PROJECT: 22-1190 REST, SEAWEST GRANSTON (MIDDLE BEAR) NATURAL AREA REST.

Sponsor: King Co Water & Land Res Program: Salmon Federal Projects Status: Active

Project Start Date: 09/22/2022 Agreement End Date: 09/18/2024

Final Report Status: Accepted 12/28/2023

Description

PROJECT AGREEMENT DESCRIPTION

This project will restore critical salmon habitat within the Middle Bear Creek Natural Area along Bear Creek. These funds will be used for implementation of the riparian restoration phase.

The overall goal of the Seawest Granston project is to raise the elevation of baseflow water levels within the reach to create off-channel aquatic habitat, lower (or at least maintain) water temperatures, and raise groundwater elevations in the adjacent riparian areas. Phase 1 of the Seawest Granston Habitat Restoration Project will focus on creating functional riparian plant communities that, in turn, will help to shade out invasive reed canary grass and provide food and dam-making materials for resident beaver. Beaver already occupy the site and have created several small dams within the project area, but they are severely limited by the paucity of woody vegetation in the riparian areas. This initial planting phase will be very aggressive, while acknowledging the likelihood (and desirability) of significant beaver predation. Some plantings will be protected from beaver predations, while others will not. Some plant species that beaver seem to avoid (Pacific ninebark, for instance) will be installed to ensure riparian function is increased. Habitat posts may be installed instream to wrack debris and support potential beaver dams. Subsequent phases of work may entail addition of large wood and/or beaver dam analogues (BDA's) to the reach.

FINAL PROJECT DESCRIPTION

Planting and installation of "Habitat Pickets" were installed at the Seawest Granston site over the fall and winter of 2022-2023. A total of 33 wooden posts were driven vertically into the streambed in 9 different locations within the project reach to study their effects on the channel and whether beaver would utilize them for dam-construction. These installations were monitored over the course of the winter of 2022-23 and through the following summer and fall.

In addition, 1850 potted plants and 6350 live stakes were installed on the site during February and March of 2023 over a total of 8.8 acres of riparian habitat. This included live staking of 4.8 acres of dense reed canayrgrass, some of which was treated with burlap mulch prior to installation, one acre of conifer underplanting, and 2.9 acres of shrub underplanting in and area previously planted with a monoculture of Douglas fir. These plantings were installed by Washington Conservation Corps crews. A property owner requested a modification of the planting plan, which we accommodated by moving about 0.9 acres worth of live stakes to another area of the site where they still provided riparian function.

Beaver activity in these reaches of Bear Creek increased dramatically as a result of the planting. Six new dams have been recorded in the reach since planting occurred, one of which was erected on an array of "habitat pickets" installed as part of this project. The result has been a dramatic rise in water surface elevations in the reach and extensive flooding of the broad floodplain adjacent to the channel. Beaver have constructed several large channels through the reed canarygrass and extending hundreds of feet into the floodplain and begun construction of dams of those channels. This is a significant and dramatic rehydration of the Bear Creek floodplain consistent with our most optimistic predictions. However, beaver harvested a majority of the live stakes installed to create these dams, again consistent with our predictions.

The project team continues to monitor the site and plans for subsequent planting phases, as well as possible large wood addition to the channel. Future challenges will include planting in a much wetter environment than existed prior to this first phase of planting.

Final Report, Project 22-1190

Narrative

The Seawest Granston site presents unique opportunities to restore function to Bear Creek. The project site includes about 3,000 linear feet of Bear Creek with no adjacent structures or other features that need to be protected from flooding or channel migration, other than a private bridge at the downstream end of the reach. This isolation from infrastructure or other anthropogenic features, along with the incised channel of Bear Creek and the presence of beaver makes it an excellent site to try techniques that would raise the water surface elevation of the creek and better connect it to it's very broad floodplain. Typically, such projects entail installation of structures in the channel, such as large wood jams or beaver dam analogues (BDAs). However, such installations meant to cause these effects are extremely difficult to permit in the present regulatory environment, are logistically difficult and very expensive. The "Habitat Pickets" installed as part of this project were an effort to encourage beavers to provide this function without triggering permit thresholds. Similarly, providing materials and food sources for beaver in the form of live cottonwood and willow stakes also promotes these channel changes without triggering permits. The ultimate goal of the project is to create a riparian forest that is sufficiently productive to keep the local beaver population fed and supplied with building materials without losing other riparian functions.

