13	234	160	10	50
21	NA	56	3	280	17	51	NA	NA	NA

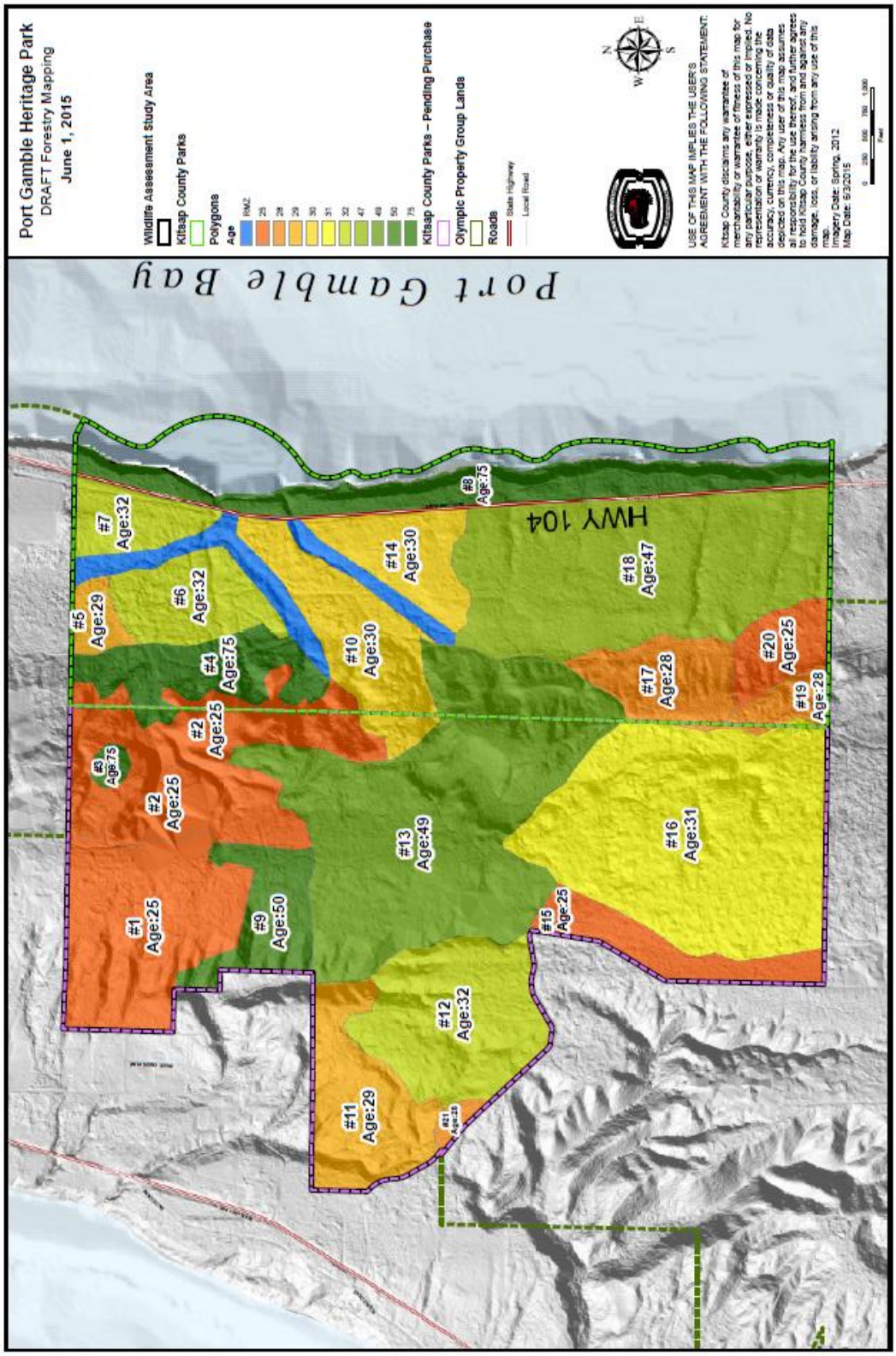
Estimated current volume: 17,950 MBF; anticipated volume from restoration thinning: 3,690 MBF

*Estimated current volume of standing volume in thousands of board feet (MBF).

**Net acres restored takes into account wetland/riparian buffers, steep slopes and hardwoods.

***Restoration Thinning would result in the removal of between 20 – 30 percent of the standing volume.

APPENDIX 1: MAP UNITS



APPENDIX 2: CURRENT FOREST - CONDITIONS/PRESCRIPTIONS

Map Unit #	Species	Age	Acres	Trees/Acre
1	Douglas Fir	30	TBD	400+

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100++	140	< 10		0

Unit Description Simple Canopy

This stand is a young dense Douglas fir plantation in the stem exclusion stage of forest development. One of the last areas clear-cut in the park and reforested into Douglas fir, this unit with its high site index is ready for restoration thinning.

Unit Prescription

Implement restoration thinning in 5 to 10 years to release the biggest and best trees.

Map Unit #	Species	Age	Acres	Trees/Acre
2	Douglas fir	25	TBD	400+

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100++	140	<10		

Unit Description Simple Canopy

This stand is a young dense Douglas fir plantation in the stem exclusion stage of forest development. One of the last areas clear-cut in the park and reforested into Douglas fir, this unit with its high site index is ready for restoration thinning.

Unit Prescription

Implement restoration thinning in 5 to 10 years to release the biggest and best trees.

Map Unit #	Species	Age	Acres	Trees/Acre
3	W Hem./Douglas fir	80	3	60

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
80 to 100	124	35	W Hemlock	40

Unit Description Complex Canopy

This unit is a circle of trees that was left when the unit around it was clear cut in 1989. It is dominated by reasonably healthy, western hemlock and Douglas fir estimate to be 80 years old. It is a small legacy unit.

Unit Prescription

Monitor the health and vigor of this unit for potential hazard tree risks. In an effort to diversify this unit, under plant western red cedar to create a new canopy cohort.

Map Unit #	Species	Age	Acres	Trees/Acre
4	WH/RA/WRC/DF	80	24	143

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	130	35	WH/RC	10

Unit Description Complex Canopy

This unit is dominated by reasonably healthy, western hemlock, Douglas fir and red alder estimate to be 80 years old. It is a small legacy second growth unit that provides good wildlife habitat due to the wide tree spacing, available dead wood and the development of multiple canopies. The red alder is old and decadent and continues to create openings in the forest.

Unit Prescription

Monitor the health and vigor of this unit for potential hazard tree risks. In an effort to diversify this unit, under plant western red cedar to create a new canopy cohort.

Map Unit #	Species	Age	Acres	Trees/Acre
5	Douglas fir	29	16	360

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	118	10	0	0

Unit Description Simple Canopy

Unit 5 is the typical Douglas fir plantation found throughout PGFHP. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

Unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 8.5 inches. This spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under planting of cedar to create 2nd canopy would add much needed species diversity and horizontal structure.

Map Unit #	Species	Age	Acres	Trees/Acre
6	Douglas fir	32	26	260

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	109	5	0	0

Unit Description Simple Canopy

Unit 6 is a typical Douglas fir plantation in PGFHP. Invasive plants, Himalayan blackberry and Scotch broom are thriving in small open areas and adjacent access Forest Roads/tails. Established trees are healthy and vigorous. . Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

Unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 8.5 inches. This spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under planting of cedar to create 2nd canopy would add much needed species diversity and horizontal structure.

Map Unit #	Species	Age	Acres	Trees/Acre
7	Douglas fir	32	10	260

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	109	5	0	0

Unit Description Simple Canopy

Unit 7 is the typical Douglas fir plantation found throughout PGFHP. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. In the area between Spine Line and Arbutus Trails, there is tree diversity, included many Madrone, and a healthy understory. Unit provides below average wildlife habitat.

Unit Prescription

Unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 10 inches. This spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant cedar and hemlock to create 2nd canopy adding much needed species diversity and vertical stand structure.

Map Unit #	Species	Age	Acres	Trees/Acre
8	RC/DF/GF/RA	100	70	96

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	126	35	RC, Grand fir	60

Unit Description Complex Canopy

Unit 8, is the along the shoreline of Port Gamble Bay and contains the oldest stand of second growth in PGFHP. Western red cedar and Douglas fir are in equal quantity and mixed with a significant amount of grand fir and declining red alder. Units provides above average wildlife habitat.

Unit Prescription

Since this unit is within the Shoreline Management Zone and has a natural designation, restoration and protection are the primary objectives. Invasive plant control and under planting shade tolerant native tree species to replace the declining red alder is the priority.

Map Unit #	Species	Age	Acres	Trees/Acre
9	DF/WH/Mixed	49	20	150

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	129	24	RC/WH	40

Unit Description Complex Canopy

Unit 9 is similar to unity 13 in that both were established at the same time at planted with Douglas fir. The difference is that this unit provides above average wildlife habitat due to its more complex canopy. Multiple canopy layers provide both horizontal and vertical structure and could serve as a future reference stand for the park.

Unit Prescription

Unit needs only to be monitored for disease. The average diameter of trees is over 15 inches with many tree exceeding 20 inches DBH.

Map Unit #	Species	Age	Acres	Trees/Acre
10	Douglas fir	30	20	260

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	140	12	0	0

Unit Description Simple Canopy

Unit 10 has steep slopes, yet is the typical Douglas fir plantation found throughout PGFHP. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

Steep slopes maybe a limitation. The unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 12 inches. This spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant of cedar and hemlock to create 2nd canopy would add much needed species diversity and vertical canopy structure.

Map Unit #	*Species*	*Age*	*Acres*	*Trees/Acre*
11	Red alder	28	18	300+

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	108	5	0	0

Unit Description Simple Canopy

Unit 11 has steep slopes and after the last harvest was planted with Douglas fir which was out competed by naturally seeded red alder. Red alder cover 90 percent of the unit and are providing valuable wildlife habitat.

Unit Prescription

The priority would be to under-plant red cedar and western hemlock to replace the red alder in 30 to 60 years.

Map Unit #	Species	Age	Acres	Trees/Acre
12	Douglas fir	32	70	360

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	116	13	0	0

Unit Description Simple Canopy

Unit 12 is nearly 100 percent conifer with Douglas fir occupying 90 percent of the area. This is a monoculture Douglas fir plantation like others located throughout PGFHP. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

Except for riparian and wetland areas, the unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 13 inches. Improved spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; and begin providing enhanced wildlife habitat. Under plant of cedar and hemlock to create 2nd canopy would add much needed species diversity and vertical canopy structure.

Map Unit #	Species	Age	Acres	Trees/Acre
13	Douglas fir	49	146	150

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	129	30	RC/WH	10

Unit Description Simple Canopy

Unit 13 is an older, well stocked Douglas fir plantation that was likely thinned 20 years ago resulting in significant understory vegetation. The canopy has closed enough that the few established shade tolerant trees, cedar and hemlock saplings, have limited light for growth. With the high single canopy this stand provide can only meet the needs of a limited number of wildlife species.

Unit Prescription

The unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 20 inches. Increased tree spacing would reduce competition, improve tree vigor and allow more light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant of cedar and hemlock would help create 2nd canopy would add much needed species diversity and vertical canopy structure. Deciduous areas with few conifers should be

Map Unit #	Species	Age	Acres	Trees/Acre
14	Douglas fir	30	20	260

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100	140	12	-	-

Unit Description Simple Canopy

This stand is occupied by typical Douglas fir plantation found throughout PGFHP. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

Steep slopes maybe a limitation. The unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The average diameter of leave trees would be approximately 12 inches. This spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant of cedar and hemlock to create 2nd canopy would add much needed species diversity and vertical canopy structure.

Map Unit #	Species	Age	Acres	Trees/Acre
15	Douglas fir	25	25	390

% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	115	5	-	-

Unit Description Simple Canopy

Unit 15 is a densely stocked Douglas fir plantation. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

The unit needs restoration thinning (VDT) leaving between 100 and 140 trees per acre. The restoration thinning should be delayed for 6 to 10 years. The goal would be have a average leave tree diameter of 12 to 13 inches. Increased tree spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant of cedar and hemlock to create 2nd canopy would add much needed species diversity and vertical canopy structure.

Map Unit #	Species	Age	Acres	Trees/Acre
16	Douglas fir	31	170	570
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	131	14	-	-

Unit Description Simple Canopy

Unit 15 has some steep slopes, and is a densely stocked Douglas fir plantation. Overstocked, this unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

The unit needs restoration thinned (VDT) leaving between 100 and 140 of the biggest trees. The average diameter of leave trees would be approximately 12 inches. The increased spacing would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Under plant of cedar and hemlock to create 2nd canopy would add much needed species diversity and vertical canopy structure.

Map Unit #	*Species*	*Age*	*Acres*	*Trees/Acre*
17	Douglas fir	28	25	320
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	108	7	-	-

Unit Description Simple Canopy

Unit 15 has steep slopes, and is a densely stocked Douglas fir plantation. Western hemlock has natural seeded in adding to the overstocked condition. This unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

The unit needs to be pre-commercially thinned to between 150 and 190 trees per acre. Additional space between trees would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Restoration thinning would be scheduled 10 years out to further develop the desired ecological structure.

Map Unit #	**Species**	**Age**	**Acres**	**Trees/Acre**
18	DF/RA/RC	47	130	220
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	140	28	grand fir/red cedar	30

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Map Unit #	**Species**	**Age**	**Acres**	**Trees/Acre**
19	D fir	28	10	320
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	108	7	-	-

Unit Description Simple Canopy

Unit 19 has steep slopes, and is a densely stocked Douglas fir plantation. Western hemlock has natural seeded in adding to the overstocked condition. This unit has vast areas where there is little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

The unit needs to be pre-commercially thinned to between 150 and 190 trees per acre. Additional space between trees would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Restoration thinning would be scheduled 10 years out to further develop the desired ecological structure.

Map Unit #	Species	Age	Acres	Trees/Acre
20	D fir	25	18	360
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	104	13	-	-

Unit Description Simple Canopy

Unit 15 has steep slopes, and is a densely stocked Douglas fir plantation. Overstocked, this unit has vast areas with little or no understory vegetation and the competition for light, moisture and nutrients causes the entire plantation to be stressed and increasingly vulnerable to attack by diseases, insects and fire. Unit provides below average wildlife habitat.

Unit Prescription

The unit needs to be pre-commercially thinned to between 150 and 190 trees per acre. Additional space between trees would reduce competition, improve tree vigor and allow light to reach the forest floor; stimulate the reestablishment of understory vegetation; begin providing enhanced wildlife habitat. Restoration thinning would be scheduled 10 years out to further develop the desired ecological structure.

Map Unit #	Species	Age	Acres	Trees/Acre
21	R Cedar/R Alder	56	3	280
% Stocking	Site Index Soil Type	Volume MBF Per Acre	Replacement Trees	Replacement Trees / Acres
100+	114	17	-	-

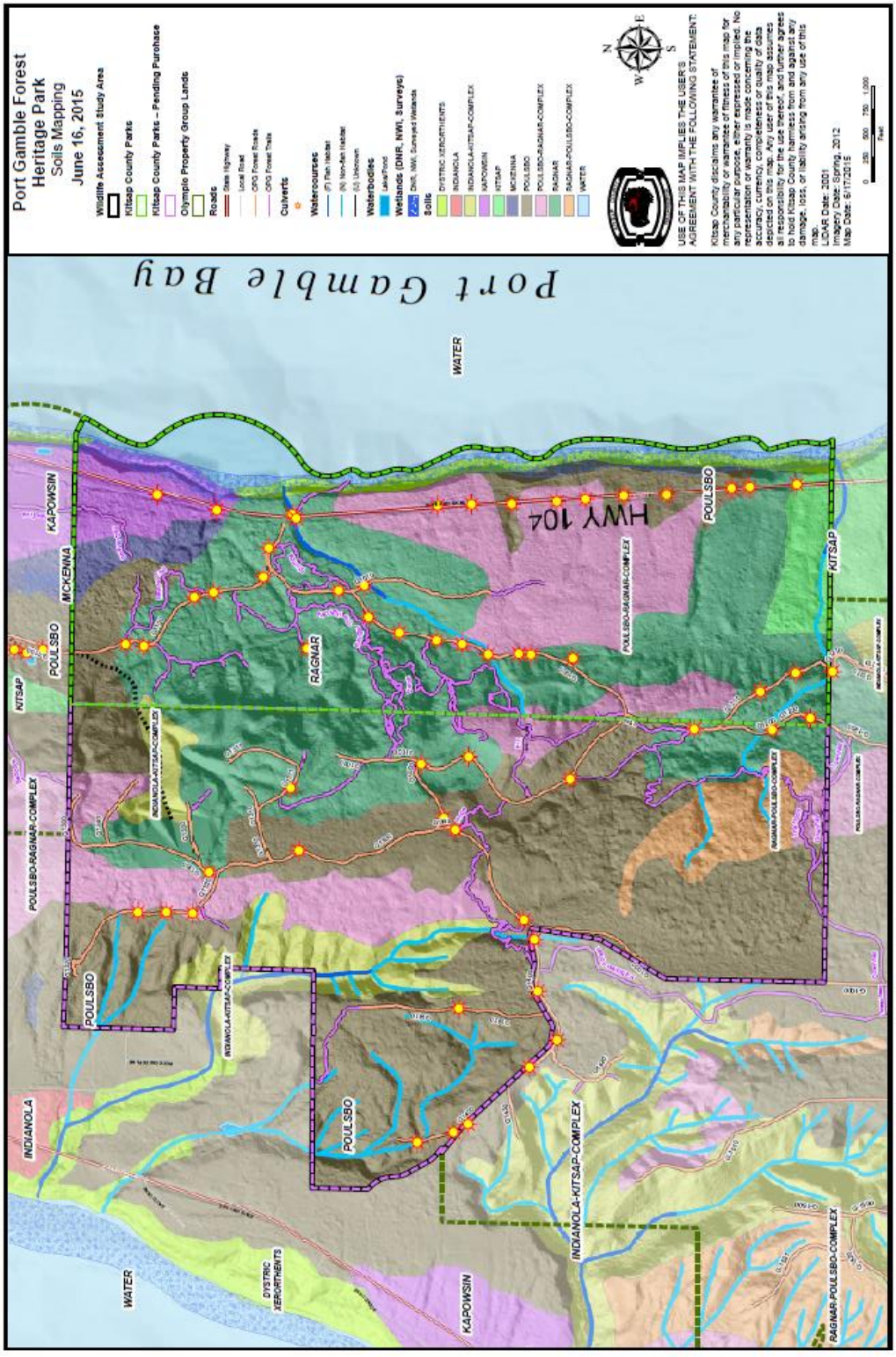
Unit Description Simple Canopy

Unit 15 has steep slopes, and is a well stocked mixed stand of Western red cedar and red alder. This unit provides above average wildlife habitat.

Unit Prescription

Monitor and if needed, under-plant additional red cedar and western hemlock to replace the declining red alder over the next 20 years.

APPENDIX 3: SOILS



Port Gamble Forest Heritage Park – USDA Soil Map Unit Symbols **

10 Dystric Xerorthents: 45 to 70 percent slopes. This deep, moderately well drained to somewhat excessively drained soil are on the sidewalls of entrenched streams and shorelines. Formed mainly in glacial till, but some are formed in sandy and gravelly outwash. Areas a long and narrow with most slopes are about 65 percent. The vegetation is conifers and hardwoods.

18, 19 & 20 Indianola loamy sand: 0 to 6, 6 to 15, and 15 to 30 percent slope respectively. This deep, somewhat excessively drained soil is found on the forest road uplands of the park. Formed in sandy glacial outwash, the primary vegetation is conifers. Some of the most fertile areas in the park, these soils have a site index* of 131 for Douglas fir and 95 for red alder.

21 Indianola-Kitsap Complex: 45 to 70 percent slope, this soil is located in the southwest corner of the park off Bay Ridge. Formed in glacial outwash and glacial lake sediment, the primary vegetation is conifers and hardwoods. Very productive soil and suited to Douglas fir and fed alder. Site index* is 131 for Douglas fir and 99 for red alder. Due to the steepness of slope, this area of the park will be "skipped" in terms of restoration thinning.

22 Kapowsin gravely ashy loam: 0 to 6 percent slopes, this is a moderately deep moderately well drained soil on forest road uplands and terraces. Formed in glacial till, are found in relatively small amounts, with less than 5 acres in the park. Native vegetation found on this soil is conifers and hardwoods. A very productive soil, Douglas fir has a site index* of 159.

30 & 31 Kitsap silt loam: 14 to 30, and 30 to 45, percent slope respectively. This is a deep, moderately well drained soil on terraces in the central area of the park. This very fertile soil formed in glacial lake sediment on the side slopes of terraces. Vegetation is conifers and hardwoods with a Douglas fir site index of 164 and site index* for red alder of 102.

32 McKenna gravely loam: 0 to 6 percent slopes, this moderately deep over compact glacial till, poorly drained soil was formed in glacial till. Found on uplands in low lying depressions and along drainage ways. Native vegetation is hardwoods, conifers, sedges, and grasses. Poor drainage limits the suitability of this soil to water-tolerant trees such as red alder, western red cedar and hemlock.

39, 40 & 41 Poulsbo gravelly sandy loam: 0 to 6, 6 to 15, and 15 to 30 percent slope respectively. This moderately deep, moderately well drained soil is on forest road uplands and is formed in glacial till. Native vegetation is conifers and hardwoods. Well suited to Douglas fir and has a site index* of 161.

42 & 43 Poulsbo-Ragnar complex: 0 to 6, and 6 to 15 percent slope respectively, these soils are on forest road uplands and terraces in the park. The formed in glacial till and glacial outwash this soil supports native vegetation consisting of mixed stands of conifers and hardwoods. Well suited to Douglas fir, Poulsbo soil has a site index* of 171 for Douglas fir.

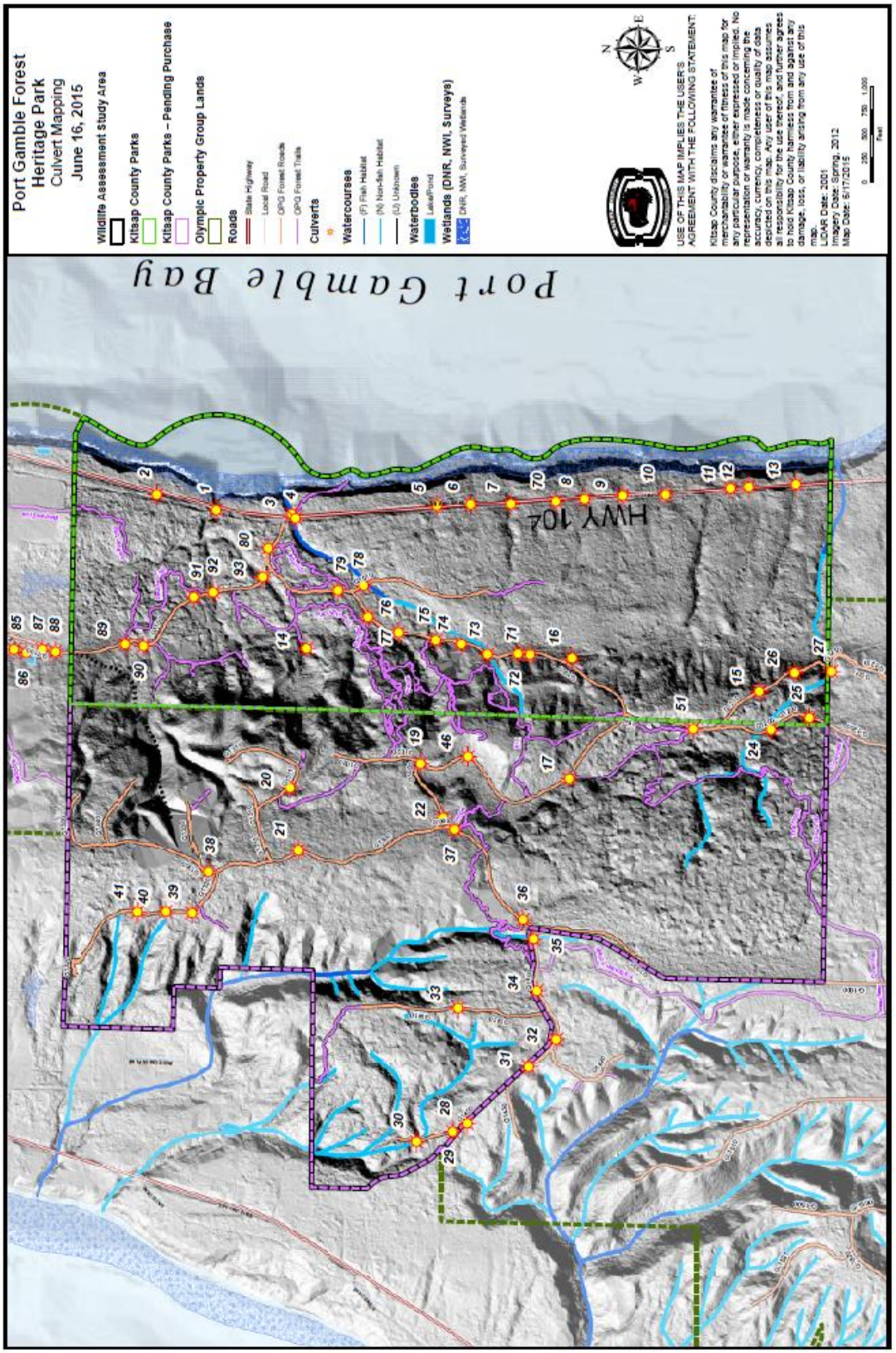
44 & 46 Ragnar fine sandy loam: 0 to 6 and 15 to 30 percent slope respectively. This is a deep, well-drained soil on terraces and uplands and was formed in glacial outwash. Native vegetation is conifers and hardwoods with a site index* for Douglas fir of 167.

47 Ragnar-Poulsbo complex: 15 to 30 percent slope. The soils of this complex are on forest road uplands and are formed in glacial till and glacial outwash. Native vegetation is a mixed stand of conifer and hardwoods. Ragnar soils are well suited to Douglas fir, western red cedar, hemlock and red alder. Douglas fir has a site index* of 139; The Poulsbo portion of the soil complex has a site index of 161 for Douglas fir.

* Site index is the height of a dominant example of the titled tree species in 100 years.

** USDA Natural Resources Conservation Service – Online Web Soil Survey.

APPENDIX 4: FOREST ROADS, RMAP'S & CULVER INVENTORY



FOREST ROADS

Owners of forestland are responsible for properly constructing and maintaining forest roads to protect fish habitat and water quality. Kitsap County has inherited the forest roads in the PGFHP that were constructed by Pope Resources for commercial timber operations. In order to keep these forest roads, most which are also used as trails, we must comply with state law. The Forest and Fish law is part of the Forest Practices Regulations of Washington State. The intent of the law is the reduction of silt pollution and runoff into streams and rivers. Forest road prisms are hard on streams when forgotten culverts become plugged creating wash out forest roadbeds, and deposit tons of silt in streams.

The goal is to keep most of the existing forest roads in the park for natural resource management, and use as trails: providing access for people with disabilities, running trails, and access routes for ingress/egress during emergencies. In order to do this we must comply with the law by having approved RMAPs check list in accordance with the small landowner rules. The accompanying map and tables show locations of existing forest roads and culverts (Tables 2 & 3), their size and condition.

Table 2: Attributes for Shoreline Culverts

Number	Culvert type	Dia. (in)	Length (ft)	Drop @ Outlet (ft)	Trail Condition	Culvert Condition	Other Conditions
1	Box	36	*		Adequate	Adequate	Functioning
2	Corrugated Metal	20	21.0		Adequate	Adequate	Functioning
3	Box	36	*		Adequate	Adequate	Functioning
4	Round Concrete	14	50.0		Adequate	Adequate	Functioning
5	Round Concrete	14	*		Adequate	Adequate	Functioning
6	Round Concrete	14	*		Adequate	Adequate	Clogged
7	Round Concrete	18	*		Adequate	Adequate	Functioning
8	Round Concrete	18	*		Adequate	Adequate	Clogged
9	Round Concrete	18	*		Adequate	Marginal	Functioning
10	Round Concrete	18	*		Adequate	Adequate	Functioning
11	Round Concrete	18	*		Adequate	Adequate	Functioning
12	Round Concrete	18	*		Adequate	Marginal	Clogged
13	Round Concrete	18	*		Adequate	Adequate	Functioning
14	Corrugated Metal	24	20.0	1.0	Marginal	Adequate	Functioning
15	Corrugated Metal	12	30.0		Adequate	Adequate	Functioning
16	Corrugated Plastic	18	29.0		Marginal	Adequate	Functioning
25	Corrugated Plastic	18	28.0		Adequate	Adequate	Functioning
26	Corrugated Plastic	18	28.0		Adequate	Inadequate	Functioning
27	Corrugated Plastic	18	45.0		Adequate	Adequate	Functioning
70	Round Concrete	18	*		Adequate	Adequate	Functioning
71	Corrugated Metal	18	31.5		Adequate	Adequate	Functioning
72	Corrugated Plastic	18	31.5		Adequate	Adequate	Functioning
73	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
74	Corrugated Plastic	18	24.0		Adequate	Adequate	Functioning
75	Corrugated Plastic	18	30.5	2.0	Adequate	Adequate	Functioning
76	Corrugated Plastic	18	30.0	1.0	Adequate	Adequate	Functioning
77	Corrugated Metal	12	34.0		Adequate	Adequate	Functioning
78	Corrugated Metal	12	38.3		Adequate	Adequate	Functioning
79	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
80	Corrugated Plastic	18	31.0		Adequate	Adequate	Functioning
89	Corrugated Plastic	18	29.5		Adequate	Adequate	Functioning
90	Corrugated Plastic	24	30.5		Adequate	Adequate	Functioning
91	Corrugated Plastic	18	31.5		Adequate	Adequate	Functioning
92	Corrugated Metal	36	45.0	3.0	Marginal	Adequate	Functioning
93	Corrugated Metal	36	49.0		Marginal	Adequate	Functioning

*Unable to measure

Table 3: Attributes for pending purchase area culverts.

Number	Culvert type	Dia. (in)	Length (ft)	Drop @ Outlet (ft)	Trail Condition	Culvert Condition	Other Conditions
17	Corrugated Plastic	18	29.0		Adequate	Adequate	Functioning
19	Corrugated Plastic	18	32.0		Adequate	Adequate	Functioning
20	Corrugated Plastic	18	31.0		Adequate	Adequate	Functioning
21	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
22	Corrugated Metal	12	31.0	0.5	Adequate	Adequate	Functioning
24	Corrugated Plastic	18	31.0		Adequate	Adequate	Functioning
28	Corrugated Plastic	18	31.0		Inadequate	Adequate	Functioning
29	Corrugated Metal	12	30.0		Inadequate	Adequate	Functioning
30	Corrugated Plastic	24	31.0		Inadequate	Adequate	Functioning
31	Corrugated Plastic	18	30.0		Marginal	Adequate	Functioning
32	Corrugated Metal	12	25.0		Marginal	Inadequate	Clogged
33	Corrugated Plastic	18	30.0		Inadequate	Adequate	Functioning
34	Corrugated Plastic	18	29.0		Marginal	Adequate	Functioning
35	Corrugated Plastic	18	39.0		Adequate	Adequate	Functioning
36	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
37	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
38	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
39	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
40	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
41	Corrugated Plastic	18	30.0	0.5	Adequate	Adequate	Functioning
46	Corrugated Plastic	18	30.0		Adequate	Adequate	Functioning
51	Corrugated Metal	12	19.0		Adequate	Adequate	Functioning

*Unable to measure

FOREST ROAD MAINTENANCE ABANDONMENT PLAN (RMAP)

There are approximately 6 miles of forest roads within the project area that will need to be maintained or formally abandoned. Public use of motorized vehicles is not allowed in the park. The only motorized traffic on the forest roads will be authorized maintenance vehicles (tractors, graders etc.), contractor vehicles (brush pickers and harvest contractors for example) and emergency vehicles. Where possible, runoff will be quickly returned to the forest floor as sheet flow by emphasizing out-sloping.

The following activities are necessary under DNR RMAPs rules.

1. An inventory of all park culverts will be maintained. This inventory has been completed.
2. GPS coordinates will be noted for each culvert. This has been completed
3. Culvert location monuments/markers will be placed at each culvert crossing be tall enough to be visible from the forest road prism and be inscribed with a unique ID #.
4. Forest road prism culvert inspection will occur each August/September to prepare for winter rains.
5. Ditches along all maintained forest roads shall be freed from obstructions that impede water flow.
6. Moss, duff, and grasses in ditches should remain undisturbed: for added water energy distribution, water absorption, and head cut reduction.
7. Forest roads shall be sloped so that water is directed to the forest floor. See WAC 222-24
8. Where beaver activity is present, frequent checks must be made to prevent washouts.
9. As forest roads are needed for scheduled forest restoration thinning projects, they will be prepared to withstand use by trucks or other equipment.
10. When forest road segments are no longer needed will be abandoned as prescribed under FPA rules.

Culverts to be replaced

Culverts that block fish passage must be removed or replaced with bridges or arched culverts. The goal is to ensure stream crossings allow fish passage for all life stages of fish. Culverts can sometimes block juvenile fish by creating a strong laminar flow that prevents upstream migration of Coho and Steelhead smolt. Culverts block returning adult salmon when they are perched higher than the fish can jump. Replacement culverts must be a minimum of 18" in diameter.

Currently, anadromous fish are present in the eastern and northern areas of the park, and the potential exists for them to utilize the park's wetland habitat. There is likely chum, sea run cutthroat, steelhead and Coho in the Port Gamble Bay that borders the park.

All forest roads and culverts need annual maintenance. Maintenance typically consists of clearing and cleaning culverts and ditches of debris and vegetative growth. Graded forest road surfaces restore the proper movement of water off the forest road surface and to prevent rutting and head cuts. Forest roads and culverts should be inspected before the fall rainy season and after any periods or record rainfall. A spring inspection will help identify problems that need attention during summer dry season.

There are four (4) culverts in the subject property that are not functioning. These culverts only need maintenance.

APPENDIX 5: FIRE RISK REDUCTION

Fire Risk Reduction Strategies for NKHP

The objective of fire risk mitigation in the park is to reduce the potential for a crown fire. Because we cannot control the weather or change the topography of the park we are left with control and distribution of fire fuels as our only viable option for reducing the intensity of a fire. If successful, this strategy would not prevent fire, which is a natural part of the environment, but reduce the fire's intensity by limiting it to a ground fire or surface fire. Reducing the potential for a fire to occur and creating a defensible space are other options that are compatible with long range goals and objectives for this park.

Ground fires: least damaging and limited to duff with no visible flames (smoldering)
Surface fires: produce a flame front and can be destructive
Crown fires: most destructive with flames spreading from tree crown to tree crown

Recognition of the role of fire in maintaining natural ecosystems (4)

Historical records show that wildfires have been a part of the natural environment for many centuries before the arrival of Europeans. A single fire that occurred on the Olympic Peninsula circa 1700, burned from near the Elwha southerly to the Hood Canal as far south as Belfair. Wildfires create new forests and contribute to the diversity of plants and habitats.

Integrating Fire Management with Ecosystem Management

In addition to increasing plant and habitat diversity, employing Variable Density Thinning (thinning from below) reduces the potential for a crown fire by increasing the spacing between tree crowns. Thinning from below canopy retains larger more vigorous and fire resistant trees and raises the base of tree crowns reducing ladder fuels.

"The common denominator is fuel (**5**)

- Reduce surface fuels.
- Increase the height to the base of tree crowns.
- Increase spacing between tree crowns.
- Keep larger trees of more fire-resistant species.
- Promote more fire-resistant forests at the landscape level by reducing fuels both vertically and horizontally."

Following these principles accomplishes three goals:

4 Fire Management for the 21st Century, James K Agee. Creating a Forestry for the 21st Century Kohm/Franklin
5 PNW 618 A Pacific Northwest Extension Publication. Oregon State University, University of Idaho, Washington State University

1. Reduces the intensity of a fire, making it easier for firefighters to suppress.
2. Increases the odds that the forest will survive a fire. Small trees, shrubs, and other understory vegetation may be injured or killed, but larger trees in the stand will only be scorched, and soil damage also will be reduced.
3. Reduces the extent of restoration activities needed, such as replanting or erosion control measures.

Specifics:

1. Access.

Maintain access for firefighting personnel and equipment.

2. Fuel Reduction Zones

Reduce fuel loading along trails by chipping or scattering. Control Scotch broom along existing service forest roads and the power line right-of-way.

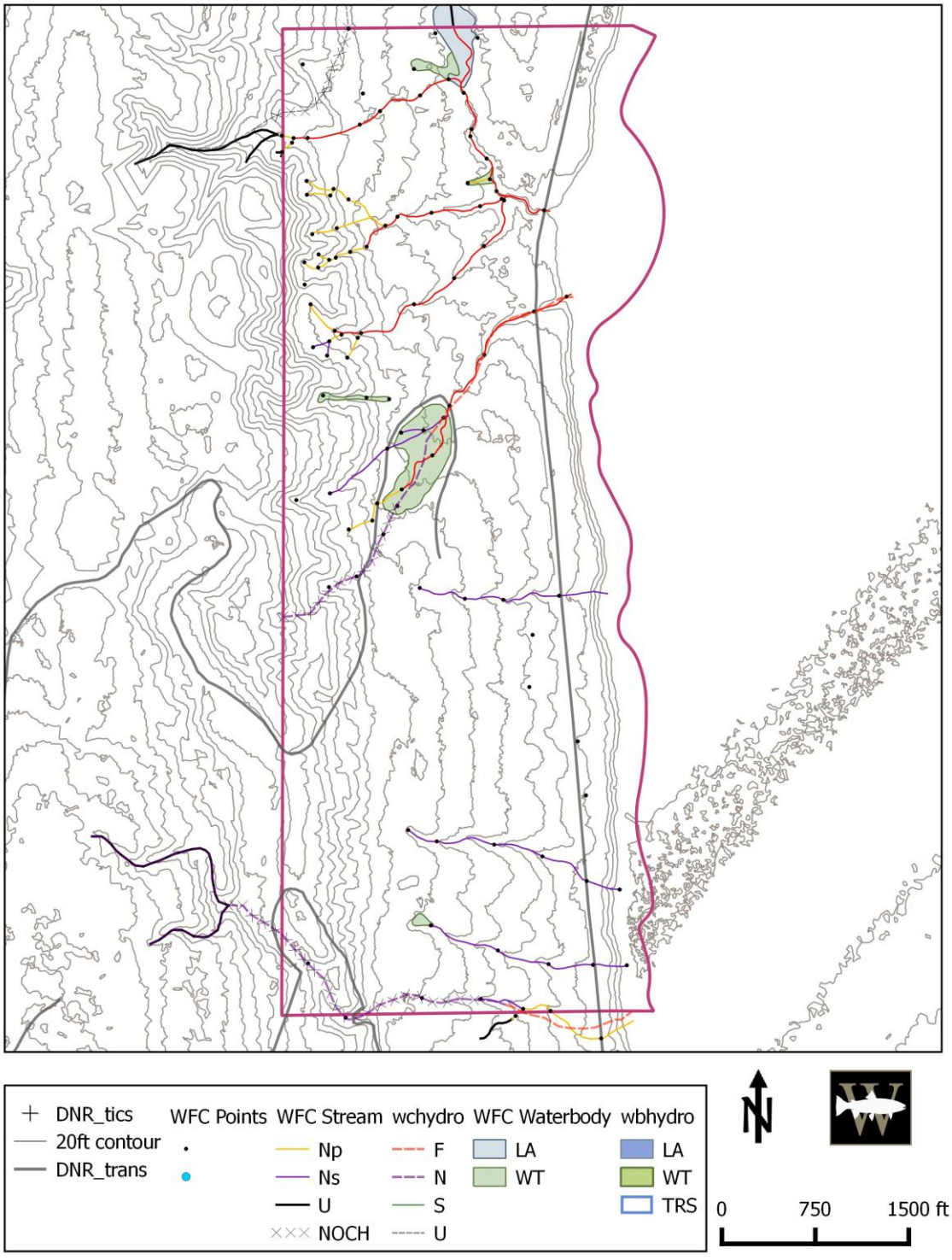
3. Shaded Fuel Breaks

Take advantage of topography and enhance moist areas by removing dead wood and ladder fuels while leaving groundcover to increase moisture retention reducing the potential for a fire.

4. Mineral Soil Firebreaks

Maintain a minimum of 30 foot crown separation across existing forest roads and reduce fuels (noxious weeds and dead wood).

APPENDIX 6 - STREAMS/WETLANDS



APPENDIX 7 – POLICY FOR THE PROTECTION AND RESTORATION OF RIPARIAN AND WETLAND MANAGEMENT ZONES IN KITSAP COUNTY PARKS

The Kitsap County Forest Stewardship program is conducting restoration thinning in County parks within 200 feet of streams and wetlands; for that reason it is important to establish a program specific policy for the protection and restoration of riparian and wetland management zones (RMZ/WMZ).

Non-conventional thinning in overstocked stands is a recommended practice within riparian and wetland management zones in Western Washington[6]. The Kitsap County Forest Stewardship program exclusively uses non-conventional thinning. Operationally called variable density thinning (VDT), this type of ecological restoration thinning is specifically recommended for young dense Douglas fir plantations and advances the forest health and habitat goals of the Kitsap County Forest Stewardship program.

Why Use Ecological Restoration Thinning?

Restoration thinning is most beneficial in young (typically less than 50 years of age) dense conifer stands because of anticipated high growth rates[2]. Unlike conventional thinning, restoration thinning can maintain or accelerate dead wood production[1]. This is accomplished by leaving all or most of the dead wood as part of the thinning prescription. The approach is to use VDT to create variation in the forest landscape by crafting tree clumps, skips and openings that closely mimic natural forest conditions[7]. Additionally, all non Douglas fir tree species in the management zones are reserved as leave trees.

Healthy, diverse forests contain dead trees. Properly implemented, VDT will result in continued stand mortality that will continue to contribute dead wood to streams and wetlands. Thinning prescriptions will also call for the artificial creation of snags. Studies show that ninety-five percent of near-stream wood inputs come from within 82 to 148 feet of a stream; Shorter distance occur in young, shorter stands and longer distances occur in older and taller stands[1]. Therefore RMZs will increase over time.

The Washington Forest Practices Rules do address the RMZ and WMZ requirements for Western Washington, but given the ecological health and habitat goals for county parks, the Forest Stewardship Program elects to increase protection for both wetlands and riparian areas. The Kitsap County Forest Stewardship Program policies for RMZ and WMZ are to be followed unless a site specific adaptive management prescription is approved by the Forest Stewardship

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[6] Spies, Thomas, Michael Pollock, Gordon Reeves and Tim Beechie. 2013. Effects of Riparian Thinning on Wood Recruitment: A scientific Synthesis. Science Review Team Wood Recruitment Subgroup, Forest Sciences Laboratory, Corvallis, OR.

[7] Kerr, Andy, and Derek Churchill. 2012. Ecological Appropriate Restoration Thinning in the Northwest Forest Plan Area. Conservation Northwest, Geos Institute, Klamath-Siskiyou Wildlands Center and Oregon Wild. Seattle, WA.

Committee and the Kitsap County Community Forester. Under no circumstance can the WMZ or RMZ be less than what is required under the Washington Forest Practice Rules.

Wetland Management Zones

In Kitsap County Parks, all wetlands are important regardless of their size and will be protected by a minimum buffer, with no harvest or use of equipment within the wetland management zone. Within wetland management zones all restoration thinning will be limited to low-impact harvest systems, specifically a cut-to-length (CTL) harvest system.