Planting and installation of "Habitat Pickets" were installed at the Seawest Granston site over the fall and winter of 2022-2023. A total of 8.8 acres were planted, mostly with live stakes of willow, cottonwood and Pacific ninebark. Access to planting locations was very difficult, requiring tools and plants to be hand-carried for a significant distance through dense reed canarygrass prior to installation. Mowing of parts of the area during the summer prior to planting helped with accessibility, but ultimately resulted in regrowth of the grass perhaps even denser and taller than previous. Mowing is likely only effective at reed canarygrass control with repeated efforts in combination with other measures and won't likely be repeated at the site, at least not on the scale attempted.

The owner of a private property on which part of this project occurred, and on which King County owns a Conservation Easement, requested a modification of the planting plan, which we accommodated by moving about 0.9 acres worth of live stakes to another area of the site where they still provided riparian function. We will continue to work with this property owner to plant those areas with species acceptable to that property owner.

As predicted, a significant--likely a majority--of the live stakes installed were harvested by beaver to construct dams. In this sense, the planting was very successful in that it resulted in beneficial changes to the channel of Bear Creek and to the hydrological regime of the broad riparian floodplain. Subsequent phases of planting will include more efforts to protect plantings and better control of reed canarygrass. These changes in water surface elevations and flow patterns will also present difficulties for subsequent phases of work on the site. These features make access to the site more difficult and also present challenges for planting in areas still dominated by reed canarygrass but now also with standing water.

The dramatic changes in water surface elevations of the creek due to beaver activity, which in turn are attributable to the plantings installed as part of this project, are consistent with our most optimistic expectations. We are monitoring and recording these changes in flow patterns and their effects on the riparian areas. The effects of this on reed canarygrass will be of interest. Also of interest will be the interaction between still-dominant reed canarygrass and the beaver-modified channel of Bear Creek.

Worksites

Worksite #1: Middle Bear Creek Natural Area, adjacent easement

Worksite Address (Optional)

Street Address Bear Creek Road NE and 144 Pl NE cros
City Woodinville
State, Zip WA 98077

Worksite Details

Worksite #1: Middle Bear Creek Natural Area, adjacent easement

Worksite Name Middle Bear Creek Natural Area, adjacent easement

WORKSITE DESCRIPTION

The Seawest Granston project site consists of three properties, the largest of which is owned by King County Parks and the other two by private landowners. These properties include nearly 3,000 linear feet of Bear Creek as it flows across a broad, flat valley with no adjacent structures or residences (aside from a County-owned bridge over the creek near the middle of the site. The creek has very little riparian cover and the broad floodplain is dominated by dense reed canarygrass. Efforts to restore ecological function are directed towards re-establishment of a forested riparian community and reconnection of the incised channel with it's broad floodplain and reduction of water temperatures.

Geographic Coordinates

From mapped point:	Latitude	47.730004	Longitude	-122.070278
For Directions:	Latitude	47.731646	Longitude	-122.074750

SITE ACCESS DIRECTIONS

Heading north on Bear Creek Road NE, park on short, side access road with signage for King County's Middle Bear Creek Natural Area, on right.

Properties

Worksite #	Worksite Name	Property Name	Sponsor Verified	RCO Verified	RCO Verified Map
1	Middle Bear Creek Natural Area, adjacent easement	Awad parcel Conservation Easement	✓	✓	N/A
1	Middle Bear Creek Natural Area, adjacent easement	Seawest Granston-Middle Bear Nat Area	✓	✓	N/A

Restoration Metrics

	Current Agreement	Final

Worksite: Middle Bear Creek Natural Area, adjacent easement (#1)