The WMZ will be measured horizontally from the edge or the point where the non-forested wetland becomes a forested wetland as determined by the method described in the Forest Practices Board Manual, Section 8 – Guidelines for Wetland Delineation. The delineation shall be of an average width as described per wetland type in the red columns. Forest Practices require that the WMZ not be less than the minimum nor more than the maximum (as shown in the red columns of Table A).

For Kitsap County Parks, the minimum WMZ for Type A and B wetlands (blue column of Table A) is basically equal to the WA FPA average width; thereby providing twice the protection. In WMZ's that exceed the KC Parks Minimum width, a total of 100 to 140 leave trees per acres greater than six inches dbh will remain; fifty of which will be greater that twelve inches dbh including 10 trees greater than twenty inches dbh, where they exist.

For Kitsap County Parks, Type B wetlands under ¼ acre and all forested wetlands will be protected with the no-harvest WMZ widths shown in the blue column of Table A.

Table A: Policy for Wetland Management Zone (WMZ) Protection

Forest Practices – Wetland Type with buffers showing additional park requirements.

Wetland Type	Acres	WA FPA Maximum Width	WA FPA Average Width	WA FPA Minimum Width No Harvest	KC Parks Minimum Width No Harvest
A (including bogs *)	Greater Than 5	200′	100′	50′	100′
A (including bogs *)	.5 to 5	100′	50′	50′	100′
A (Bogs only)	.25 to .5	100′	50′	25′	50′
B	Greater than 5	100′	50′	25′	50′
B	0.5 to 5	No WMZ	No WMZ	25′	50′
B	0.25 to 0.5	No WMZ	No WMZ	25′	50′
B	< 0.25	No WMZ	No WMZ	No WMZ	50′
Forested	n/a	No WMZ	No WMZ	No WMZ	50′

The columns highlighted in red represent WMZ no harvest zones under Forest Practices; the blue columns specify the Kitsap County Forest Stewardship Program WMZ policy for enhanced wetland management zone protection in Kitsap County Parks.

Riparian Management Zones

Decisions regarding Riparian Management Zone (RMZ) are more complicated than WMZ's as there are many options based on the presence or absence of: fish, cultural resources, threatened or endangered species, seasonal or perennial stream flow and stand age and density. Generally, rules in the Washington Forest Practices law protect fish bearing waters (Type F and S) quite well. The 4a Option (Tables B), no harvest within the inner zone or a small landowner "Alternative Plan" (Table C) will be used by the Forest Stewardship Program for the young plantation stands bordering streams in Kitsap County Parks.

The Kitsap County Forest Stewardship Program manages park forests for forest health and wildlife, as opposed to previous management for fiber production. With the exclusive use of restoration thinning (thinning from below), and leaving more trees per acre than the required minimums, the prescription will significantly preserve forest hydrology and provide for the recruitment of deadwood. By more than doubling the leave trees, required under Forest Practices Rules, beyond the no harvest in the Inner Zone (Option 4a in Tables B) there is no need to increase the core and inner zone buffers.

The columns highlighted in red represent FPA no harvest zones; blue columns indicate the Kitsap County Forest Stewardship Program policy for enhanced riparian management zone protection in Kitsap County Parks.

Tables B: Policy for Type S/F Stream Protection - No-Harvest Inner Zone

Type "S" (Shoreline) and "F" (Fish bearing) Streams

4a No Inner Zone Harvest - Buffer Width by Site Class (Stream <10 feet)

Site Class	WA FPA Core Zone No Harvest	WA FPA Inner Stream < 10' No Harvest	Total Buffer Width No Harvest	WA FPA Outer Zone TPA Minimum	**Kitsap County Forest Stewardship Program Outer Zone Average TPA**
I	50'	83'	133'	20	100 to 140
II	50'	63'	113'	20	100 to 140
III	50'	43'	93'	20	100 to 140
IV	50'	23'	73'	20	100 to 140
V	50'	10'	60'	20	100 to 140

4a No Inner Zone Harvest - Buffer Width by Site Class (Stream > 10 feet)

Site Class	WA FPA Core Zone No Harvest	WA FPA Inner Stream > 10' No Harvest	Total Buffer Width No Harvest	WA FPA Outer Zone TPA Minimum	**Kitsap County Forest Stewardship Program Outer Zone Average TPA**
I	50'	100'	150'	20	100 to 140
II	50'	78'	128'	20	100 to 140

III	50’	55’	105’	20	100 to 140
IV	50’	33’	83’	20	100 to 140
V	50’	18’	68’	20	100 to 140

Table C: Policy for Type S/F Stream Protection Using Alternate Plan

Small Landowner Alternate Plan – Type S & F Stream Fixed Width, No Harvest, by Site Class

Site Class	WA FPA - No Harvest Core Zone	**Kitsap County Forest Stewardship Program - Minimum No Harvest Core Zone**	**Kitsap County Forest Stewardship Program Average TPA For Outer Zone**
I	145’	145’	100 to 140
II	118’	118’	100 to 140
III	101’	101’	100 to 140
IV	82’	82’	100 to 140
V	75’	75’	100 to 140

Both perennial and seasonal streams need protection. Because the Kitsap County Forest Stewardship Program manages park forests for ecological diversity and wildlife, restoration thinning will significantly enhance forest hydrology and provide for the recruitment of deadwood into Type Np and Ns streams. The blue column in Table(s) D indicate the buffer widths for Type Np and Ns streams under the Kitsap County Integrated Forest Stewardship Policy for Kitsap County Parks.

Tables D: Policy for Np/Ns Stream Protection No-Harvest Buffer

Type “Np” (Non-Fish Perennial) Streams

From S or F Stream Length of Np Stream	WA FPA- No Harvest Width Np	**Kitsap County Forest Stewardship Program – Minimum No Harvest Buffers**
Length > 1000, First 500’	50’	50’
Length <1000, First 300’	50’	50’
Length < 300’	50’	50’
Beyond 1,000’	0’ with 30’ ELZ	50’
All Sensitive Sites	50 to 56’	50 to 60’

Type “Ns” (Non-Fish Seasonal) Streams

WA FPA- No Harvest Buffer Width for Ns Stream	WA FPA Type Ns Restriction	**Kitsap County Forest Stewardship Program Buffer Minimum No Harvest Buffer**
0’	30’ ELZ	50’

Thinning for Wildlife in Wetlands and Riparian Management Zones

The number of leave trees per acre for all restoration thinning in and adjacent to riparian and wetland management zones is base on established thinning guidelines for optimum wildlife habitat enhancement.

The trees per acre range (100 to 140) will be determined in the field using the average diameter of the leave trees to calculate the relative density (RD) too optimize the desired wildlife habitat condition. Large trees need more space, more space means more light on the forest floor stimulating understory plants thereby creating diverse habitat for wildlife.
RD will be used to determine the thinning density or the number of leave trees per acre. The density goal will be an average RD of 35. Leave trees will be sampled and measured to determine the RD using the following guideline and methodology (Table E):

Table E: Thinning guidelines for Wildlife

Relative Density (RD) for Wildlife

	Lower Limit – RD 25		Upper Limit – RD 45	
Avg. Leave Tree DBH (inches)	**Trees/Acre (TPA)**	**Avg. Tree Spacing (Feet)**	**Trees/Acre (TPA)**	**Avg. Tree Spacing (Feet)**
6	312	11	561	8
7	248	13	446	8
8	203	14	365	10
9	170	16	306	10
10	145	17	261	11
11	126	18	226	12
12	110	19	198	13
13	98	21	176	14
14	88	22	158	15
15	79	23	142	15
16	72	24	129	16
17	65	25	118	17
18	60	26	108	18
19	55	28	100	18
20	51	29	92	19
21	48	30	86	20
22	44	31	80	21
23	42	32	75	21

Relative Density (RD) is a descriptive term that relates to the density of a timber stand to a fully stocked level. An ideal RD for wildlife habitat is between 25 and 45.

Mathematically, RD = Standing Basal Area (BA) in square feet per acre divided by the square root of the quadratic average of DBH in inches.

The quadratic average is the square root of the average squared diameters. For smaller areas, a simple average DBH can work about as well as the quadratic average in calculating RD.

Basal area (BA) is equal to the sum of the cross sectional area of trees at breast height on an acre of land. It is also equal to the BA of the average diameter multiplied by the trees per acre (TPA). To convert tree DBH to BA, square the DBH and multiply by 0.005454.

Thus an average tree diameter of 10 inches would have a basal area equal to (10 X 10 X 0.005454) or 0.5454 square feet.

Excerpted from Washington State University Extension
EB2000 "Silviculture for Washington Family Forest"[8]

[8] Hanley, Donald P. and David Baumgartner. Silviculture for Washington Family Forests. 2005. Washington State University Extension Bulletin 2000. Pullman, WA.

GLOSSARY - Policy for the Protection and Restoration of Riparian and Wetland Management Zones in Kitsap County Parks

Type "A" Wetland	An area of ½ acre or more covered by open water seven consecutive days between April 1st and October 1st. This includes forested and non forested bogs that are greater than ¼ acre.
Type "B" Wetland	An open area of ¼ acre or more that is vegetated with water tolerant plants and/or shrubs.
Forested Wetland	A wetland with a tree crown closure of 30% or more, if trees are mature.
Type "S" Stream	Shorelines of Washington State
Type "F" Stream	Streams lakes and ponds that are used by fish, amphibians, wildlife and drinking water
Type "Np"	Perennial, year round stream flow (sometimes below the surface).
Type "Ns"	Seasonal streams
ELZ	Equipment limitation zone on type Np/Ns streams
Bogs	A unique wetland with peat or muck to 16 inches or more and vegetation, such as sphagnum moss, Labrador Tea, Bog Rosemary and other hydrophilic plants, requiring acidic soils. True bogs are rare on the landscape and Included here as bogs are Poor Fens for purposes of Forest Practices.
Conventional Thinning	Thinning that spaces the leave trees out as equally as possible and is designed as a method to produce the highest quality wood for the subsequent final harvest.
Non Conventional Thinning	Thinning where the smallest trees are removed first, thinning from below leaving the largest trees and clumps of trees along with skips and small openings; thereby creating a highly varied forest landscape.
DBH	The diameter of a tree at breast height (4.5 feet)
Riparian Zone	The area adjacent to streams, lakes and ponds.

Relative Density	A descriptive term that relates to the density of a timber stand to a fully stocked level. An ideal RD for wildlife habitat is between 25 and 45.

6-2 APPENDIX

RESTORATION ACTION BY FOREST STAND TABLE

APPENDIX

Restoration by Forest Stand Table

Port Gamble Forest Heritage Park

Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
1	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 30- to 32-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
2	Preforest Young Forest (early)	Restoration	Action 4 - Enhance/restore stream, wetland, and upland buffer communities Action 6 - Monitoring	This site is a long and narrow patch that was harvested in 2018. The stumps that remain are a mix of conifers and deciduous species. The patch appears to be a wetland with surface hydrology visible and wetland herbaceous plants like soft rush and slough sedge dominating the wettest areas. There is some regrowth of western red cedars and some red alders near the edge of the harvested area. This area will likely become a scrub-shrub and emergent wetland through natural regeneration. This area could be planted to add a wetland forest element outside of the wettest areas. Quaking aspen, Pacific willow, western red cedar, and Sitka spruce should be planted to establish a mixed forest canopy that will allow for a diverse understory of wetland shrubs and herbaceous species.
3	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 20- to 25-year-old Douglas fir and a few hemlocks and cedars that range in height from 40 to 50 feet. The canopy is partially closed with no regeneration of trees in the understory. The shrub layer is moderate at about 40% and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 25% thinning of canopy Douglas fir trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
4	Preforest Young Forest (early)	Conservation	This forest stand includes future recreational development. No restoration actions are proposed. Future harvest may be conducted on remaining large trees. Any actions should be coordinated with proposed recreation.	This parcel was 75% clear-cut in 2018 and the harvest area was replanted in primarily Douglas fir on 15- to 20-foot spacing. The northeast 25% of the parcel is a recently thinned (3 to 5 years ago) stand of Douglas firs that are approximately 30 to 35 years old and 70 to 75 feet tall. The stand has a 40% open canopy with natural regeneration of hemlock in the understory. The shrub and herbaceous layer is dense with many evergreen shrubs and ferns. The fuel load is low due to the recent thinning and the remaining larger Douglas fir trees are healthy. The stand contains larger high-value trees and will likely be harvested soon. If not harvested, this stand will continue to mature and form a subcanopy of mixed conifers that will create a multi-layered healthy forest.

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Restoration by Forest Stand Table

Port Gamble Forest Heritage Park

Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
5	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 30- to 32-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is dense with evergreen and deciduous species but there is little to no herbaceous layer other than a few sword ferns. The stand has been hand thinned which has created a moderate fuel load within the shrub layer. This stand could use another 25% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
6	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Dense red alder stand with 30- to 32-year-old trees that are 50 to 60 feet tall. The alder stand has scattered western red cedars that are 20 to 30 feet tall. The understory and shrub layer is dense with elderberry, salmonberry, and sword fern. The cedars will continue to mature and more conifers will likely regenerate under the deciduous canopy of alders. This stand should be left to naturally develop with routine monitoring to see if invasive species from nearby clear-cuts remain controlled.
7	Preforest Young Forest (early)	Restoration	Action 2 - Invasive control Action 5 - Chip and spread slash Action 6 - Monitoring	This small circular parcel was clear-cut in 2018 and the harvest area was replanted in primarily Douglas fir. There are several large slash piles within the parcel that could be burned in winter, chipped, or left as habitat features. The shrub and herbaceous layer is very dense with many deciduous and evergreen shrubs with some ferns. Some Scot's broom has begun to colonize the parcel and should be controlled to minimize the spread.
8		Restoration	Action 2 - Invasive control Action 6 - Monitoring	This parcel contains a large wetland that has a central emergent community that transitions to a scrub-shrub community with a ring of alder and cedar trees on the fringes of the wetland. The forested portions are dominated by 25- to 30-year-old alders with a sparse understory of cedar. The shrub layer is dense with elderberry, salmonberry, Himalayan blackberry, and Douglas spirea. The Himalayan blackberry should be removed and monitored, and the parcel should be left to naturally develop the mixed alder and conifer forest ringing the large wetland.
9	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 38- to 40-year-old Douglas firs that range in height from 70 to 80 feet. The canopy is mostly closed with some regeneration of understory western hemlock. The shrub layer is moderate with evergreen and deciduous species, but there is little to no herbaceous layer other than a few sword ferns. The stand has been hand thinned, which has created a moderate fuel load within the shrub layer. This stand could use another 25% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.

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Restoration by Forest Stand Table

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
10	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 30- to 33-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
11	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 38- to 40-year-old Douglas firs that range in height from 75 to 80 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns. The stand has been self thinning and creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
12	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Moderately dense, even-aged stand with 30- to 33-year-old Douglas fir, hemlocks, and cedars that range in height from 45 to 60 feet. The canopy is partially closed with some regeneration of trees in the understory. The shrub layer is moderate at about 60% and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 25% thinning of canopy Douglas fir trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand. This parcel has a high value for recreation and education due to the tree diversity, age of the stand, size of the stand, and location in the core of the park. This parcel should be targeted for preservation to avoid clear-cutting.
13	Disturbance and Legacy Creation	Restoration	Action 5 - Chip and spread slash Action 3 - Native planting Action 2 - Invasive control Action 6 - Monitoring	This parcel is being actively clear-cut. Slash piles should be chipped and spread. The clear-cut should be replanted in a mix of conifers and deciduous species based on the existing topography, soils, and hydrology. Invasive species should be controlled and the site monitored for colonization by invasives.

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Restoration by Forest Stand Table

Port Gamble Forest Heritage Park

Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
14	Disturbance and Legacy Creation	Restoration	This stand is approved for clear cutting. Following cutting, restoration actions should include: Action 5 - Chip and spread slash Action 3 - Native planting Action 2 - Invasive control	This parcel is approved for clear-cutting soon. The stand is a dense, even-aged stand with 35- to 40-year-old Douglas firs that range in height from 70 to 80 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse at 20% and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. If not clear-cut this stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
15	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	The stand is a dense, even-aged stand with 25- to 28-year-old Douglas firs that range in height from 50 to 60 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is moderate at 50% and there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of Douglas fir on the ridges to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
16	Preforest Young Forest (early)	Restoration	Action 2 - Invasive control Action 3 - Native planting Action 6 - Monitoring	This square parcel was clear-cut in 2019 and the harvest area may have been replanted but access to the area was limited. There are several large slash piles within the parcel that could be burned in winter, chipped, or left as habitat features. The shrub and herbaceous layer is moderate with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread. The parcel should be replanted in a mix of conifers and deciduous species if it has not been planted. There are steep narrow drainages to the west that may contain perennial, intermittent, or ephemeral streams. The streams should be surveyed to assess the impact level from the recent clear-cut
17	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 32- to 35-year-old Douglas firs that range in height from 65 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is sparse at 20% and there is little to no herbaceous layer other than a few sword ferns. The stand has been hand thinned, which has created a moderate fuel load within the shrub layer. This stand could use another 25% to 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
18	Preforest Young Forest (early)	Restoration	Action 2 - Invasive control Action 5 - Chip and spread slash Action 6 - Monitoring	This parcel was clear-cut in 2019 and the harvest area replanted in primarily Douglas fir on a 15- to 20-foot spacing. There are several large slash piles within the parcel that could be burned in winter, chipped, or left as habitat features. The shrub and herbaceous layer is low with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread.
19	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 6 - Monitoring	Moderately dense, even-aged stand with 30-year-old Douglas fir, hemlocks, cedars, and alders that range in height from 45 to 60 feet. The canopy is partially closed with some regeneration of trees in the understory where alders are being selected against. The shrub layer is moderate at about 60%, and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where alders have thinned or trees have been wind-thrown. The stand has started to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead snags of smaller sizes. This stand could use a 10% to 25% thinning of canopy Douglas fir trees to help promote natural regeneration of trees in the understory, reduce fuel loads, and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
20	Preforest Young Forest (after canopy closure)	Restoration	Action 2 - Invasive control Action 6 - Monitoring	Moderately dense red alder and big-leaf maple stand with 30- to 35-year-old trees that are 50 to 60 feet tall. The alder and maple stand has scattered western red cedars, hemlocks, and Douglas firs in the understory that are 35 to 40 feet tall. The shrub layer is dense (60%) with elderberry, salmonberry, and Himalayan blackberry. The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alder and maple. This stand should be left to naturally develop, with removal of invasive species and monitoring to see if invasives from nearby clear-cuts remain controlled.
21	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Dense red alder and Douglas fir stand with 30-year-old trees that are 50 to 60 feet tall. The alders are beginning to lean and be selected against due to shading and competition from the Douglas fir. The understory and shrub layer is moderate with cedar, elderberry, and sword fern. The cedars will continue to mature under the canopy of alders and Douglas firs. This stand should be left to naturally develop, with routine monitoring to see if invasives from nearby clear-cuts remain controlled.
22	Preforest Young Forest (after canopy closure)	Conservation	This forest stand includes future recreational development. No restoration actions are proposed and any future actions should be coordinated with proposed recreation. Action 6 - Monitoring	This parcel is very large and has several different aged stands with varying densities of trees and tree diversity. The dense 30+-year-old Douglas fir stands should be 25% to 50% thinned to reduce fuel loads and increase the health of the canopy, subcanopy, and shrub layer. The mixed coniferous and deciduous stands should be monitored to assess health, fuel load, and invasives. Wetlands and streams within this parcel should be avoided and buffers to protect habitats and water quality should be established.

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
23	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Dense red alder and Douglas fir stand with 35- to 38-year-old trees that are 50 to 75 feet tall. The alders are beginning to lean and be selected against due to shading and competition from the Douglas fir. The understory and shrub layer is moderate with cedar, salal, elderberry, and sword fern. The cedars will continue to mature under the canopy of alders and Douglas firs. This stand should be left to naturally develop, with routine monitoring to see if invasives from nearby clear-cuts remain controlled.
24	Disturbance and Legacy Creation	Restoration	This stand is approved for clear cutting. Following cutting, restoration actions should include: Action 5 - Chip and spread slash Action 3 - Native planting Action 2 - Invasive control Action 6 - Monitoring	The stand is a dense, even-aged stand with 35- to 40-year-old Douglas firs that range in height from 70 to 80 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is low at 20% but there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand is planned for a clear-cut, but if that does not occur it could use a 50% thinning of Douglas fir on the ridges to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand. The steep valleys and mapped streams should be avoided during thinning and a buffer should be established around streams.
25	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 18- to 20-year-old Douglas firs that range in height from 35 to 40 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
26	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	The stand is a dense, even-aged stand with 30- to 35-year-old Douglas firs that range in height from 60 to 70 feet on the ridges, and 25- to 28-year-old big-leaf maples and red alders in the valleys. The canopy is closed with limited regeneration of understory trees. The shrub layer is low at 20% but there are sword ferns and herbaceous species in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 50% thinning of Douglas fir on the ridges to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand. The steep valleys and mapped streams should be avoided during thinning and a buffer should be established around streams.

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
27	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Dense red alder stand with 25- to 28-year-old trees that are 50 to 60 feet tall. The alder stand has scattered western red cedars and hemlocks in the understory that are 20 to 30 feet tall. The shrub layer is dense with elderberry and salmonberry. The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alders as the stand matures. This stand appears to have wetland inclusions and should be left to naturally develop with established buffers to protect wetlands and water quality. Routine monitoring should be conducted to see if invasives from nearby clear-cuts remain controlled.
28	Preforest Young Forest (early)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Moderately dense and young even-aged stand with 15-year-old Douglas fir, hemlocks, cedars, and white pine that range in height from 45 to 60 feet. Some mature pine and Douglas fir trees were left after the 2005 clearing, and those trees have been reseeding the area and white pine is regenerating. The canopy is partially closed with regeneration of trees in the understory. The shrub layer is moderate at about 40% and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where trees have thinned. The stand is just starting to self thin, creating a low to moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 25% thinning of canopy Douglas fir trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand. This parcel has a high value for recreation and education due to the tree diversity, young age of the stand, and size of the stand. This parcel should be targeted for preservation to avoid clear-cutting in the future.
29	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 30-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 30% to 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
30	Preforest Young Forest (early)	Restoration	Action 5 - Chip and spread slash Action 2 - Invasive control Action 3 - Native planting Action 4 - Enhance/restore stream, wetland, and upland buffer communities	This parcel was clear-cut in 2020 and the harvest area was replanted in Douglas fir on a 15- to 20-foot spacing. There are several large slash piles within the parcel that could be burned in winter, chipped, or left as habitat features. The shrub and herbaceous layer is moderate with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread. The parcel may contain a wetland, which should be replanted in wetland species and a buffer established to protect water quality and habitat.
31	Preforest Young Forest (early)	Restoration	Action 5 - Chip and spread slash Action 2 - Invasive control Action 6 - Monitoring	This parcel was clear-cut in 2019 and the harvest area was replanted in Douglas fir on a 15- to 20-foot spacing. There are several large slash piles within the parcel that could be burned in winter, chipped, or left as habitat features. The shrub and herbaceous layer is moderate with primarily Scot's broom colonizing the parcel that should be controlled to minimize the spread.
32	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Moderately dense red alder and big-leaf maple stand with 30- to 35-year-old trees that are 50 to 60 feet tall. The alder and maple stand has scattered western red cedars and hemlocks in the understory that are 35 to 40 feet tall. The shrub layer is dense (60%) with elderberry, salmonberry, holly, and Himalayan blackberry. The conifers will continue to mature and more conifers will likely regenerate under the deciduous canopy of alder and maple. This stand should be left to naturally develop, with removal of invasive species and monitoring to see if invasives from nearby clear-cuts remain controlled.
33	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 6 - Monitoring	Dense, even-aged stand with 30-year-old Douglas firs that range in height from 60 to 70 feet. The canopy is closed with no regeneration of understory trees. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 25% to 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.

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Forest Stand	Forest Developmental Stage	Restoration or Conservation Priority	Programmatic Action	Notes
34	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 4 - Enhance/restore stream, wetland, and upland buffer communities Action 6 - Monitoring	Dense, even-aged stand with 40-year-old Douglas firs that range in height from 75 to 80 feet. The canopy is closed with no regeneration of understory trees. Small patches of mature alder are present within the Douglas fir forest. The shrub layer is very sparse and there is little to no herbaceous layer other than a few sword ferns or in gaps where storm damage has occurred or trees have been wind-thrown. The stand has started to self thin, creating a moderate to high fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 25% to 50% thinning of canopy trees to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand.
35	Preforest Young Forest (after canopy closure)	Restoration	Action 1 - Restoration thinning Action 3 - Native planting Action 4 - Enhance/restore stream, wetland, and upland buffer communities Action 6 - Monitoring	The stand is a dense, even-aged stand with 30- to 32-year-old Douglas firs that range in height from 60 to 70 feet, and 30- to 32-year-old big-leaf maples and red alders mixed within the Douglas firs. The canopy is mostly closed with limited regeneration of understory trees. The shrub layer is low at 30% but there are sword ferns and herbaceous species under the maples and alders that allow more light to the forest floor. The stand has started to self thin against alders and small Douglas firs, creating a moderate fuel load of fallen, leaning, and standing dead Douglas fir snags of smaller sizes. This stand could use a 20% thinning of Douglas fir to help promote natural regeneration of trees in the understory and to allow for more light to help establish a diverse shrub and herbaceous layer. During thinning, non-Douglas fir species should be avoided and only Douglas fir trees should be thinned to help promote a more diverse and mixed species stand. Any steep valleys and mapped streams should be avoided during thinning and a buffer should be established around streams.
36	Preforest Young Forest (after canopy closure)	Conservation	Action 6 - Monitoring	Thin to moderately dense, even-aged stand with 30- to 35-year-old Douglas fir, hemlocks, and cedars that range in height from 50 to 70 feet. The canopy is partially closed with some regeneration of trees in the understory. The shrub layer is dense at about 75% and there is little to no herbaceous layer other than a few sword ferns and moss in gaps where storm damage has occurred or trees have been wind-thrown. The stand has been hand thinned but fuel loads appear to be low. This stand does not require thinning now. In 15 to 20 years the possible thinning of canopy Douglas firs trees could help promote more natural regeneration of trees in the understory and allow for more light to help establish a diverse shrub and herbaceous layer. This parcel has a high value for recreation and education due to the tree diversity, age of the stand, size of the stand, and location in the core of the park. This parcel should be targeted for preservation to avoid clear-cutting.

7-1 APPENDIX

DETAILED COST ESTIMATE SPREADSHEETS

Port Gamble Forest Heritage Park
MASTERPLAN ROUGH ORDER OF MAGNITUDE ESTIMATE
7/26/2022

Estimate Qualifications and Assumptions:

1. The estimate is based on diagrams, renderings, presentations, site photos, take-offs and notes supplied to SiteWorks in February 2022
2. The estimate is based on labor, materials and equipment data from RS Means, current cost research, and SiteWorks' expertise
3. The estimate assumes normal working hours (5 Days a week, 8 hours/ Day)
4. Soils are assumed to be free of hazardous contamination
5. The estimate is escalated in the "Escalation Tab" to presumed future construction dates.
6. The excavation includes, but is not limited to, pavement profile excavation, utility trenches, event field and drainage area profiles, green infrastructure.
7. Reforestation work assumes 1 gal. sized plants @ 5' O.C.
8. Water supply utility work assumes 3" copper K pipe + 1-1/2" laterals
9. Fire supply line assumes 6" ductile iron pipe
10. Items priced under "RECREATIONAL USES/FACILITIES CAPITAL COSTS" are assumed to be separate from other sections of the estimate.
    The same holds for items in "EDUCATIONAL USES/FACILITIES CAPITAL COSTS" and "INFRASTUCTURE CAPITAL COSTS". There is no assumption of double counting in the estimate.

The Estimate Excludes the Following:

1. Overtime costs.
2. Ongoing and annualized park maintenance and operations (O+M) costs.
3. Costs for maintenance and protection of traffic on any public right of way during construction
4. Items highlighted in red are assumed outside the scope of this estimate

Port Gamble Forest Heritage Park
SiteWorks - Budget-level Cost Estimate - CAPITAL COSTS 2022 DOLLARS
18-Jul-22

RECREATIONAL USES/FACILITIES CAPITAL COSTS

Plan Code	Facility	Background Data / Unit		Phase 1 QTY	Phase 2 QTY	Phase 3 QTY	Unit Price	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	All Phases Total
1	Parking (E- Existing and P- Planned/Proposed)	Total (below): 600 not including staging area overflow									
1A	**E- Bayview (Hwy 104) West**	**25 vehicles + expand (50 vehicles)+ new restroom + crosswalk on SR104 + gate. Phase 1- Re-gravel. Phase 2- Assume gravel surface, no curbs, wheel stops, rain gardens, ROMTEC pit toilet (2 stalls), signage, gate, paved entry turn-around/drop-off per plan. 12,000 sf existing; 25,000 sf proposed new gravel, 6,000 sf paved turn-around/drop-off**						**$18,447**	**$416,782**	**$0**	**$435,229**
	Re-gravel		SF	12,000			$1.54	$18,447	$0	$0	$18,447
	Gravel Expansion		SF		25,000		$3.80	$0	$95,024	$0	$95,024
	Wheel Stops		EA		50		$84.12	$0	$4,206	$0	$4,206
	Rain Gardens		SF		1,850		$37.56	$0	$69,486	$0	$69,486
	Pit Toilets		AL		1		$169,160.64	$0	$169,161	$0	$169,161
	Signage		AL		3		$1,391.90	$0	$4,176	$0	$4,176
	Paved Entry Turn Around		SF		6,000		$12.46	$0	$74,730	$0	$74,730
1B	**E- Bayview (Hwy 104) East**	**No change in size- 15 vehicles, add gate. Phase 1 - regravel, reconfigure entry off highway, add gates. 12,000 sf existing**						**$80,329**	**$0**	**$0**	**$80,329**
	Re-gravel		SF	12,000			$1.54	$18,447	$0	$0	$18,447
	Reconfigure Entry Off Highway		SF	4,000			$12.46	$49,820	$0	$0	$49,820
	Gates		EA	2			$6,031.26	$12,063	$0	$0	$12,063
1D	**E- Stottlemeyer Roadside**	**No change in size- 20 vehicles, overflow for new Stottlemeyer parking. O&M for existing not included. No changes**						**$0**	**$0**	**$0**	**$0**
1E	**E- Millie's**	**No change in size- 2 vehicles. O&M for existing not included. No changes**						**$0**	**$0**	**$0**	**$0**
1F	**P- Sandpit (Future)**	**25 vehicles; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom. 15,000 sf**						**$71,518**	**$21,801**	**$0**	**$93,318**
	Gravel Parking Surface		SF	11,250	3,750		$3.80	$42,761	$14,254	$0	$57,014
	Wheel Stops		EA	19	6		$84.12	$1,598	$505	$0	$2,103
	Rain Gardens		SF	563	188		$37.56	$21,128	$7,043	$0	$28,170
	Gate		EA	1			$6,031.26	$6,031	$0	$0	$6,031
1G	**P- Stottlemeyer**	**12 vehicles, 6 horse + restroom later in Phase 1. Per 2020 SCE Preliminary Design- Already funded. Separate, already funded project under design**						**$0**	**$0**	**$0**	**$0**
1H	**P- North Ride Park**	**75 vehicles + restroom later in Phase 1. Per 2020 SCE Preliminary Design- Already funded. Separate, already funded project under design**						**$0**	**$0**	**$0**	**$0**
1I	**P- New Airfield Replacement East**	**100 vehicles + restroom; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom- not shown on plans as it is off-site; 40,000 sf, including adjacent gravel paths**						**$0**	**$0**	**$241,988**	**$241,988**
	Gravel Parking Surface		SF			40,000	$3.80	$0	$0	$152,038	$152,038
	Wheel Stops		EA			100	$84.12	$0	$0	$8,412	$8,412
	Rain Gardens		SF			2,000	$37.56	$0	$0	$75,120	$75,120
	Gate		EA			2	$3,209.00	$0	$0	$6,418	$6,418
1J	**P- New Airfield Replacement West**	**100 vehicles; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom- not shown on plans as it is off-site. 40,000 sf, including adjacent gravel paths**						**$0**	**$241,988**	**$0**	**$241,988**
	Gravel Parking Surface		SF		40,000		$3.80	$0	$152,038	$0	$152,038
	Wheel Stops		EA		100		$84.12	$0	$8,412	$0	$8,412

	Rain Gardens	SF		2,000		$37.56	$0	$75,120	$0	$75,120
	Gate	EA		2		$3,209.00	$0	$6,418	$0	$6,418
1K	**P- Gathering Place/Staging Area**	**100 vehicles; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom. 40,000 sf, including adjacent gravel paths**					**$241,988**	**$0**	**$0**	**$241,988**
	Gravel Parking Surface	SF	40,000			$3.80	$152,038	$0	$0	$152,038
	Wheel Stops	EA	100			$84.12	$8,412	$0	$0	$8,412
	Rain Gardens	SF	2,000			$37.56	$75,120	$0	$0	$75,120
	Gate	EA	2			$3,209.00	$6,418	$0	$0	$6,418
1L	**P- Walk-in Camping/Edu Center/Research**	**75 vehicles; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom. Phase 1: 8,000 sf (not including roadway (see #41 below) Phase 2: 8,000 sf (not including roadway (see #41 below)**					**$55,046**	**$48,544**	**$0**	**$103,590**
	Gravel Parking Surface	SF	8,000	8,000		$3.80	$30,408	$30,408	$0	$60,815
	Wheel Stops	EA	38	37		$84.12	$3,197	$3,112	$0	$6,309
	Rain Gardens	SF	400	400		$37.56	$15,024	$15,024	$0	$30,048
	Gate	EA	2			$3,209.00	$6,418	$0	$0	$6,418
1M	**P- Glamping/Group Camping**	**25 vehicles; Assume gravel surface, no curbs, wheel stops, rain gardens, gate, no restroom. Phase 1: 2,500 sf (not including roadway (see #42 below) Phase 2: 4,000 sf (not including roadway (see #42 below)**					**$12,038**	**$23,893**	**$0**	**$35,932**
	Gravel Parking Surface	SF	2,500	4,000		$3.80	`	$15,204	$0	$15,204
	Wheel Stops	EA	11	14		$84.12	$925	$1,178	$0	$2,103
	Rain Gardens	SF	125	200		$37.56	$4,695	$7,512	$0	$12,207
	Gate	EA	2			$3,209.00	$6,418	$0	$0	$6,418
2	**Water Access**	**Improve existing; Signage, placement of large boulder steps to create hardened but natural access to shoreline, minimal grading, restoration planting. Trail/access exists, assume less than 300 sf of work area/disturbance**					**$0**	**$66,693**	**$0**	**$66,693**
	Kiosk with Canopy	EA		1		$48,199.50	$0	$48,199	$0	$48,199
	Boulder Staircase Placement	SF		200		$88.81	$0	$17,761	$0	$17,761
	Restoration Planting	SF		100		$7.32	$0	$732	$0	$732
3	**Wildlife Viewing Areas/Platforms**	**12- locations TBD, additional boardwalks, fire tower structure in Phase 1; 8 timber boardwalks with rails ($35k each), 1 fire tower (assume $150k). Each boardwalk- 500 sf max, 200 lf rails max. Fire tower- 20' x 20' deck, small enclosure, 40' height, timber and steel**					**$440,000**	**$35,000**	**$35,000**	**$510,000**
	Timber Boardwalks / Viewing Platform	SF	4,000	1,000	1,000	$35.00	$140,000	$35,000	$35,000	$210,000
	Fire Tower	AL	1			$300,000.00	$300,000	$0	$0	$300,000
4	**Event Staging Area (Replace Airfield)**	**6-8 acres adjacent to formal parking for other facility; In clearcut, mass grading, drainage, soil prep and seeding. Assume 300,000 sf of grading, seeding, and drainage**					**$823,084**	**$0**	**$0**	**$823,084**
	Rough Grading	SF	300,000			$0.076	$22,872	$0	$0	$22,872
	Rain Gardens	SF	9,000			$37.56	$338,040	$0	$0	$338,040
	Sub-Grade Drainage	SF	300,000			$1.19	$356,160	$0	$0	$356,160
	Soil Conditioning and Seeding	SF	300,000			$0.35	$106,011	$0	$0	$106,011
5	**"Gathering Place"**	**Entry feature with interpretation; Plaza, covered space, interpretation. Assume 5,000 plaza- paved hardscape, low stone walls (150 lf max)**					**$277,692**	**$57,984**	**$0**	**$335,676**
	Paved Plaza	SF	5,000			$21.22	$88,861	$0	$0	$88,861
	Interpretive Kiosks	EA		4		$7,436.37	$0	$29,745	$0	$29,745
	Low Stone Walls	LF		150		$188.26	$0	$28,238	$0	$28,238
	Overhead Structure	AL	1			$188,831.68	$188,832	$0	$0	$188,832
6	**Nature-based Playground**	**3- Adjacent to: North STO, Stottlemeyer, & Bayview parking areas; Natural materials, logs, boulders, split rail fencing, gravel trails. 30,000 sf each, 250 lf 4' wide gravel/dirt trails within each, 800 lf fence each**					**$161,034**	**$322,068**	**$0**	**$483,102**
	Playgrounds	AL	1	2		$143,280.72	$143,281	$286,561	$0	$429,842
	Access Trails	LF	250	500		$3.91	$977	$1,954	$0	$2,931
	Fencing	LF	800	1,600		$20.97	$16,777	$33,553	$0	$50,330

7	**Picnic Area with Shelter**	**5- Staging, North STO, Stottlemeyer, Bayview parking areas, Education Center; Costs for all 5 picnic areas, assume $100k for each. Assume ROMTEC picnic shelter or similar- 24' x 36', timber/steel, tables 10 tables per each area**						**$593,645**	**$197,882**	**$197,882**	**$989,408**
	Overhead Shelter	AL	3	1	1		$188,831.68	$566,495	$188,832	$188,832	$944,158
	Tables	EA	30	10	10		$905.00	$27,150	$9,050	$9,050	$45,250
8	**Concessionaire Structure**	**Located at Staging parking area- for Tree Adventure Park and Assistive Devise; Includes flush restrooms (4 stalls), two enclosed structures with covered outdoor space between (see plan), used for bike storage on one side and Tree Adventure Park check in and shop on the other. 1,200 sf enclosed space, 500 sf of outdoor covered space**						**$668,832**	**$0**	**$0**	**$668,832**
	Indoor Structures with Restrooms	SF	1,200				$400.00	$480,000	$0	$0	$480,000
	Outdoor Overhead Shelter	AL	1				$188,831.68	$188,832	$0	$0	$188,832
9	**Tree Adventure Park**	**7-10 acres in Ride Park (south end). $1M development costs by the concessionaire**						**$0**	**$0**	**$0**	**$0**
	Tree Platform Structures and Ziplines	**AL**	**1**					**$0**	**$0**	**$0**	**$0**
10	**Mountain Bike Ride Park**	**Approved; Already funded, EMBA developing**						**$0**	**$0**	**$0**	**$0**
11	**Camping- Walk-in (Group & Individual)**	**Small/50-100 tent spaces- walk-in with restrooms (4) and cart barns (4); Assume $20k-$25k per site, includes pit toilet costs. Phase 1 - 50 spaces, 2 pit toilets (2 stall), (2) 200 sf cart barns, 1,000 lf of 4' wide gravel/dirt trail, Phase 2- 50 spaces, 2 pit toilets (2 stall), (2) 200 sf cart barns, 1,000 lf of 4' wide gravel/dirt trail**						**$379,152**	**$379,152**	**$0**	**$758,304**
	Tent Site Grading	SF	50,000	50,000			$0.13	$6,694	$6,694	$0	$13,387
	Pit Toilets	EA	2	2			$169,160.64	$338,321	$338,321	$0	$676,643
	Cart Barns	EA	2	2			$9,253.87	$18,508	$18,508	$0	$37,015
	Gravel Trails	SF	4,000	4,000			$3.91	$15,629	$15,629	$0	$31,259
12	**Glamping- Walk-in**	**Small cabins/yurts- 15 spaces- walk-in with pit toilets (2) and cart barn (1); Assume $40k per site, includes pit toilet costs. Phase 1 - 6 yurts, 1 pit toilet (2 stall), 200 sf cart barn, 1,000 lf of 4' wide gravel/dirt trail Phase 2- 9 yurts, 1 pit toilet (2 stall), 800 lf of 4' w gravel trail**						**$301,384**	**$342,674**	**$0**	**$644,058**
	Yurts / Cabins	EA	6	9			$17,890.00	$107,340	$161,010	$0	$268,350
	Pit Toilets	EA	1	1			$169,160.64	$169,161	$169,161	$0	$338,321
	Cart Barn	EA	1				$9,253.87	$9,254	$0	$0	$9,254
	Gravel Trails	SF	4,000	3,200			$3.91	$15,629	$12,503	$0	$28,133
14	**Host Campsite**	**Within Glamping parking area; Assume 1. 1,500 sf gravel, hookup for water, power, comm.**						**$30,861**	**$0**	**$0**	**$30,861**
	Host Campsite Gravel Pad	SF	1,500				$3.91	$5,861	$0	$0	$5,861
	Utility Hookups	AL	1				$25,000.00	$25,000	$0	$0	$25,000
15	**Trail Restrooms (pit toilets)**	**2- Additional along STO (doesn't include new at parking areas); Assume pit toilet type such as CXT or ROMTEC brand, 2 stalls. 2 locations along trail, other quantities of pit toilets identified in projects above**						**$169,161**	**$169,161**	**$0**	**$338,321**
	Pit Toilets	EA	1	1			$169,160.64	$169,161	$169,161	$0	$338,321
16	**Orientation Points**	**Multiple- Throughout park (small kiosks at key trail intersections); Assume 16 locations- kiosk or orientation sign @ $10k each. 16 locations throughout park- assume 6 kiosk-type and 10 orientation sign**						**$44,618**	**$6,959**	**$6,959**	**$58,537**
	Kiosk - No Canopy	EA	6				$7,436.37	$44,618	$0	$0	$44,618
	Signs	EA		5	5		$1,391.90	$0	$6,959	$6,959	$13,919
--	**Trails (see trail plans)**	**Decommissioning, adding new, transitioning to different trail classifications; See trails tab for breakdown. See trails tab for linear footage for each trail type**						**$989,570**	**$0**	**$0**	**$989,570**
	Trail Decommission - Removed	LF	23,760				$11.78	$279,987	$0	$0	$279,987
	Road Decommission - Minimal Change	LF	34,320				$1.14	$39,125	$0	$0	$39,125
	Class 4 To 3- Reclass	LF	17,538				$9.55	$167,486	$0	$0	$167,486
	Class 3 To 4- Reclass	LF	6,335				$38.74	$245,415	$0	$0	$245,415
	Class 3 Trails Added- New	LF	41,712				$2.34	$97,559	$0	$0	$97,559
	Class 4 Trails Added- New	LF	4,026				$39.74	$159,998	$0	$0	$159,998

--	**Sound to Olympics Trail**	**Approved; Phase 1 already funded. Phase 2 funding per Public Works. 6.7 miles**					**$0**	**$0**	**$0**	**$0**
Subtotal Capital Costs for Recreation Facilities							**$5,358,397**	**$2,330,581**	**$723,817**	**$8,412,795**