Targeted salmonid ESU/DPS (A.23)	☐ No Salmon ESU or Steelhead DPS ✓ Chinook Salmon-Puget Sound ESU ☐ Chinook Salmon-unidentified ESU ☐ Chum Salmon-Puget Sound/Strait of Georgia ESU ☐ Chum Salmon-unidentified ESU ✓ Coho Salmon-Puget Sound/Strait of Georgia ESU ☐ Coho Salmon-unidentified ESU ☐ Pink Salmon-Odd year ESU ☐ Pink Salmon-unidentified ESU ✓ Steelhead-Puget Sound DPS ☐ Steelhead/Trout-unidentified DPS	☐ No Salmon ESU or Steelhead DPS ✓ Chinook Salmon-Puget Sound ESU ☐ Chinook Salmon-unidentified ESU ☐ Chum Salmon-Puget Sound/Strait of Georgia ESU ☐ Chum Salmon-unidentified ESU ✓ Coho Salmon-Puget Sound/Strait of Georgia ESU ☐ Coho Salmon-unidentified ESU ☐ Pink Salmon-Odd year ESU ☐ Pink Salmon-unidentified ESU ✓ Steelhead-Puget Sound DPS ☐ Steelhead/Trout-unidentified DPS
Targeted species (non-ESU species)	None Unknown Brook Trout Brown Trout Bull Trout Cutthroat Forage Fish Kokanee Lamprey Rainbow ✓ Searun Cutthroat	None Unknown Brook Trout Brown Trout Bull Trout Cutthroat Forage Fish Kokanee Lamprey Rainbow ✓ Searun Cutthroat
Miles of Stream and/or Shoreline Treated or Protected (C.0.b)	0.45	0.45
Project Identified In a Plan or Watershed Assessment (C.0.c)	WRIA 8 Salmon Recovery Coun 2017. Lake Washington/Cedar/ Sammamish Watershed Chinook Salmon Conservation P 10-year Update (2017). Water Resource Invento Area (WRIA) 8, Seattle, WA. [http://www.govlink.org/watershe reports/plan-update.aspx]	*Not Collected at Closure*
Priority in Recovery Plan	Tier 1 subbasin of WRIA 8 Salmon Conservation Plan	*Not Collected at Closure*
Type Of Monitoring (C.0.d.1)	✓ Implementation Monitoring None	✓ Implementation Monitoring None
Monitoring Location (C.0.d.2)	☐ No monitoring completed ☐ Downstream ✓ Onsite ☐ Upslope ☐ Upstream	☐ No monitoring completed ☐ Downstream ✓ Onsite ☐ Upslope ☐ Upstream

Riparian Habitat Project

Total Riparian Miles Streambank Treated (C.5.b.1)	0.45	0.45
Total Riparian Acres Treated (C.5.b.2)	10.5	8.8 **Note:** Decrease in area planted due to property owner concerns. Plants relocated to other parts of the area. Also, very heavy beaver predation on plants have significantly reduced riparian plant density.

Planting (C.5.c.1)

Total cost for Planting	$117,648 **Note:** Original amount shown in application $312,500; reduced to funding request amount of $117,647.	*Not Collected at Closure*
Species Of Plants planted in riparian (C.5.c.2)	Salix spp., Populus balsimifera, Physocarpus capitatus,Thuja plicata, Pseudotsuga menziesii, Lonicera involucrata, Acer circinata, Fraxinus latifolia.	Salix spp., Populus balsimifera, Physocarpus capitatus,Thuja plicata, Pseudotsuga menziesii, Lonicera involucrata, Acer circinata, Fraxinus latifolia.
Acres Planted in riparian (C.5.c.3)	10.5	8.8 **Note:** Decrease in area planted due to property owner concerns. Plants relocated to other parts of the area. Also, very heavy beaver predation on plants have significantly reduced riparian plant density.
Miles of streambank planted (C.5.c.4)	0.45	0.45
Average Riparian Width	300	300
Site Potential Tree Height at 200 years (SPTH-200)	105	*Not Collected at Closure*

Final Report, Project 22-1190

Overall Metrics

	Current Agreement	Final
Completion Date		
Projected date of completion	06/30/2024 **Note:** June 2023	12/14/2023
Funding not reported to RCO		
Provide the dollar amount spent to complete the scope of this project identified in PRISM that was not included in the grant or as match to the grant in the project agreement.	*Collected at Closure*	$239,067
Project Goals		
Goals, purpose, and expected benefits (A.17)	The project goal is to enhance the quantity and quality of accessible juvenile salmon rearing habitat within a 2,400-foot reach of Bear Creek by leveraging existing beaver populations to raise baseflow water elevations. Establishment of woody vegetation communities in riparian areas will allow the existing beaver community to thrive, create and maintain more dams, and thereby provide channel structure and elevated water tables. These effects will, in turn, improve rearing habitat quantity and quality for juvenile coho and Chinook salmon, as well as steelhead and cutthroat trout.	The project goal is to enhance the quantity and quality of accessible juvenile salmon rearing habitat within a 2,400-foot reach of Bear Creek by leveraging existing beaver populations to raise baseflow water elevations. Establishment of woody vegetation communities in riparian areas will allow the existing beaver community to thrive, create and maintain more dams, and thereby provide channel structure and elevated water tables. These effects will, in turn, improve rearing habitat quantity and quality for juvenile coho and Chinook salmon, as well as steelhead and cutthroat trout.