EDUCATIONAL USES/FACILITIES CAPITAL COSTS

Plan Code	Facility	Background Data / Unit	Phase 1 QTY	Phase 2 QTY	Phase 3 QTY	Unit Price	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	All Phases Total
20	**Research Facility**	**Independent of other education facilities**					**$0**	**$1,788,000**	**$692,000**	**$2,480,000**
21	Indoor/Outdoor Lab + Restroom	2,000 SF- lab, restrooms, open offices, site work, utilities, fire. Expand 320 sf in Phase 3- equipment storage and lab extension. See architect's spreadsheet								
23	Greenhouse	Research/commercial, size dependent on programs; Phase 2- 5,000 sf, Phase 3 expansion as needed- 5,000 sf. Phase 2- 5,000 sf, Phase 3 expansion as needed- 5,000 sf								
							$0	$1,788,000	$692,000	$2,480,000
24	Outdoor Classroom Area	1- Large, covered, near Education Center + 2 small (dispersed within park); Large- $100k Small- $35k each. See architect's spreadsheet					**$71,400**	**$706,400**	**$1,106,400**	**$1,884,200**
							$71,400	$706,400	$1,106,400	$1,884,200
25	**Native Plant Nursery**	**Associated with research facility- 4 acres, fenced; Grading, drainage, fencing (chain link). 175,000 sf, 1,200 lf of chain link**					**$0**	**$581,031**	**$0**	**$581,031**
	Grading	SF		175,000		$0.08	$0	$13,342	$0	$13,342
	Subgrade Drainage	SF		175,000		$1.19	$0	$207,760	$0	$207,760
	Rain Gardens	SF		5,250		$37.56	$0	$197,190	$0	$197,190
	Fencing	LF		1,200		$135.62	$0	$162,738	$0	$162,738
27	Restroom & Docent Space at Education Complex	600 SF- Phase 2, septic, water, power. Assume $600/SF cost. See architect's spreadsheet					**$0**	**$708,000**	**$0**	**$708,000**
							$0	$708,000	$0	$708,000
26	Education Center/Multi-use Facility + Restroom	1,000 SF in Phase 2; Small library, interpretive area, site work, utilities, covered areas. See architect's spreadsheet					**$0**	**$1,115,500**	**$3,023,000**	**$4,138,500**
							$0	$1,115,500	$240,000	$1,355,500
28	Add Interpretive/Classroom (Phase 3)	1,000 SF expansion in Phase 3 (1,500 SF), Add Restroom in Phase 3; 8 stall restroom. See architect's spreadsheet								
							$0	$0		$0
29	Add Gathering Hall/Kitchenette (Phase 3 or 4)	1,000 SF expansion in Phase 4 (1,000 SF); Addition. See architect's spreadsheet								
							$0	$0	$2,783,000	$2,783,000
30	Education Bunkhouse	Overnight Accommodations for Education Center + Restroom; 4 @ 600 sf each, utilities, common bath house, expand in Phase 3- 1,200 sf. See architect's spreadsheet					**$0**	**$1,840,000**	**$1,770,000**	**$3,610,000**
							$0	$1,840,000	$1,770,000	$3,610,000
Subtotal Capital Costs for Education Facilities							**$71,400**	**$6,738,931**	**$6,591,400**	**$13,401,731**

INFRASTUCTURE CAPITAL COSTS

Plan Code	Facility	Background Data / Unit	Phase 1 QTY	Phase 2 QTY	Phase 3 QTY	Unit Price	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	All Phases Total
TRANSPORTATION										
40	**Main Road to North End Rec/Edu District**	**Main access road into park + infrastructure, 24' width; Phase 1: gravel, drainage (2 large culverts), signs Phase 2: asphalt pavement. 3,300 lf x 24' width**					**$523,009**	**$986,436**	**$0**	**$1,509,445**
	Gravel Pavement	SF	79,200			$3.80	$301,035	$0	$0	$301,035
	Asphalt Pavement	SF		79,200		$12.46	$0	$986,436	$0	$986,436
	Culverts	EA	2			$136.08	$272	$0	$0	$272
	Swales	LF	6,600			$33.59	$221,702	$0	$0	$221,702
41	**Spur Road to Research Facility/Camping**	**Gravel only, 20' width, drainage; Parking added in Phase 2 (se 1L above). 600 lf x 20' width**					**$0**	**$57,281**	**$28,776**	**$86,057**
	Gravel Pavement	SF		8,000	4,000	$3.80	$0	$30,408	$15,204	$45,611
	Culverts	EA			1	$136.08	$0	$0	$136	$136

	Swales	LF		800	400	$33.59	$0	$26,873	$13,436	$40,309
42	**Spur Road to Glamping**	**Gravel only, 16' width, drainage; Expand in Phase 2; Phase 1: 350 lf x 16' width. Phase 2:275 lf x 16' width**					**$44,935**	**$35,199**	**$0**	**$80,135**
	Gravel Pavement	SF	5,600	4,400		$3.80	$21,285	$16,724	$0	$38,009
	Culverts	EA	1			$136.08	$136	$0	$0	$136
	Swales	LF	700	550		$33.59	$23,514	$18,475	$0	$41,989
43	**Bus Stops**	**Bayview (Hwy 104) and Stottlemeyer Road (or Bond Road); Coordinate with Kitsap Transit. Allowance for site items, assume Kitsap Transit to provide signs/shelters**					**$0**	**$0**	**$0**	**$0**
	Bus Shelters						**$0**	**$0**	**$0**	**$0**
	Signs						**$0**	**$0**	**$0**	**$0**
44	**Gates- parking lots and roads**	**Multiple- one at every parking lot entry. Assume up to 10; Standard steel- manual (not electronic), swing gates. (6)- 30' width, (4)- 24' width**					**$66,673**	**$0**	**$0**	**$66,673**
	30ft. Wide Steel Gate	EA	6			$7,091.26	$42,548	$0	$0	$42,548
	24ft. Wide Steel Gate	EA	4			$6,031.26	$24,125	$0	$0	$24,125
UTILITIES										
45	**Power**	**Assume solar for North End Rec/Edu District- as needed per structure; Expand in each Phase, bulk of work done in Phase 1. To service all facilities in North End Rec/Edu District**					**$0**	**$0**	**$0**	**$0**
	Solar Panels						**$0**	**$0**	**$0**	**$0**
	Inverter						**$0**	**$0**	**$0**	**$0**
	Distribution and Control						**$0**	**$0**	**$0**	**$0**
46	**Water**	**KPUD waterline under proposed STO route; Expand in each Phase, bulk of work done in Phase 1. Loop off main: 2,000 lf, laterals: 1,600 lf**					**$1,013,792**	**$0**	**$0**	**$1,013,792**
	Fire Line	LF	2,500			$205.76	$514,412	$0	$0	$514,412
	Hydrants	AL	1			$50,000.00	$50,000	$0	$0	$50,000
	Water Line Loop Off Main	LF	2,000			$128.00	$255,999	$0	$0	$255,999
	Laterals	LF	1,600			$105.24	$168,382	$0	$0	$168,382
	Valves	AL	1			$25,000.00	$25,000	$0	$0	$25,000
47	**Comm**	**Possible install under new road or STO spur route to North End Rec/Edu only; Expand in each Phase, bulk of work done in Phase 1. 3,300 lf if run up entry road**					**$0**	**$0**	**$0**	**$0**
	Communications utility	**LF**	**3,300**				**$0**	**$0**	**$0**	**$0**
SERVICES										
48	**Park Host/Ranger Residence**	**1,200 SF, 2 bedrooms, 1 bath, potential modular/green, septic and power; Assume $400/SF cost. 1,200 SF, 2 bedrooms, 1 bath, potential modular/green, septic and power**					**$785,000**	**$0**	**$0**	**$785,000**
	Structure						$785,000	$0	$0	$785,000
49	**Park Maintenance Yard & Shop**	**1,500 SF structure and 15,000 SF gravel yard; Used to store bulk materials, vehicles, maintenance equipment. Phase 1: 7,500 sf gravel yard Phase 2: 7,500 sf gravel yard addition + 1,500 shop (metal pole barn)**					**$91,746**	**$28,507**	**$0**	**$120,253**
	Metal Pole Barn	AL	1			$63,238.50	$63,239	$0	$0	$63,239
	Gravel Paving	SF	7,500	7,500		$3.80	$28,507	$28,507	$0	$57,014
50	**Waste**	**Dumpsters and trash/recycle receptacles at parking areas and trailheads; Dumpsters located at parking lots/facilities only. (10) dumpsters, (50) trash/recycle receptacles**					**$118,623**	**$0**	**$0**	**$118,623**
	Dumpsters	EA	10			$5,226.75	$52,268	$0	$0	$52,268
	Trash / Recycling Receptacles	EA	50			$1,327.10	$66,355	$0	$0	$66,355
SIGNAGE										
51	**Wayfinding Signs**	**Kiosks, orientation, directional, etc. See signage framework section of plan; Kiosks and orientation signs included in #16 above. Allowance for park (sign #'s TBD per signage plan)**					**$20,878**	**$0**	**$0**	**$20,878**
	Park wayfinding Signs	EA	15			$1,391.90	$20,878	$0	$0	$20,878

52	**Interpretive Signs**	**Need to develop Interpretation/Education Program; Allowance for park (sign #'s TBD per signage plan)**					**$26,262**	**$0**	**$0**	**$26,262**
	Park Interpretive Signs	EA	10			$2,626.22	$26,262	$0	$0	$26,262
Subtotal Capital Costs for Infrastructure							**$2,690,918**	**$1,107,423**	**$28,776**	**$3,827,117**

	RESOURCE MANAGEMENT ACTIONS CAPITAL COSTS- see O&M below for ongoing costs									
Action	**Facility**	**Background Data / Unit**	**Phase 1 QTY**	**Phase 2 QTY**	**Phase 3 QTY**	**Unit Price**	**Phase 1 Cost**	**Phase 2 Cost**	**Phase 3 Cost**	**All Phases Total**
--	**Meadow Creation**	**Specific demonstration projects; Use clear cut areas, plug and seed, weed control, no soil amendment. Assume 500,000 sf within park**					**$18,352**	**$18,352**	**$18,352**	**$55,057**
	Till, Weed Control and Seed	SF	166,666.66	166,666.66	166,666.66	$0.11	$18,352	$18,352	$18,352	$55,057
--	**Shoreline Restoration**	**Specific demonstration projects; At water access location- native shrub planting, no soil amendment. Assume 100,000 sf within park along shoreline bank**					**$32,070**	**$32,070**	**$32,070**	**$96,210**
	Native Shrub Planting	SF	33,333.33	33,333.33	33,333.33	$0.96	$32,070	$32,070	$32,070	$96,210
							$0	$0	$0	$0
Subtotal Capital Costs for Education Facilities							**$50,423**	**$50,423**	**$50,423**	**$151,268**

						Cost	**Cost**	**Cost**	**Total Cost**
Subtotal All Capital Costs						**$8,171,138**	**$10,227,357**	**$7,394,416**	**$25,792,911**
Contingency based on master planning detail- 25%						**$2,042,784**	**$2,556,839**	**$1,848,604**	**$6,448,228**
TOTAL DIRECT CAPITAL TRADE COSTS						**$10,213,922**	**$12,784,197**	**$9,243,019**	**$32,241,138**
	Mobilization/Demobilization				6%	$612,835	$767,052	$554,581	**$1,934,468**
					Subtotal	$10,826,758	$13,551,248	$9,797,601	**$34,175,607**
	General Conditions				10%	$1,082,676	$1,355,125	$979,760	**$3,417,561**
					Subtotal	$11,909,433	$14,906,373	$10,777,361	**$37,593,167**
	G. C.'s Overhead & Profit (21% Labor, 10% Materials & Equipment)				15.0%	$1,786,415	$2,235,956	$1,616,604	**$5,638,975**
					Subtotal	$13,695,848	$17,142,329	$12,393,965	**$43,232,142**
	G. C.'s Overhead & Profit on Subcontractors				5%	$625,245.25	$782,584.59	$565,811.44	**$1,973,641**
					Subtotal	$14,321,094	$17,924,914	$12,959,776	**$45,205,784**
	Design Contingency- 25% already included above per Capital Costs				0%	$0.00	$0.00	$0.00	**$0**
					Subtotal	$14,321,094	$17,924,914	$12,959,776	**$45,205,784**
	Bonds and Insurance				(included w/Mob./Demob.)	-	-	-	
					Subtotal	$14,321,094	$17,924,914	$12,959,776	**$45,205,784**
	SUBTOTAL CONSTRUCTION COST; THEORETICAL BID					$14,321,094	$17,924,914	$12,959,776	**$45,205,784**
	Owner Held Construction Contingency				10%	$1,432,109	$1,792,491	$1,295,978	**$4,520,578**
	TOTAL CONSTRUCTION COST WITH OWNER HELD CONSTRUCTION CONTINGENCY					$15,753,203	$19,717,405	$14,255,754	**$49,726,362**
	CM Fee, 3rd Party Inspections, and RE Services				10%	$1,575,320	$1,971,741	$1,425,575	**$4,972,636**
	TOTAL CONSTRUCTION COST INCL. CONSTRUCTION CONTINGENCY & CONSTRUCTION MGT. IN 2022 DOLLARS					$17,328,523	$21,689,146	$15,681,329	**$54,698,998**

INDIRECT COSTS - 2022 Dollars		Phase 1	Phase 2	Phase 3	
Soft costs- planning, policy changes, design, engineering, permitting, project management					
Note: Specific soft costs for each policy, program, and planning action in the recommendations not provided		Cost	Cost	Cost	Total Cost
RECREATIONAL USES/FACILITY INDIRECT COSTS	Assume 45% of Capital Costs (without contingency) from above	$2,411,279	$1,048,762	$325,718	$3,785,758
EDUCATIONAL USES/FACILITY INDIRECT COSTS	Assume 45% of Capital Costs (without contingency) from above	$32,130	$3,032,519	$2,966,130	$6,030,779
INFRASTUCTURE INDIRECT COSTS	Assume 45% of Capital Costs (without contingency) from above	$1,210,913	$498,340	$12,949	$1,722,203
RESOURCE MANAGEMENT INDIRECT COSTS	Assume 45% of Capital Costs (without contingency) from above	$22,690	$22,690	$22,690	$68,070
		$3,677,012	**$4,602,311**	**$3,327,487**	**$11,606,810**

Port Gamble Forest Heritage Park

SiteWorks - Budget-level Cost Estimate - Capital Cost Escalation to Future Dollars

26-Jul-22

		Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	All Phases Total
Escalation (per annum, compounded annually)	4%				
Years to Midpoint of Construction		4	9	14	
@ 4% per		$2,432,560	$7,587,828	$9,482,363	
SUBTOTAL CONSTRUCTION COST; THEORETICAL BID		$16,753,654	$25,512,741	$22,442,139	**$64,708,535**
Construction	10%	$1,675,365	$2,551,274	$2,244,214	**$6,470,853**
TOTAL CONSTRUCTION COST MID 2024 WITH OWNER HELD CONSTRUCTION C(		$18,429,019	$28,064,016	$24,686,353	**$71,179,388**
Party	10%	$1,842,902	$2,806,402	$2,468,635	**$7,117,939**
TOTAL CONSTRUCTION COST INCL. CONSTRUCTION CONTINGENCY & CONSTRUCTION MGT. IN FUTURE DOLLARS		$20,271,921	$30,870,417	$27,154,989	**$78,297,327**

Phase 1 Escalation Calculation				Escalated Cost
2023	2024	2025	2026	
104%	104%	104%	104.00%	
$14,893,937	$15,489,695	$16,109,283	$16,753,654	$2,432,560

Phase 2 Escalation Calculation									Escalated Cost
2023	2024	2025	2026	2027	2028	2029	2030	2031	
104%	104%	104%	104%	104%	104%	104%	104%	104%	
$18,641,910	$19,387,587	$20,163,090	$20,969,614	$21,808,398	$22,680,734	$23,587,964	$24,531,482	$25,512,741	$7,587,828

Phase 3 Escalation Calculation														Escalated Cost
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	
$13,478,167	$14,017,294	$14,577,986	$15,161,105	$15,767,549	$16,398,251	$17,054,181	$17,736,349	$18,445,803	$19,183,635	$19,950,980	$20,749,019	$21,578,980	$22,442,139	$9,482,363

Port Gamble Forest Heritage Park

SiteWorks - Budget-level Operations and Maintenance Costs

26-Jul-22

Resource Management O+M (2022 Dollars)

Restoration/Pre-commercial Thinning	$43,750
Invasive Control	$25,000
Native Tree Planting	$100,000
Enhance and Restore Stream, Wetland, & Upland Buffers	$50,000
Monitor	$25,000
Management/staff	$125,000
Total	$368,750

Escalation Calculation														
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	**2036**	
104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	
$368,750	$383,500	$398,840	$414,794	$431,385	$448,641	$466,586	$485,250	$504,660	$524,846	$545,840	$567,674	$590,381	**$613,996**	**Escalation Total**

Port Gamble Forest Heritage Park

SiteWorks - Budget-level Operations and Maintenance Costs

26-Jul-22

O+M Phase 1 Cost (2022 Dollars)	O+M Phase 2 Cost (2022 Dollars)	O+M Phase 3 Cost (2022 Dollars)
$102,139	$127,842	$92,430

Phase 1 Escalation Calculation				
2023	2024	2025	**2026**	
104%	104%	104%	104.00%	
$106,225	$110,474	$114,893	**$119,488**	**Phase 1 Escalation Total**

Phase 1 + 2 Escalation Calculation									
2023	2024	2025	2026	2027	2028	2029	2030	**2031**	
104%	104%	104%	104%	104%	104%	104%	104%	104%	
$239,180	$248,748	$258,698	$269,045	$279,807	$291,000	$302,640	$314,745	**$327,335**	**Phase 1 +2 Escalation Total**

Phase 1+2+3 Escalation Calculation														
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	**2036**	
104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	
$335,308	$348,720	$362,669	$377,176	$392,263	$407,953	$424,271	$441,242	$458,892	$477,248	$496,338	$516,191	$536,839	**$558,312**	**Phase 1+2+3 Escalation Total**

Regravel Pavement

Subgrade prep			$ 0.45	
Place New Gravel		$ 54.06	$ 1.00	
			$ 1.54	SF

New Gravel Pavement

Excavation		$ 110.04	$ 2.04	
Subgrade prep			$ 0.45	
Place New Gravel			$ 1.10	
			$ 3.80	SF

Soil Conditioning

Fine Grading	0.27	0.27648	$ 0.03	
Compost			$ 1.26	
			$ 1.37	

Plaza Pavement

Excavate		$ 110.04	2.035796045	
Fine Grading	1.83	1.87392	0.208213333	
concrete pavement			17.77212947	
			21.21710718	sf

Rough Grading

RS Means:	$ 5,275.00	$ 5,401.60	$ 0.076	SF

Low Stone Walls

RS Means:	$ 69.38	$ 71.04	$ 188.26	

Fencing

Materials			$ 12.00	
Installation		$ 7.35	$ 7.78	
			$ 20.97	lf

Cart Barns

Shed Structure			$ 8,050.00	
Excavation	$ 110.04	2.035796	$ 456.02	
Place New Gravel Pac	$ 54.06	1.0002021	$ 224.05	
			$ 9,253.87	EA

Tent Site Pads

Total adjustment factor
0.9241877

Material adjustment factor
0.889305816

Installation adjustment factor
0.939662

Fine Grading	1.11	1.13664	0.133870933	SF					
Gravel Trails									
Vegetation Removal	6700	$ 6,860.80	$ 0.16						
Excavation		$ 110.04	$ 2.04						
Fine Grading	1.11	$ 1.14	$ 0.13						
Place New Gravel		$ 54.06	$ 1.00						
Top Aggregates		$ 59.47	$ 0.37						
			$ 3.91	SF					
Soil Conditioning and Seeding									
seeding and soil condi	2.93	3.00032	$ 0.35	SF					
Yurts / Cabins									
Yurt			$ 15,890.00						
Pile footings			$ 2,000.00						
			$ 17,890.00						
Pit Toilets									
Romtec SST Double Vault Restroom Model			$ 65,000.00						
Excavation	49.21	$ 110.04	$ 5,740.13						
Grading	400	$ 0.22	$ 93.58						
Concrete pad and vau	19	$ 1,528.42	$ 30,782.46						
Assembly	360	$ 375.25	$ 67,544.47						
			$ 169,160.64	EA					
Gathering Pavilion									
Romtec Pavilion Model 3012			$ 90,000.00						
Excavation	26.4	$ 119.07	$ 3,332.05						
Grading	994	$ 0.22	$ 232.54						
Concrete Footings	8	$ 1,528.42	$ 12,961.03						
Concrete Pad	864	$ 19.69	$ 18,034.28						
Assembly	360	$ 357.07	$ 64,271.76						
			$ 188,831.68	EA					
Kiosks with Canopy									
Romtec Kiosk Model 3105			$ 22,000.00						
Excavation	3	$ 119.07	$ 378.64						
Concrete Footings	2.67	$ 1,528.42	$ 4,325.75						
Assembly	192	211.23339	$ 21,495.11						
			$ 48,199.50	EA					
Large Kiosk No Roof									
			4975	5149.125	5329.344	5515.871	5708.926928	6051.463	
Excavation	0.5	$ 110.04	$ 55.02						
Concrete Footings	0.5	$ 128.06	$ 64.03						

Installation		4	211.23339	$	844.93					
				$	7,436.37	EA				
Park Interpretive Sign										2022
Large Trail Guide					1418	1467.63	1518.997	1572.162	1627.187615	1724.819
Excavation		0.5	$ 110.04	$	55.02					
Concrete Footings		0.5	$ 128.06	$	64.03					
Installation		3	211.23339	$	633.70					
				$	2,626.22	EA				
Wayfinding sign										
				$	1,391.90					
Pole Barn										
Kit of Parts		1500	18.33	$	31,619.25					
Installation				$	31,619.25					
				$	63,238.50					
Asphalt Pavement										
~~asphalt~~	~~$ 45.79~~			~~$~~	~~5.39~~	SF	$12.46			
Culverts										
Pipe	$ 85.03		$ 71.57	$	71.57					
Crushed stone	$ 54.06		0.0555	$	3.00					
Excavation	$ 110.04		0.48888	$	53.80					
				$	136.08	LF				
Swales										
Excavation	$ 110.04		0.285185	$	31.38					
Fine Grading	$ 0.27		$ 0.28	$	0.31					
				$	33.59	LF				
Nature Play Areas										
Play equipment				$	44,386.32					
Installation				$	25,000.00					
Mulch	$ 15.42		12.976727	$	43,255.76					
				$	143,280.72	EA				
Water Line Main Loop										
Excavation	$ 110.05		0.3259259	$	35.87					
sand bedding	$ 100.20		0.037037	$	3.71					
Pipe	$ 78.73		1	$	78.73					
Backfill	$ 5.53		0.2888889	$	1.60					
Compaction	$ 2.93		0.2888889	$	0.85					
				$	128.00	LF				
Water Line Laterals										

Excavation	$	110.05	0.3259259	$	35.87	
sand bedding	$	100.20	0.037037	$	3.71	
Pipe	$	57.26	1	$	57.26	
Backfill	$	5.53	0.2888889	$	1.60	
Compaction	$	2.93	0.2888889	$	0.85	
				$	105.24	LF

Fire Line						
Excavation	$	110.05	0.3259259	$	35.87	
sand bedding	$	100.20	0.037037	$	3.71	
Pipe	$	152.10	1	$	152.10	
Backfill	$	5.53	0.2888889	$	1.60	
Compaction	$	2.93	0.2888889	$	0.85	
				$	205.76	LF

Chain Link Fence		
8ft CLF	$	135.62

Meadow Creation						
Mow meadow	$	105.62	43560	$	0.00242	
Till Soil	$	105.62	43560	$	0.00485	
Seed				$	0.0300	
Seed Application				$	0.0318	
Preemergent herbicide	$	66.69	$ 3.07	$	0.00307	
Herbicide application				$	0.0318	
				$	0.11011	SF

Native Shrub Planting					
1 Gal Shrubs	$	19.73	4600	$	0.96210

24' Wide Gate					
12FT gate leaf				$	1,500.00
Post and footing				$	500.00
Installation	$	211.23	4	$	844.93
				$	6,031.26

30' Wide Gate					
15FT gate leaf				$	2,000.00
Post and footing				$	500.00
Installation	$	211.23	4	$	844.93
				$	7,091.26

TRAIL COSTS	LF in PGFHP	Miles in PGFHP	PGFHP Capital Unit Price	PGFHP Capital Cost	PGFHP O&M Unit Price	PGFHP O&M Cost	Notes
EXISTING			Per mile		Per mile		
TOTAL EXISTING ROADS	127,593	26.9	NA	$0			
TOTAL EXISTING TRAILS	102,269	19.4	NA	$0			
TOTAL	229,862	46.3		$0		$0	
PROPOSED CHANGES							
TRAIL DECOMMISSION - REMOVED	23,760	4.5	$60,000	$0	NA	$0	
ROAD DECOMMISSION - MINIMAL CHANGE	34,320	6.5	$6,000	$39,000	NA	$0	
CLASS 4 TO 3- RECLASS	17,538	3.3	$45,000	$149,472	NA	$0	
CLASS 3 TO 4- RECLASS	6,335	1.2	$75,000	$89,986	NA	$0	
CLASS 4 TO 5 (STO TRAIL)- RECLASS	35,595	6.7	$0	$0	NA	$0	Cost not included in Master Plan
CLASS 2 TRAILS ADDED- NEW	0	0.0	$0	$0	NA	$0	Already exist in park
CLASS 3 TRAILS ADDED- NEW	41,712	7.9	$150,000	$1,185,000	NA	$0	https://www.americantrails.org/images/documents/Developing-Trail-Systems.pdf
CLASS 4 TRAILS ADDED- NEW	4,026	0.8	$225,000	$171,563	NA	$0	https://www.americantrails.org/images/documents/Developing-Trail-Systems.pdf
TOTAL				$1,635,020		$0	
FINAL TRAIL SYSTEM							
CLASS 5 TRAILS - STO	35,595	6.7	NA	$0	$0	$0	$2,500/mile assumed to be covered by County Public Works
CLASS 4 TRAILS (ALSO USED AS ROADS FOR FOREST MGMT)	76,560	14.5	NA	$0	$1,500	$21,750	https://www.americantrails.org/images/documents/MaintenancePracticesandCostsofRail-Trails.pdf
CLASS 3 TRAILS	118,800	22.5	NA	$0	$1,000	$22,500	https://www.americantrails.org/images/documents/MaintenancePracticesandCostsofRail-Trails.pdf
CLASS 2 TRAILS	5,280	1	NA	$0	$500	$500	https://www.americantrails.org/images/documents/MaintenancePracticesandCostsofRail-Trails.pdf
TOTAL	236,235	22.2		$0		$22,250	

* Costs not included for trails/roads on Rayonier property

Assumptions

TRAIL DECOMMISSION - REMOVED	Existing dirt/gravel surface scarified, minimal soil amendments, native species planting, wood debris laydown, seeding (grass) in open areas
ROAD DECOMMISSION - MINIMAL CHANGE	Existing roads will not be decommissioned like trails, as they could be needed for forest thinning access in the future; however, they will not be part of the official trail system or maintained or forest/veg kept from encroaching over time. Decommission costs would be minimal.
CLASS 4 TO 3- RECLASS	Existing 12' wide gravel/dirt road reduced to 5' width dirt trail: Road edges scarified and reseeded/planted. Trail surfaces that are primarily gravel will have dirt added.
CLASS 3 TO 4- RECLASS	Existing 3-5' wide dirt trails will be widened and gravel base/top course added. Will require vegetation removal on 4' on each side of trail.
CLASS 4 TO 5 (STO TRAIL)- RECLASS	Do not include in estimate as this will be a Public Works project (already approved and under design/engineering).
CLASS 3 TRAILS ADDED- NEW	Vegetation removal, compaction of soil in 3-5' width. Design per USFS construction parameters and specifications. Links/references to these are in report on page 117
CLASS 4 TRAILS ADDED- NEW	Vegetation removal, compaction of soil in 10' width. Will include gravel base course and finer gravel top course. Design per USFS construction parameters and specifications. Links/references to these are in report on page 117

TRAIL DECOMMISSION - REMOVED	**23,760**	LF					
Scarify Existing Soil	285,120	SF	$ 0.00	$ 0.00	$ 1,284.64		
Native Species planting	285,120	SF	$ 1.21	$ 1.21	$ 172,497.60		
Place woody debris	285,120	SF	$ 12,500.00		$ 12,500.00		
Seeding	285,120	SF	$ 2.40	$ 0.27	$ 77,856.77		
					$ 11.78	LF	
CLASS 4 TO 3- RECLASS	**17,538**	LF					
Scarify Existing Soil	122,766	SF	$ 0.00	$ 0.00	$ 553.13		
Native Species planting	122,766	SF	$ 1.21	$ 1.21	$ 74,273.43		
Seeding	122,766	SF	$ 2.40	$ 0.27	$ 33,523.30		
Rough grading	40,881	SF	$ 5,275.00	$ 5,401.60	$ 2,940.389		
Additional Fill	550	CY	$ 109.25	$ 84.99	$ 46,714.94		
					$ 9.55	LF	
CLASS 3 TO 4- RECLASS	**6,335.0**	LF					
Vegetation Removal	50680	SF	$ 6,700.00	$ 6,860.80	$ 7,982.22		
Excavation	63350	SF		$ 110.04	$ 128,967.68		
Fine Grading	63350	SF	$ 1.11	$ 1.14	$ 8,000.68		
Place New Gravel	63350	SF		$ 54.06	$ 63,362.81		
Top Aggregates	63350	SF		$ 59.47	$ 23,209.80		
					$ 38.74	LF	
CLASS 3 TRAILS ADDED- NEW	**41,712.0**	LF					
Vegetation Removal	417,120	SF	$ 6,700.00	$ 6,860.80	$ 65,697.36		
Soil Compaction	208,560	SF	1.11	1.13664	$ 26,339.74		
					$ 2.34	LF	
CLASS 4 TRAILS ADDED- NEW	**4,026.0**	LF					
Vegetation Removal	56364	SF	$ 6,700.00	$ 6,860.80	$ 8,877.46		
Excavation	40260	SF		$ 110.04	$ 81,961.15		
Fine Grading	40260	SF	$ 1.11	$ 1.14	$ 5,084.57		
Place New Gravel	40260	SF		$ 54.06	$ 40,268.14		
Top Aggregates	40260	SF		$ 59.47	$ 14,750.22		
					$ 39.74	LF	

7-2 APPENDIX

REVENUE GENERATION BY FACILITY

Revenue Generation by Facility

This section provides additional information on visitation and market demand, associated revenue potential of the ventures in question, information on operating costs, and relevant comparable facilities in the region. In each concept we explore common operating structures and present revenue and cost estimates from the perspective of the County, taking into account the possibilities of other agreements such as concessionaire or partner organization that would be responsible for operating the facilities.

Education Center / Outdoor Classroom

A brief examination of programs and public facilities that offer environmental education programs to the public across western Washington uncovered nearly 30 comparable programs. This section briefly identifies and characterizes these comparable programs and facilities in order to inform the financial implications of this type of development at Port Gamble Forest Heritage Park. The following table displays the comparable programs identified along with the business structure of the operator.

Table 9: Comparable Environmental Education Programs, Western Washington

Name of Program or Facility	Location	Operator Entity Type				
		Utility / Private Corp.	Non-Profit Corp.	City	Other Gov. Agency	College / Univ.
Adriana Hess Audubon Center	University Place		x			
Camp Long	Seattle			x		
Carkeek Park Environmental Learning Center	Seattle			x		
Cedar River Watershed Education Center	North Bend	x				
Coastal Interpretive Center	Ocean Shores		x			
Discovery Park Environmental Learning Center	Seattle			x		
Dungeness River Audubon Center	Sequim		x			
Feiro Marine Life Center	Port Angeles		x			
Forest Learning Center	Toutle	x				
Island Wood	Bainbridge		x			
Lake Hills Greenbelt Ranger Station	Bellevue			x		
Lewis Creek Park Visitor Center	Bellevue			x		
Marine Life Center	Bellingham	x				
MaST – Marine Science and Technology Center	Des Moines					x
Mercer Slough Environmental Education Center	Bellevue			x		
Nisqually National Wildlife Refuge	Olympia				x	
Nisqually Reach Nature Center	Olympia		x			
North Cascades Environmental Learning Center	Rockport		x			
Northwest Trek Wildlife Park	Eatonville			x		

Name of Program or Facility	Location	Operator Entity Type				
		Utility / Private Corp.	Non-Profit Corp.	City	Other Gov. Agency	College / Univ.
Olympic Natural Research Center	Forks					x
Orkila Outdoor Environmental Education	Seattle		x			
Padilla Bay National Estuarine Research	Mt. Vernon				x	
Port Townsend Marine Science Center	Port Townsend		x			
SEA Discovery Center	Poulsbo					x
Seward Park Environmental & Audubon Center	Seattle		x			
Skagit River Bald Eagle Interpretive Center	Rockport		x			
Stillwaters Environmental Center	Kingston		x			
Tacoma Nature Center	Tacoma			x		
Water Resources Education Center	Vancouver					

As indicated in the above table, the most common structure for an operator of an environmental education facility is as a non-profit corporation (12 of the 28 identified). Often, these operators relied on tax deductible donations from members and the general public to operate their programs as well as build and maintain their facilities. In applying this structure to the Port Gamble Forest Heritage Park site, one potential partnership would be for the County to provide land to a non-profit organization at zero cost or highly reduced rate. The non-profit could then initiate a capital campaign to raise funds for a facility (or facilities) that could then be used to house education programs and possibly an event center. We explore the financial costs and returns of this potential partnership further below.

Municipalities, or agencies within a municipality (e.g. Metro Parks Tacoma) operate 8 of the 28 programs identified. With these types of operating arrangements, the city funds the operation and maintenance of the environmental education programs and facilities, with residual revenue possibly coming in through facility rental income, nominal fees for education program or tours, as well as visitor center / gift shop revenue. It is worth noting that the smallest municipality to fund this type of program or facility is Bellevue, where the Lake Hills Greenbelt Ranger Station, Lewis Creek Park Visitor Center, and Mercer Slough Environmental Education Center (in partnership with the Pacific Science Center) are funded (at least partially) by the city. It is worth noting that the population in Bellevue is 144,400 people, much larger than Port Gamble.

Three programs were identified in Western Washington that are funded through college or universities, including the MaST (Marine Science and Technology Center, Highline College), Olympic Natural Research Center (University of Washington), and SEA Discovery Center (Western Washington University). These programs are geared toward providing research opportunities for graduate and undergraduate programs through the respective university or college, as well as providing education opportunities for local communities. This type of partnership is explored further in the 'Research Facility" section below.

Three programs identified were primarily funded through private corporations or utilities, often with other (non-profit organization) sponsors. These include the Forest Learning Center (Weyerhaeuser in partnership with Rocky Mountain Elk Foundation), Marine Life Center (Port of Bellingham, which is a special purpose municipal corporation), and Cedar River Watershed Education Center (Seattle Public Utilities). In these instances, the environmental education as well as public space provided by the program is in line with the mission of the corporation or utility operating the venture.

The education center / outdoor classroom can serve as a community "gathering place." There are several economic and demography factors that would indicate such a facility at Port Gamble Forest Heritage Park would be used often by local residents, as well as serve non-resident visitors, such as:

- There is a substantial and growing population base in nearby communities of Poulsbo and Bremerton
- There is a significant existing corporate presence in the region, especially in adjacent King County
- The County population is well-educated with high household incomes that are expected to increase faster than state and national averages.[1]
- There is a robust and resilient economic base with low unemployment and steady industry clusters (namely military, federal and defense contractor jobs which make up over 40% of all jobs in the county).
- The ferry infrastructure links the County to the larger economies of Jefferson and King counties. More than half of ridership on the Washington State Ferries originates or ends in Kitsap County (Vleming, 2021).

While it is likely that this type of facility would be popular it is also important to note that these types of ventures are generally *not* financially self-sufficient from revenue generated solely by the earned income components of the programs (with possible exclusion of the event center rentals – explored elsewhere below). The funding to operate youth education programs, interpretive centers and the facilities that house them generally relies on non-profit organizations (and indirectly the individuals, sponsors or partners providing funding through these organizations). One example of this can be found in the Dungeness River Audubon Center (located in Sequim), which is operated as a partnership of the Jamestown S'Klallam Tribe, Olympic Peninsula Audubon Society and National Audubon Society. Their 2020 annual report indicates that 'earned income' and 'gift shop' revenues combined for less than 12 percent of income in 2019 and 2020 ($37,500 annually); whereas fundraising events and donations contributed over 70 percent to their income; grants and festivals accounted for the remainder of income brought in for the center. Total operating costs of the Dungeness Center over this time period were $367,000 to $384,000[2], so the facility was reliant on a legacy fund to make up for the shortcoming of revenues to cover expenses (Dungeness River Audubon Center , 2021). For this broad financial analysis, we conceptualize an arrangement whereby the county and a non-profit organization (and possibly a

[1] Median household income in the County is reported to be $79,624; about 20 percent higher than this category in the United States. 96.2% of residents have a high school degree or higher / 35 % have a bachelor's degree or higher, both of which are higher than the United States (88.6% and 33.1%, respectively)**Invalid source specified.**.

[2] We use this as the range of operating costs for the education center in this analysis

tribal entity) enter into a partnership whereby the County would provide land (through a long-term lease agreement) to build an outdoor classroom and event center facility. The County would not be financially responsible for the capital or operating expenditures of the facility but would receive rental income at a rate of $6,000 to $8,000 per year for five acres ($1,200 to $1,600 per acre).[3]

This scenario presents no financial risk to the County but would have synergies with several other ventures considered below. All financial risk would be on the partners (e.g. a non-profit entity) that would likely need a capital campaign to build the outdoor classroom and education center. This has been estimated by Signal Architecture to be $3.9 million to $4.7 million total.[4] If this capital cost were financed at a rate of between 3 and 7 percent over 25 years the loan payments would amount to $224,000 to $400,000 annually. Thus, the capital campaign for such a facility would need to be able to generate between $300,000 (taking into account the low-end revenue estimate) and $400,000 annually to cover these payments as well as cover operation and maintenance of the facilities.[5]

Multipurpose Event Center

Multipurpose event centers are very popular attractions for both residents and tourists. Event spaces typically earn revenue from facility rentals for weddings or corporate functions but can also be used to for community events including classes, lectures, workshops and more. In this section we consider a basic event center (similar to those provided at state parks in the region) and a more developed event center (similar to those provided by private entities). We also consider different operating arrangements and the implications for revenue to the County.

There are numerous public and private event centers and other facility venues for rent in the area, as described in the table below. Many of these facilities also offer other amenities such as campground / yurt rentals, bunkhouses or gardens to use in conjunction with the facility. Six of these facilities are owned and operated by private entities, four are tribal enterprises, and five are operated by local government agencies. Of note, nine of the 15 comparable facilities offer (or are closely aligned with) an overnight lodging or camping option. In the Port Gamble area, the nearest hotels are located in Kingston (12 miles), Poulsbo (10 miles), or Port Ludlow (12 miles). While this is not necessarily a major limitation for event center rentals, the lack of lodging options nearby does pose additional opportunities for revenue generation from a bunkhouse, lodge, campground or yurt rental concept.

[3] This is in line with the Clallam County lease of land to National Park Service for operation of the nursery facility on Robin Hill in Sequim.

[4] $900,000 to $1.2 million for the outdoor classroom and an additional $3.0 to $3.5 million for the environmental education center

[5] Note: these projections do not consider facility rentals which could be another revenue stream and is explored further in the multipurpose event center concept below.

Table 10: Comparable Event Centers in the Area

Name	Location	Key Facility Components	Educ.	Lodge	Camp / Yurt	Garden / Nursery	Daily Rates
NatureBridge at Olympic	Port Angeles	Dormitory style cabins and historic cabins; retreat center; dining rooms; Inn; view of Lake Crescent.	X	X			
Lake Crescent Lodge	Port Angeles	Outdoor wedding venue on shore of Lake Crescent.		X			
Elwha Klallam Heritage	Port Angeles	Small meeting room, business meeting,		X			$150 to $750
Eberle Barn	Sequim / Dungeness	Rustic barn, former dairy					$3,500 to
Guy Cole Event Center	Sequim	Hall and kitchen					$1,000
Tolt MacDonald	Carnation	Suspension bridge, electricity, BBQ, yurts and			X		$1,400 to
Kitsap Memorial	Poulsbo	Hall, pavilion, caterer's kitchen and hospitality					$1,000 to
Scenic Beach State Park	Seabeck	Kitchen, dressing rooms, outdoor gazebo, picnic			X		$500 to $1,000
Hood Canal Vista Pavilion	Port Gamble	Pavilion, tented terrace, electronics					~$3,000
St. Paul's Church	Port Gamble	Restored church, church bell, remodeled downstairs					~$1,000
Heronswood Garden	Kingston	Botanical garden with plants from all over the world.	X	X		X	
The Point Casino &	Kingston	Dance floor, wet bar		X			$54 per person
Kingston House	Kingston	Lodging, waterfall, lavender farm, pond, walking trails,		X	X	X	$5,000 - $8,500
Red Cedar Farm	Poulsbo	100-year-old restored farm					$2,500 to
Kiana Lodge	Poulsbo	Waterfront property, deep water dock, main lodge, garden atrium		X		X	$1,000 to $5,000

The revenue potential would vary considerably depending on the facility. As such, in the following subsections we consider a basic facility and a more developed, higher end facility.

Facility Rentals – Basic Facility Development

A basic rental facility would have the necessary utilities and function for hosting weddings, corporate retreats and other gatherings, but is not a high-end level of development. It would be similar to the state park facilities in the region.



Wedding and corporate event venue fees at area parks are presented in Table 11. At Tolt MacDonald Park the bridge shelter is a popular wedding venue and rents for $1,400 (alcohol permit is an additional $225). Weddings take over the park and are so popular, they are limited to two per month (Wolski, 2021). This figure is significantly below the private facility rentals in the region as well as the national average wedding venue costs of $10,500 in 2019 (Sims, 2020). This reduced rate is likely due to the level of amenities and hosting services available at these public facilities.

Table 11: Public Facility Rental Fees

Site Name	Location	Wedding Fees
Tolt MacDonald	King County	Bridge Shelter $1,450
Kitsap Memorial State park	Kitsap County	$1,000- $1,900
Scenic Beach State Park	Kitsap County	$500 - $1,000

Development of an event center at Port Gamble would provide the ability to generate revenue for the park for either the county, concessionaire or partner depending on the operating agreement in place for such a facility. We anticipate with the level of development considered in this subsection (comparable to public facilities available nearby) the site could host 36 events (e.g. weddings or corporate events) annually at a rate of $1,500 per event, so the revenue generation considered in this scenario is approximately $54,000 annually. This would have the following implications for the various development options:

- **Non-profit Partner Operator:** Event center rentals could be added as an additional service to the environmental center (discussed above) with minimal operational changes and costs. Specifically, this would likely require some additional staff time to coordinate bookings, cleaning / maintenance of the facility itself, along with additional liability insurance for such events. We anticipate these additional costs would be roughly 20 percent of the gross revenue of the rentals or $10,800 annually. Thus, we'd expect the facility rental to generate an additional $43,000 per year in net revenue. In the scenario where the county has a non-profit partner leasing the land and operating the event center this would be additional revenue to cover operating expenditures identified above.

- **County developed and operated:** In the scenario where the county has developed a basic facility for rentals and is renting it out themselves we estimate that the County could spend between $500,000 and $750,000 in capital expenditures on such a facility and be able to breakeven on the venture. This is calculated from a present value calculation of $43,000 in net revenue annually (after operating expenses) and interest rates of 3 and 7 percent over a 25 year loan term.[6] This level of capital expenditure is much higher than the estimate of $3.0 to $3.5 million provided by Signal Architecture, but may be in line with the level of development seen at other public facilities used as the basis for the rental rates, described above.

- **Concessionaire Operated:** This scenario would not be viable and further is not in line with the level of development and amenities considered in this scenario. This is explored in the high-end level of development considered below.

Facility Rentals – High End

We anticipate the level of development envisioned by Signal Architecture in their design of the event center is more in line with the size, scale and accommodations at several of the private rental facilities in the region. This would likely result in high-end finishes and appealing architectural design.



[6] The SBA 504 loan program has term rates up to 25 years and current interest rates are between 3.2% and 3.7%.

Source: Kiana Lodge (Kiana Lodge, 2021)

While capital costs are higher with this level of development, there is also opportunity for charging higher rental rates to users; likely $2,000 to $8,500 per day depending on the season and amenities included. For purposes of this analysis, we consider a mid-point of this range, or $5,500 per day as the low end; and assume 36 rentals per year (as with the basic facility) to arrive at total gross revenues of around $200,000 annually. At the high end we anticipate $8,000 daily rate and 36 rentals per year, for revenue generation of $288,000. This would have the following implications for the various development partnerships considered:

- **Non-Profit Partner and Operator** – All $200,000 to $288,000 in revenue would be available to use as a revenue stream for the partner / operator of the event center, likely with some additional costs in staffing, maintaining and cleaning the event center. Revenues to the county would be maintained at the agreed upon land lease rate, and none of the financial risk of building the center would be the responsibility of the county. This revenue stream, along with the other fees and other donations could meet the financial needs of operating a multi-use facility.

- **County developed and operated** – Approximately $3.0 to $3.5 million would be expended by the County to develop the multipurpose event center; this is annualized capital of between $172,300 and $201,000 at 3% interest and between $257,400 and $300,000 at 7% interest rates respectively. Given the revenue level described above (approximately $200,000 to $288,000 in facility rentals per year), it would be reasonable to expect the event center could be operated viably if expenses could be kept in the $16,000 to $20,000 per year range (at or below $3 per square foot).[7] We use this cost as the rough estimate of the additional operating costs incurred by the county for operating such a venture. The implication with this cost estimate is that there would not be much additional labor costs to operate the facility, and labor could be supplied from other areas of the county operation to coordinate the event center rentals. Thus, the net operating revenue of the event center to the count is expected to be $174,000 to $268,000 annually. This would indicate the low end of the annual net revenue (accounting for capital costs) would be a loss of $20,000 ($200,000 in sales - $20,000 operating costs - $200,000 annualized capital costs) but the potential high end of the range is a gain of approximately $99,700 annually ($288,000 in sales - $16,000 operating costs – 172,300 annualized capital costs). Also, with this scenario the county would be solely carrying the financial risk of the event center.

- **County owned and Concessionaire Operated** – As with the bullet above, this scenario would require the County to develop the event center at a cost of $3.0 to $3.5 million. However, instead of operating the facility the County would contract with a concessionaire to operate the facility. Typical concessionaire agreements for event centers and lodges would involve around 10 to 20 percent of gross revenue coming back to the owner; which is only $40,000 to $57,600 based on revenue generation modeled above. However, this would result in a large negative net revenue to the county when considering the annualized capital costs (-$115,000 to -

[7] It is worth noting that at the high interest rate (7%) the annualized capital costs are higher than the low end of the expected gross revenue.

$260,000 annually). In the event a concessionaire is selected the contract could include a minimum annual payment, but the rate to cover the annualized capital costs (between $172,300 and $300,000 annually) would likely preclude most concessionaires from bidding, unless there were other (more profitable) operations they would be running simultaneously (e.g. lodge). Based on 20 % concessionaire agreement, the event center would need to achieve sales of over $862,000 annually to meet the annualized capital cost of the low estimate and 3 % interest. This would be equivalent to 157 days annually at $5,500 daily rate or 108 days annually at $8,000 rate. So, this level of occupancy would be possible but is significantly higher than expectations. Further, as in the bullet above the county would carry the significant financial risk of developing the event center in this scenario.

- **Concessionaire owns and operates facility** – This would involve concessionaires / developers fully funding the entitlement, planning and development of conference facilities (likely in concert with the campground or lodging facility). These contracts would involve extended terms (e.g. over 50 years). An example of this is the California Parks Department that issued a Request for Proposal (RFP) for a lodge and conference facility (Parks, 2007). The minimum rental bid identified in the RFP was $200,000 per year or six percent of annual gross sales, whichever was greater. Further, the facility, furnishings and equipment become the property of the owner at the end of the term. Pacifica Companies was awarded this bid, and through a lengthy permitting and construction process they intend to finish construction of the 150-room boutique hotel and conference center in 2024. As mentioned above, this development concept would likely be dependent on developing a lodge or overnight accommodation adjacent to the conference center, as the event center as a standalone enterprise could struggle to be financially viable. If an appropriate concessionaire is identified, it would take all financial risk from the county and provide a minimum revenue stream. For purposes of this analysis, because we're evaluating the event center independent of other ventures, we use the 6% of sales level identified previously to inform the expected net revenues to the county in this scenario. This would equate to approximately $12,000 to $17,280 annually for the county.

Bunkhouses

In the preliminary alternative cost estimates, bunkhouses are considered as part of the research facility, which is discussed further below. An additional revenue stream from these bunkhouses could be overnight lodging, and would be a complementary concept to the event center rental mentioned directly above. One example of a bunkhouse (or dormitory style lodging) option in combination with event center rentals is found in Nature Bridge at Olympic National Park. Each cabin is heated and air conditioned and can accommodate 12 to 20 guests. There are between four and six rooms in each cabin and each room sleeps between two to six guests. Cabins either have their own restroom or are located adjacent to a shared bathhouse (photo below).



Source: Cabins at Nature Bridge property (Nature Bridge at Olympic National Park, 2021)

Additional cabin rental examples are found at Log Cabin at Olympic National Park. Nightly rates vary depending on level of amenities, but it is reasonable to expect sales of around $90 per room for the dormitory style rooms, where the bunkhouse would be adjacent to a shared bath and / or kitchen area. There were four bunkhouses included in the preliminary cost estimate at 600 square feet each (or 2,400 square feet total). We estimate each house could accommodate up to four private rooms, or the revenue generating potential for up to $360 per night per house, or $1,440 over the four bunkhouses total. We further estimate occupancy of 35 % to 65% to derive total revenue generation estimate of between $184,000 and $342,000 annually.

Table 12: Potential Gross Revenue of Bunkhouse Development at Port Gamble

Financial Variable	Low	High
Room Rate	$90	$90
Rooms	16	16
Occupancy Rate (%)	35%	65%
Gross Revenue, 6 bunkhouses	**$184,000**	**$342,000**

As with the event center there are multiple operating arrangements to consider, including:

- **County developed and operated** – Approximately $1.0 to $3.5 million would be expended by the County to develop the bunkhouse. Total operating costs for a facility like this are estimated at $35 per occupied room (Source Strategies Inc, 2018), based on a 2018 feasibility study for

Sleep Inn and MainStay Suite, which may be an overestimate of costs for this dormitory style lodging option. This would equate to between $72,000 and $133,000 annually in operating costs. At this operating expense the bunkhouse would provide $51,000 to $270,000 annually in net operating revenue. The expected capital cost of the bunkhouses are $1.5 to $2.0 million, which represents annual costs of $86,000 to $115,000 when annualized over 25 years at 3 % interest; and $105,000 to $140,000 when annualized at 7 % interest. When accounting for these annualized capital costs ($86,000 to $140,000), the bunkhouse would have total annual net revenues of -$89,000 to $184,000 annually. This wide range from a loss to a significant profit represents the uncertainty and risk of the investment in question.

- **Non-profit / University partner developed and operated-** This scenario is explored further below but would likely result in a land lease rate for the county only.
- **County developed and concessionaire operated** – As with the bullet above, County would develop the event center at a cost of $1.5 to $2.0 million. However, instead of operating the facility the County would contract with a concessionaire to operate the facility. Typical concessionaire agreements for event centers and lodges would be for 20 percent of gross revenue to go to the County; which is only $37,000 to $68,000 based on revenue generation modeled above. However, this would result in a large negative net revenue to the County when considering the annualized capital costs (-$18,000 to -$103,000 annually). In the event a concessionaire is selected the contract could include a minimum annual payment, but the rate to cover the annualized capital costs (between $86,000 and $140,000 annually) would likely preclude most concessionaires from bidding. Based on a 20% concessionaire agreement (of gross sales going to the County), the event center would need to achieve sales of over $430,000 annually to meet the annualized capital cost of the low estimate and 3% interest. This would be equivalent to booking all rooms of the bunkhouse for 299 days annually at $90 per room daily rate. So, this level of occupancy would be possible but is highly unlikely. Further, as in the bullet above the county would carry the significant financial risk of developing the bunkhouse.
- **Concessionaire developed and operated**–Concessionaires / developers fully funding the entitlement, planning and development of conference facilities (likely in concert with the campground or lodging facility). These contracts would involve extended terms (e.g. over 50 years). As mentioned above, this development arrangement would likely be dependent on developing an event center and / or campground and yurt development simultaneously, as the bunkhouse as a standalone enterprise may not provide enough revenue by itself. If an appropriate concessionaire is identified, it would remove all financial risk from the County and provide a minimum revenue stream. For purposes of this analysis, because of evaluating the bunkhouse independent of other ventures, we use the 6% of sales level identified previously to inform the expected net revenues to the County in this scenario. This would equate to approximately $11,000 to $21,000 annually for the County.

Covered Pavilions

Covered pavilions are popular attractions at area parks (Wolski, 2021). Fees at nearby County parks range from $40 to $150 to rent a covered pavilion (see **Table 13**). Larger pavilions can be used for family reunions and office parties and often include additional fees for large groups. For example, at Tolt MacDonald Park, after 100 people, an additional $2 per person is required to use the covered pavilions.

Covered pavilions are booked most weekends but less so during the week at Tolt MacDonald, which is closed during winter months. King County Parks offer an alcohol permit for $225, and picnic shelter rentals would likely be lower if alcohol permits were not offered (Wolski, 2021).

Table 1: County Park Covered Pavilion Rentals

Site Name	Location	Picnic Shelter Fees
King County Parks	King County	Picnic Shelters: $110 to $135 Alcohol Permit Fee: $225
Snohomish County Parks	Snohomish County	$40-$150 Reservation Fee: $11
Kitsap County Parks	Kitsap County	$40 - $60 (for 4 Hours) $25 Administration Fee

Existing Kitsap County Park picnic shelters rent for $65 for smaller pavilions and $85 for larger pavilions (including administration fees) (Kitsap Co, Accessed 2021), which is below comparable area covered pavilion rental rates. This analysis relies on a range of potential rental rates based on the local market with the low estimate assumed to be $85 per day with the high estimate assumed to be $150 per day.

Our projection of covered pavilion rentals is based on Tolt MacDonald Park in King County, Washington where covered pavilions are rented most weekends but less so during the week over the park's operating season (March through October)(Wolski, 2021). Based on these figures, a covered pavilion at Port Gamble Forest Heritage Park would be reserved from 90 to 120 days annually (25 to 33 percent occupancy). In total, this would generate between $7,700 to $18,000 in gross revenue per covered pavilion annually.

Table 2: Potential Gross Revenue of Covered Pavilion Development at Port Gamble

Financial Variable	**Low**	**High**
Covered Pavilion Fee	$85	$150
Occupancy (rental days)	90	120
Gross Revenue	**$7,700**	**$18,000**
Gross Revenue, 3 Pavilions	**$23,000**	**$54,000**

Capital costs to build covered pavilion at Port Gamble are expected to range from $133,000 to $200,000 per pavilion (see Section VII.A above). At this level of cost, annualized capital costs are between $8,000 and $17,000 annually assuming a 3 percent to 7 percent interest rate over 25 years (See **Table 15**). In addition to capital costs, operational costs are a factor in estimating net revenue. A 2015 study presents general operational costs of covered pavilions as roughly $3,000 for small pavilions and $5,000 for medium pavilions[8] (Flyod, Suau, Layton, Maddock, & Bitsura-Meszaros, 2015). Total costs, including capital and operating are estimated at $11,000 to $22,000 per pavilion.

[8] Figures presented here in 2020 dollars, updated from 2015 study year dollars of $2,500 and $4,500.

Table 3: Potential Annualized Costs of Covered Pavilion Development and Operation

Financial Variable	Low	High
Capital Cost	$133,000	$200,000
Annualized Capital Costs	$8,000	$17,000
Annual Operational Costs	$3,000	$5,000
Total Annualized Costs	**$11,000**	**$22,000**
Total Annualized Costs, 3 Pavilions	**$33,000**	**$66,000**

Sources: (Bouma, 2021) and (Flyod, Suau, Layton, Maddock, & Bitsura-Meszaros, 2015)
Note: Annualized costs are based on 25 year loan period and interest rates of 3% (low estimate) to 7% (high estimate.

As identified above (**Table 14**), the total revenue generation of the covered pavilion rentals is expected to be between $7,700 and $18,000 annually per pavilion (or $23,000 and $54,000 annually). When compared against the total annualized costs of between $11,000 and $22,000 we find there is potential for the covered pavilions to generate net revenue (high revenue and low-cost ranges) but the most likely outcome is a breakeven condition or slightly negative net revenue from this facility.

In order for covered pavilions to 'break even' (where revenue generation is more than annualized expenses), rental rates would need to range from $122 to $244 per day assuming occupancy of 90 days annually. Assuming 120 annual rentals, rates would need to range from $92 for the low estimate to $183 to break even. These figures are presented in the table below.

Table 4: Break Even Analysis for Covered Pavilion Occupancy

Financial Variable	Low	High
Annualized Capital Costs	$8,000	$17,000
Annual Operational Costs	$3,000	$5,000
Total Annualized Costs	$11,000	$22,000
Break Even Rate assuming 90 annual rentals	$122	$244
Break Even Rate assuming 120 annual rentals	$92	$183

There are several operating agreements that could be implemented or considered for pavilion rentals. In the event an operating partner or concessionaire is already operating another facility in the Park (e.g. education center, multipurpose event center, or bunkhouses) then it would be reasonable to include the operation of the covered pavilions with their operating agreement, as it is likely to be a breakeven endeavor for whoever takes on the financial responsibility of this concept. If not included in the operating agreement with a partner or concessionaire this could be undertaken as a County program.

Yurts

Washington State faces a systemic undersupply of yurts and cabins for camping (Washington State Recreation and Conservation Office, 2019) even with the existing supply of private and public yurts in the region. There are several resorts and retreats in the region that provide high-end yurts and which advertise themselves as luxury camping or glamping vacations. Two such private resorts are Doe Bay and Lakedale. At Doe Bay Resort and Retreat yurt rentals start at $90 per night for two people (and $20 for each additional guest) and require a 5-night minimum stay, while at Lakedale nightly costs are $325 per night (Sutcliffe, 2021). These are commercial operations that are likely generating sufficient net

revenues to warrant their continued operation. As described in the table below, there are also several yurts on public lands in the region. The nightly rates charged (and the associated net revenues of such venues), varies widely based on the amenities provided, size, structures built, and other features. We would expect the level of amenities at Port Gamble Forest Heritage Park yurts to be similar to the amenities at other public lands in the region, with comparable nightly fees ranging from $55 to $90.

Table 17: Yurt Recreational Opportunities at Public Parks in Washington

Site Name	Location	Driving Time from Downtown Seattle	Yurt Fees (Nightly)
Grayland Beach State Park	Pacific County	132	$69 - $89
Kanaskat - Palmer State Park	King County	37	$50 - $69
Pacific Beach State Park	Grays Harbor County	197	$59 - $84
Seaquest State Park	Cowlitz County	121	$55 - $79
Twin Harbors State Park	Grays Harbor County	127	$55 - $79
Kayak Point Park	Snohomish County	47	$70 - $95
River Meadows Park	Snohomish County	52	$60
Tolt MacDonald Park	King County	27	$55-$65

In order to estimate potential yurt occupancy, we rely on two sources. A 2007 California yurt feasibility study, which details yurt occupancy rates at five California yurt campgrounds, reported an average of 146 nights occupancy per yurt annually (Applied Development Economics, 2007). The second source is data provided by Tolt MacDonald Park in King County, Washington, which indicated an average occupancy of 210 nights occupancy per year per yurt (Wolski, 2021). Yurt rentals in the Tolt MacDonald Park are sold out all weekends and most weekdays over their operational months (March 1 through October, 31). Occupancy figures are significantly higher than those estimated for traditional campsites, which is likely due to the general shortage of yurt sites across Washington State (Washington State Recreation and Conservation Office, 2019). Based on the available data, this analysis estimates annual occupancy of between 150 and 200 nights annually per yurt.

Given the potential yurt nightly fee and occupancy estimates described above, we estimate the potential annual gross revenue from yurts at Port Gamble Forest Heritage Park to range from $8,000 to $18,000 per yurt as shown in **Table 18**.

Table 5: Potential Gross Revenue of Yurt Development at Port Gamble

Financial Variable	Low	High
Yurt Nightly Fee	$50	$90
Yurt Occupancy (nights)	150	200
Gross Revenue, per Yurt	**$8,000**	**$18,000**
Gross Revenue, 5 Yurts	$40,000	$90,000
Gross Revenue 10 Yurts	$80,000	$180,000

Capital cost to build a yurt range from $11,500 to $44,000 per individual yurt site. These costs include labor, material and site preparation (Home Advisor, Accessed 2021). A yurt feasibility study evaluating

yurt development in California found development costs consistent within this range, at $41,700[9] per yurt (Applied Development Economics, 2007).

Thus, annualized capital costs range from $1,000 to $3,000 per yurt at 3% interest rate (See table above) to $4,000 assuming 7% interest. A yurt feasibility study conducted in California estimates operational costs of roughly $1,000[10] per yurt (Applied Development Economics, 2007). This estimate covers maintenance, utilities, long term maintenance and repairs, a reserve for unforeseen maintenance costs, and marketing. Thus, each yurt developed in Port Gamble Forest Heritage Park is expected to have a total annual cost of between $2,000 and $5,000.

Table 6: Potential Annualized Costs of yurt Development and Operation at Port Gamble, per Yurt

Financial Variable	Low	High
Capital Cost	$11,500	$44,000
Annualized Capital Costs	$1,000	$4,000
Annual Operational Costs	$1,000	$1,000
Total Annualized Costs	**$2,000**	**$5,000**

Source: (Home Advisor, Accessed 2021) (Applied Development Economics, 2007)
Note: Annualized costs are based on 25 year loan period and interest rates of 3% (low estimate) to 7% (high estimate.

Given the estimates of revenues and costs described above, we expect 5 to 10 yurts developed at Port Gamble Forest Heritage Park could generate total net revenue of $30,000 to $140,000 annually. These figures are presented in the table below.

Table 20: Estimated Net Revenue of Yurt Development at Port Gamble

Financial Variable	Low	High
Annualized Capital Costs	$1,000	$3,000
Annual Operational Costs	$1,000	$1,000
Total Annualized Costs	$2,000	$4,000
Campsite Fee	$50	$90
Campsite Occupancy (nights)	150	200
Total Gross Revenue	$8,000	$18,000
Net Revenue, per yurt	**$6,000**	**$14,000**
Net Revenue, 5 yurts	**$30,000**	**$70,000**
Net Revenue, 10 yurts	**$60,000**	**$140,000**

Given these assumptions we can also test for what occupancy and rental rates would need to be achieved in order for the yurt concept to break even, whereby annual income would equal annualized expenses. We find that, assuming occupancy of 150 nights per year, nightly rates would need to range from $14 to $33 (depending on interest rate employed in the capital cost estimate). At 200 occupancy nights annually, nightly rates would need to range from $10 to $25 to generate a positive net revenue. It is important to note that these breakeven nightly fees are significantly lower than the campsite

[9] Figure presented here in 2020 dollars, updated from 2007 study year dollars of $34,671.
[10] Figure presented here rounded in 2020 dollars, updated from 2007 study year dollars of $860.

breakeven nightly fees simply due to the significantly larger projected occupancy at yurts versus campsites.

There are several different operating agreements that could be explored in operating the yurt rentals. The above assumptions would be relevant to the situation where the county develops and operates the yurt program, however, other arrangements are reasonable to consider, including:

- **County Developed and Concessionaire Operated –** In this scenario the county would develop the yurts but hire a concessionaire to operate the program, likely in concert with the bunkhouse, and possibly event center. As mentioned previously, in these types of operating agreements the county typically would generate 20 % of the gross revenue of the yurt rentals, which would be $16,000 to $36,000 (20% of between $80,000 and $180,000). When considering the annualized capital costs of these yurts, the net revenue generated to the county in this scenario would be between $3,000 and $26,000.
- **Concessionaire Developed and Operated** – This would involve concessionaires / developers fully funding the entitlement, planning and development of conference facilities (likely in concert with the campground or lodging facility). These contracts would involve extended terms (e.g. over 50 years). As mentioned above, this development concept would likely be dependent on developing an event center and / or campground and bunkhouse development simultaneously. If an appropriate concessionaire is identified, it would take all financial risk from the county and provide a minimum revenue stream. For purposes of this analysis, because we're evaluating the bunkhouse independent of other ventures, we use the 6% of sales level identified previously to inform the expected net revenues to the county in this scenario. This would equate to approximately $2,400 to $10,800 annually for the county.

Campground

The Kitsap County Parks Department does not currently offer overnight camping, but overnight camping is available within the region including Kitsap Memorial State Park which hosted over 12,000 overnight visitors in 2020 (Washington State Parks, 2020). The fees charged at these State Park campgrounds informs the estimate of camping fees used in this analysis (See **Table 21**). Fees for primitive campsites are modeled at $12 per night regardless of season, whereas standard campsites (with bath and shower facilities, water, and fire rings) range from $20 to $37 per campsite based on season.

Table 7: Fees at Washington State Park Campgrounds

Classification	Peak Season	Shoulder Season	Winter Season
Primitive Campsites	$12	$12	$12
Standard Campsites	$27-$37	$20-$30	$20

Source: (Washington State Park, Accessed 2021)

Capital cost to build a private campground range from $20,000 to $25,000 per individual campsite; or $1.6 million to $2 million for 80 standard sites (see Section VII.A above). These capital costs are expected to include multiple restrooms and water spigots to service the campground, as well as individual picnic tables and fire rings for each site. Annualized capital costs range from $1,100 to $2,100 per campsite at a 3% to 7% interest rate over 25 years (See **Table 22**).

In addition to capital costs, operational costs are a factor in estimating net revenue. A similar campsite feasibility study estimates operational costs ranging from $10,700 to $16,500 per campground (Design Workshop, 2013). Campground operational costs are assumed to be consistent regardless of the number of campsites (between 12 and 35), which translates to roughly $500 to $1,400 per standard campsite in current dollars. **Table 21** presents the potential total annual costs of campsite development and operation

Table 8: Potential Annualized Costs of Campsite Development and Operation, per Campsite

Financial Variable	Low	High
Campsite Capital Cost	$20,000	$25,000
Annualized Capital Costs	$1,100	$2,100
Annual Operational Costs	$500	$1,400
Total Annualized Costs	**$1,600**	**$3,500**

Note: Annualized costs are based on a 25 year pay-back period and interest rate of 3% (low estimate) and 7% (high estimate).

To estimate the potential revenue if campsites are developed at Port Gamble, we utilize Washington State Parks standard campsite fees of between $20 and $37 per night (Washington State Park, Accessed 2021). Campsite occupancy is assumed to range from 55 to 120 nights annually (Design Workshop, 2013). Thus, total gross revenue generated by each potential campsites is expected to be between $1,100 and $4,440 annually. The Port Gamble Forest Heritage Park potential campground development may include 80 standard campsites (see Section VII.A above). In total, gross revenue generated by the proposed Port Gamble Forest Heritage Park campground is expected to be between $88,000 and $355,000 annually.

Table 9: Potential Gross Revenue of Campsite Development at Port Gamble

Financial Variable	Low	High
Campsite Occupancy (nights)	55	120
Campsite Fee (nightly)	$20	$37
Potential Annual Gross Revenue, per Campsite	$1,100	$4,440
Potential Total Annual Gross Revenue, 80 Campsites	$88,000	$355,000

Source: (Washington State Park, Accessed 2021), (Design Workshop, 2013)

The net revenue generation potential of campsites relies on the projected costs and revenue associated with the development and operation of campsites. For the high estimate analysis, the breakeven nightly rate assuming 120 occupancy nights annually of $23 falls far below the high-end State Park nightly rate of $37, generating a large positive net revenue figure of $900 annually per campsite. Over the 80 proposed campsites at Port Gamble Forest Heritage Park, the total net revenue would range from -$40,000 to $72,000 annually, as presented in the table below. It is important to note that these estimates present a range of potential revenue generation capabilities, and the actual net revenue performance of the campground would likely be somewhere in the middle.

Table 10: Net Revenue of Campground development at Port Gamble

Financial Variable	Low	High
Total Annualized Costs	$1,600	$3,500

Total Gross Revenue	$1,100	$4,440
Net Revenue, per Campsite	($500)	$900
Total Net Revenue, 80 campsites	($40,000)	$72,000

Note: Figures may not sum due to rounding.

In order for Port Gamble Forest Heritage Park campsites to breakeven, nightly rates would need to range from $29 for the low estimate to $51 for the high estimate assuming occupancy of 55 nights annually to generate a positive net revenue. Assuming 120 occupancy nights annually, nightly rates would need to range from $13 for the low estimate to $23 for the high estimate to generate a positive net revenue. These figures are presented in the table below.

Table 25: Break Even Analysis for Campsite Occupancy

Financial Variable	Low	High
Annualized Capital Costs	$1,100	$2,100
Annual Operational Costs	$500	$1,400
Total Annualized Costs	$1,600	$3,500
Break Even Nightly Rate assuming 55 Occupancy Nights Annually	$29	$64
Break Even Nightly Rate assuming 120 Occupancy Nights Annually	$13	$29

There are several development options the County could consider in developing and operating the campsite. We identify a few of them below, along with implications of financial risk and returns expected by the County and concessionaire.

- **County Develops and Operates**: County costs of development are expected to be $1.6 to $2.0 million for an 80-site campground. The financial analysis indicates this investment would have a chance to generate $48,000 to $243,000 per year in net operating income (low to high end of net operating revenue only, without considering the annualized capital costs). With the low end of this range the investment could not pay the annualized capital costs. However, the high end of this range would provide $72,000 annually in net revenue to the county after paying an annualized capital cost.

- **County Develops and Concessionaire Operates**: In this scenario the county would expend $1.6 to $2.0 million, but likely receive only a portion of the campground fees in return. Typical concessionaire agreements involve a set percentage (e.g. 20 percent) of gross sales with a minimum annual amount. This would equate to revenue to the county of between $8,000 and $36,000. However, this is far lower than the expected annualized capital costs of $128,000 to $280,000 annually, and would result in a net revenue (after accounting for capital costs) of between -$272,000 and -$92,000 annually.

  In order to pay back the annualized capital costs the county would need to recoup between 50 percent (on high end) and 100 percent (on low end) of the gross sales in order for this scenario to be viable. While it is unlikely this would be a profitable enterprise for the county it may be possible to find a concessionaire to provide the minimum amount needed to recoup development costs of the county, if the concessionaire would also be responsible for operating other, likely more profitable ventures, within the park (e.g. yurt rental or bunkhouse).

- **Concessionaire Develops and Operates**: As with the enterprises described above, a concessionaire could be found to both develop and operate the campground facility. The operating agreement would likely involve a lower percentage of gross revenue (around 6%), and smaller minimum payment, than if the county were to develop the campground itself. Further, the concessionaire would likely expect a long term agreement to be in place prior to any development occurring (e.g. 25 or 50 year term). In this scenario the county would have no financial risk in the venture, but the financial returns would also likely have the shortest ceiling, relative to the other scenarios considered. Specifically, for this scenario we model revenue to the county at 6% of sales, or between $5,300 and $21,100 annually.

Adventure Tree Course

Numerous entities in the greater Seattle metropolitan area provide tree courses and ziplining opportunities (including High Trek Adventures, Bellevue Zip Tours, and Soaring Eagle Zip Line). These venues provide multiple attractions including water parks, ropes courses, axe throwing, mini-golf, laser tag, etc. Regional ziplining and tree course venues are summarized in the table below. Zipline pricing varies by location from a $5 zipline add-on with $42.99 park entry fee at Soaring Eagle Zip Line to $85 at Bellevue Zip Tours for adult riders. According to one survey of 213 zipline/canopy tours in the U.S. and Canada, the average ticket price was $87 (range of $39 - $499) (Smith, 2015). All courses summarized in the table below are private businesses and are not located on public lands.

Table 11: Zipline and Tree Courses in the Region

Site Name	Location	Amenities	Fees
High Trek Adventures	Everett, WA	Largest ropes course with ziplines in the PNW, mini golf, tactical laser tag, and axe throwing.	$50 for one hour ($10 discount for off peak times) $60 for two hours ($10 discount for off peak times) Kids course: $35 for 1-hour Junior zipline: $15
Bellevue Zip Tours	Bellevue, WA	Seven Zip Lines Two Suspension Bridge Two Short Hikes	Adult Rider:$85 Youth Rider: $70 Youth Rider: $70
Soaring Eagle Zip Line	Federal Way, WA	The Soaring Eagle Zip Line is a paid attraction at the Wild Waves Theme & Water Park.	Park admissions $42.99 plus $5 for the Zip Line ride Park admissions $26.99 for seniors and children

The costs to operate a zipline would also vary widely depending on the number of lines or complexity of the ropes course. Ongoing operational costs of ziplines primarily involves training staff and routine maintenance. One feasibility study for a zipline business estimated that operating the zipline would cost $106,000 to $235,000 annually in the first five years of operation (Olaker, 2015). The zipline was assumed to serve about 20,000 customers per year. Assuming an average ticket price of approximately $50, a zipline serving 20,000 customers would have revenues of $1 million. Even with an annual

operating cost of $235,000, this would translate into annual operating revenues of approximately $750,000.

Fort Tuthill County Park in Coconino County, Arizona, features an Adventure Park with a zip line and tree ropes course built and operated by an outside company, FLG X. The Park charges $58 for adults and $29 for children for the adventure course and $58 for the adventure zipline (Flagstaff Extreme Adventure Course, Accessed 2021). Fort Tuthill County Park receives 13 percent of gross revenue from FLG X, which equated to $13,502 in the month of July, 2021 alone. Assuming that visitation is relatively constant over the 9 months it operators, the Park receives roughly $122,000 in annual revenue. The agreement with the concessioner has a minimum monthly guaranteed revenue of $5,400, which over 9 months would generate $49,000 in revenue. This indicates potential high revenue to the County from a tree adventure and zipline course.

At Port Gamble Forest Heritage Park, development of an adventure tree course is expected to cost roughly $1 million in capital costs (see Section VII.A above). The only operational structure considered in this analysis for the adventure is concessioner developed and operated. Thus, the development of an adventure tree course is not expected to result in any direct capital or operational costs for the County.

Revenue to the County from an adventure tree course depends on admissions price, visitation numbers, and the agreement with the concessioner. Assuming operations, prices, and demand at Port Gamble Forest Heritage Park are similar to those at Fort Tuthill County Park, then with a similar concessionaire agreement the annual net revenue to the County would be expected to range from $49,000 to $122,000 for an adventure tree course.

Trail and Outdoor Events

Outdoor events including concerts, races, and festivals can generate by 'renting' the park and, paying the County a percentage of revenue. At Tolt MacDonald Park, the Snoqualmie Valley ½ marathon and Beat the Blerch Races are revenue generators, with the park receiving a percentage of the race sales. In 2021, the Snoqualmie Valley ½ marathon had roughly 800 racers paying between $41 and $66, generating an estimated $7,000 to $9,000 for the park (assumed at 15 percent to 20 percent[11]). Beat the Blerch race has significantly higher participation rates, generating an estimated $30,000 to $40,000 for the park. Tolt MacDonald also hosts the Timber Outdoor music festival, a three-day event, which generates $10,000 to $11,000, which was reported to be below market price (Wolski, 2021). Though trail and outdoor event offerings are park specific and may take years to create and grow, we rely on Tolt MacDonald events to generate estimates for this analysis. Thus, potential revenue due to trail and outdoor events is estimated at between $0 and $60,000, with the higher revenue potential possible in future years. As these events are expected to be concessioner operated, no direct operational costs are expected.

Native Plant Nursery

Native plant nurseries have experienced growth in the past decade due to increasing attention to drought tolerant and native plant gardening by homeowners, along with regulations that require federal agencies and developers to incorporate native plants into rehabilitation and landscape planning

[11] Figures are based on personal communication with Helen Wolski of King County Parks (Wolski, 2021).

projects. There are several native plant nurseries in the region that serve a variety of functions, three of these nurseries are highlighted below:

- **Matt Albright Native Plant Center,** on Robin Hill in Sequim, is owned and operated by the National Park Service to assist in restoration of plant communities around the Olympic National Park. Through this program, approximately 50 volunteers assist National Park Service staff (4 to 7 employees depending on the season) and partners with various aspects of plant propagation and care, and replanting of disturbed areas (National Parks Service, 2021). The nursery facilities were expanded and moved to Clallam County property in 2008 to accommodate additional room needed to establish plants for the Elwha Dam removal project which began in 2011. The facilities include a 2,100 square foot greenhouse[12], a small office complex, and approximately 1-acre outdoor growing area (Reinwald, 2021). The National Park Service entered into a 10-year lease of the 5 acre parcel from Clallam County, with two optional five-year extensions, at a rate of $6,000 per year ($1,200 per acre) (Clallam County, 2008) (Urbani de la Paz, 2009).



- **Four Corners Nursery,** in Whatcom County, is a wholesale grower of native plants, operating on 80 acres with 40 acres under production currently (Four Corners Nursery, 2021). The nursery employs 25 people and has sales of approximately $1.2 million (Manta, 2021).

Source: (Four Corners Nursery, 2021)



- **Briggs Nursery,** in Elma, consists of 400 acres with 140 of these in production currently. The nursery also contains 600 greenhouses including a 52,000 square foot micropropagation laboratory and initiation greenhouse (Briggs Nursery, 2021). Briggs was purchased by Sidhu Nursery in 2013 for $12 million (Beytes, 2013) ; from which we can estimate the annual sales were approximately $8 million at the time.[13]

Source: (Briggs Nursery, 2021)

The Matt Albright Native Plant Center is the only example identified of a native plant nursery operating on leased property. In this situation, the lease agreement is on a per acre basis, and the lessor is responsible for development costs associated with the nursery. In addition to the nurseries listed here, there are other private operations such as Heronswood and Kingston House that operate as retail nurseries but primarily supply larger gardens that are then used in events such as weddings (discussed above).

In terms of site-specific attributes, availability of reliable, high-quality water is the number one factor to consider in siting a native plant nursery (U.S. Forest Service, 2009). According to a native plant nursery

[12] NPS spent $358,000 building this greenhouse through a contract to Northcon Construction of Hayden Idaho in 2009 (Urbani de la Paz, 2009).

[13] This estimate assumes a 10 percent net operating profit and a capitalization rate of 15%.

guide from the US Forest Service, “water is the most important biological factor controlling plant growth, so the quantity and especially the quality of irrigation water are critical to growing nursery plants” (U.S. Forest Service, 2012). Even though native plants tend to be drought tolerant when planted in the garden, they can quickly become stressed by drought, and losing plants to drought is too risky considering the financial investment required in native nursery plants (Sanders, 2017). Gentle topography is ideal, and easy access to the nursery by staff and clients is also important for economically viable native nursery (U.S. Forest Service, 2009).

In terms of land requirements, the average sized nursery in Washington State during the last US Census of Agriculture (2017) was 16 acres in the open and ¾ of an acre under glass (greenhouse), which is on the smaller end of the range presented in the regional examples above. Further, US Department of Agriculture statistics indicate there were $145.7 million in sales across 443 nurseries (average of $328,800 per nursery) (NASS, 2021).

Based on four acres of open field production and a small (2,000 square foot) greenhouse, a native plant nursery could produce between $120,000 to $230,000 in gross revenue per year (this is equivalent to $30,000 to $57,500 per acre annually, comparable to sales per area in production in the nursery examples identified above). Further, we anticipate 75% of revenue would be spent on labor costs (approximately 2 - 4 full time equivalent positions), and another 10 percent of revenue would be spent on supplies and materials (Allen, 2018). The preliminary cost estimates identified a capital cost of between $300,000 and $500,000 which would equal $17,200 to $29,000 annually at a 3% interest rate; and $25,700 to $43,000 annually at a 7% interest rate, over 25 years. With these assumptions the nursery concept is viable with loan rates of 3% for capital costs, and relatively low lease rates for the land. The lease revenue to the county, in this development scenario, would be approximately $6,000 to $8,000 annually (similar to the Matt Albright Native Plant Center lease with Clallam County).

Table 12: Net Revenue Generation Potential, Annual $, Native Plant Nursery

Financial Variable	**Low**	**High**
Gross Revenue	$120,000	$230,000
Annual Labor Costs	$90,000	$172,500
Annual Material Costs	$12,000	$23,000
Net Operating Revenue (or Cost)	**$18,000**	**$34,500**
Capital Costs	$300,000	$500,000
Annualized Capital Costs (3% interest, 25 years)	$17,300	$28,700
Annualized Capital Costs (7% interest, 25 years)	$25,800	$43,000

Since the 1980’s, policies regarding the use of native plant materials have strengthened. Establishment of national policies on the use of and need for native plant materials has provided direction for further development of federal and state native plant policies. Policies have also made available funding needed to develop various native plant programs. With an increasing amount of research emphasizing the importance of genetic considerations of these native plant materials, agencies have begun to recognize the value of using locally-adapted plant materials when vegetating federal and state lands (Lynn, 2007).

Burned Area Emergency Response Program: BAER serves most of the federal land management agencies and assists with the emergency stabilization measures required following fires when help is requested by local jurisdictional units. BAER teams provide recommendations on where reseeding is needed and recommend seeding mix compositions. Funding is provided for the first post-fire year, with amounts depending on budgets and annual wildfire activity.

Department of Transportation: DOT allots funds for the National highway System through the Federal Highway Administration (FHWA) to state transportation departments based on proposals for interstate, state, municipal and county highway construction or upgrades. Recent highway bills have passed that require or encourage state recipients of federal dollars to plant native plants in conjunction with road construction. USDOT is the primary contact for advice on pollinators and vegetation management for state recipients of federal highway funds. Guidance is provided in publications, including: Roadside Use of Native Plants, Roadside Weed Management, Vegetation Management: An Ecoregional Approach, and Pollinators and Roadsides: Best Management Practices for Managers and Decision Makers.

Environmental Protection Agency: EPA develops and enforces regulations to implement environmental laws and sets national standards that states and tribes enforce. The EPA generates and disseminates scientific information through grants, research, partnerships, education, and publications, and it includes restoration activities in pollution abatement programs, wetland mitigations, Superfund cleanup, and related programs. Stormwater construction project permits, for example, require sites be restored with native vegetation to a uniform plant coverage of 70 percent of the site. The Clean Water Act provides funding for stream and wetland restorations, which totaled $165.4 million in 2019.

Natural Resources Conservation Service Program: NRCS aids individuals or groups in developing plans for conserving natural resources and sustaining agricultural production on non-federal lands. One of the federal assistance programs administered by NRCS is the Conservation Reserve Program, which incentivizes farmers to take marginal cropland out of production for 10 to 15 years. The use of native species is not required, but an emphasis on native plants increases the likelihood of receiving fundings. This program and others in the Farm Bill are drivers of seed, and plant demand, by private landowners across the country.

Research Facility

University researchers contribute basic and applied science to support the use of native plants and seed, forestry science, bird and wildlife science, and other environmental issues, often working in tandem with state, federal and NGO partners to answer the most pressing questions in such areas. With increasing focus and interest in restoration science, the number of programs preparing students to fill these positions is growing, and efforts are ongoing to increase the number of higher level education and training programs across the United States. In the immediate area this includes:

- Olympic Natural Resource center (operated by University of Washington) in Forks
- Olympic College in Bremerton
- Western Washington University – Huxley College of the Environment in Bellingham

A research facility on the park property would have synergies with the education center, multipurpose event center, bunkhouses, native plant nursery, and likely other development concepts considered. The preliminary cost estimate identified a research facility would cost between $1.75 million and $2.0

million to construct. For purposes of this analysis we assume a research facility would be developed in partnership with an educational institutions at no net cost and no net revenues to the County.

Miscellaneous:

Other events and offerings may bring revenue to the Park with little operational or capital expenditures. One such offering is filming permits. Area park districts including King and Snohomish County parks offer such permits for between $400 to $450 (half day) and $900 (full day) for filming access to the park. As it is difficult to forecast popularity of the Park for filming, no revenue estimates are generated here.

While not raised as a desired option, guided horseback rides may also have net revenue generation potential at the park. Many ranches in Washington State offer guided horseback rides, especially in Central Washington. Ranches often offer guided horseback rides by the hour or half or full day rides on trails with prices starting from $55 to 75 for one hour, $95 to $140 for 2 hours, and up to $285 for a full day (see **Table 28**). Ranches and stables in the area around Port Gamble do not currently offer guided horseback rides, though they often receive inquiries into guided horseback ride opportunities, demonstrating existing demand (Gelderman, 2021).

Table 13: Selected Guided Horseback Rides in Washington State

Ranch/Company Name	Location	Cost for Guided Ride (per person)
Three Peaks Outfitters LLC	Cle Elum, WA	Half Day: $200
Misty Acres	Ravensdale, WA	One Hour: $70
Equine Escapes	Roy, WA	One Hour: $65
Vashon Westside Stables	Vashon, WA	One Hour: $60
Pets Galore Horse Rides	Olalla, WA	One Hour: $70
Red Hawk Stables	Sequim, WA	One Hour: $75
Monroe Farms	Snohomish, WA	One Hour: $55
Icicle Outfitters and Guides	Leavenworth, WA	Half Day: $140
Eco River Ranch	Enumclaw, WA	One Hour: $60

Guided horseback rides at Port Gamble is analyzed utilizing a concessioner model. Under this model a secondary party will provide the experience, bearing all associated costs, and in turn, the County receives a percentage of gross receipts. This model requires little to no capital infrastructure with the horses boarded elsewhere. Additionally, operating expenses would be the responsibility of the concessionaire. Structuring such an agreement with an existing area ranch/stable would be ideal, and Sandmar Stables is interested in facilitating such a connection.

This analysis assumes roughly 300 and 850 guided horseback rides annually[14], at a price of between $100 and $140 per rider (based on specific ride length). With these assumptions, the County could expect to generate between $6,000 and $24,000 in net revenue concessioner fees annually.

Disc golf is a popular attraction at many area parks and courses. Multiple disc golf courses in the region are maintained by West Sound Disc Golf Association, which is a 501c3 nonprofit volunteer organization that promotes disc golf around the West Puget Sound region. The nonprofit provides course

[14] This figure is based on an operation with three to five horses, each giving four to five rides a week over the course of 6 to 8 months a year. Figures are based on personal communication with Julie Gelderman.

maintenance at multiple club-maintained courses in Kitsap County including NAD Park, Van Zee Park, and Kitsap Fairgrounds (West Sound Disc Golf Association, Accessed 2021). Course maintenance is done through 100 percent volunteer efforts. It is assumed that West Sound Disc Golf Association will provide the maintenance on the Potential Port Gamble course. Capital costs of the potential disc golf course are estimated at $30,000 to $50,000 or $1,700 to $2,900 annually.[15]

Disc golf courses on public lands are free though some private land disc golf courses are pay to play. At Port Gamble, it is assumed that disc golf will be a free attraction as is consistent with public land disc golf, generating no revenue to the park.

[15] Annual figures are estimated at a 3 percent interest rate over 25 years.

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