Restoration Costs

Final amounts include a pending billing
Date of Last Released Billing 08/15/2023

Worksite: Middle Bear Creek Natural Area, adjacent easement (#1)

	Proposed	Final
SPLIT OUT FINAL TOTAL BELOW	$326,500	$134,438
Riparian Habitat Costs (C.5.a)	$117,648	$134,438
Difference		$0

Final Report, Project 22-1190

Billed Summary

Final amounts include a pending billing
Date of Last Released Billing 08/15/2023

Category	Project Agreement RCO	Project Agreement Total	Totals To Date Expended	Totals To Date Non Reimbursable	Totals To Date Total Billed
Restoration					
Construction	100,000.00	117,648.00	134,437.64		134,437.64
AA&E					
Restoration Total	**100,000.00**	**117,648.00**	**134,437.64**		**134,437.64**
Total	100,000.00	117,648.00	134,437.64		134,437.64

Sponsor Match

	Proposed	Final
Project Funding		
Federal Funds	$100,000.00	$90,000.00
State Funds (A.11)		
Pending Billing - RCO Share Approved	*Collected at Closure*	$0.00
Retainage - RCO amount retained	*Collected at Closure*	$10,000.00

Match Details

Match Category	Match Type	Proposed	Final
Other Monetary Funding	Appropriation - Local		
Amount		$100,000.00	
Funding Organization		King County Surface Water Management **Note:** $100,000 Local funds will be allocated to project for implementation.	King County Surface Water Management
Other Monetary Funding	Grant - Local		
Amount		$126,500.00	$34,437.64
Funding Organization		King County Flood Control District	King County Flood Control District
Grant Program		Cooperative Watershed Management	Cooperative Watershed Management

Project Funding Total	$100,000.00	30.63 %	$100,000.00	74.38 %
Sponsor Match Total	$226,500.00	69.37 %	$34,437.64	25.62 %
Project Total	$326,500.00	100.00 %	$134,437.64	100.00 %
Total Billed			$134,437.64	
Difference			$0.00	

Attachments

PHOTOS (JPG, GIF)

Photos (JPG, GIF)


582378


582379


582380

PROJECT DOCUMENTS AND PHOTOS

Project Documents and Photos

File Type	Attach Date	Attachment Type	Title	Person	File Name, Number Associations	Shared
	10/18/2023	Progress report	Progress Report, 22-1190 (accepted 10/18/23 12:24:36)	AmeeB	Accepted Progress Report 28532 for project 22-1190.pdf, 582455 Final Report, 12/28/2023, Accepted, Progress Report, 10/18/2023, Accepted	✓
	10/18/2023	Photo	UpperDam.jpg	WilliamO	UpperDam.jpg, 582380 Final Report, 12/28/2023, Accepted, Progress Report, 10/18/2023, Accepted	✓
	10/18/2023	Photo	PicketDam_Plantings.jpg	WilliamO	PicketDam_Plantings.jpg, 582379 Final Report, 12/28/2023, Accepted, Progress Report, 10/18/2023, Accepted	✓
	10/18/2023	Photo	Dam_w_plantings.jpg	WilliamO	Dam_w_plantings.jpg, 582378 Final Report, 12/28/2023, Accepted, Progress Report, 10/18/2023, Accepted	✓

Certify & Submit

Status History

Report Status	Date	User	Note
Accepted	12/28/2023	Amee Bahr	Thanks for the final report. It looks like we should plan for a final as soon as possible. Let's chat dates over email.
Submitted	12/14/2023	Denise Di Santo	
Draft	12/08/2023	William ORollins	

WASHINGTON STATE Recreation and Conservation Office

Property Report

PROJECT: 22-1190 REST, SEAWEST GRANSTON (MIDDLE BEAR) NATURAL AREA REST.

Sponsor: King Co Water & Land Res Program: Salmon Federal Projects Status: Active
Project Start Date: 09/22/2022 Agreement End Date: 09/18/2024

PROPERTY: Awad parcel Conservation Easement (1: Middle Bear Creek Natural Area, adjacent easement)

Property Basics

Acquisition ✓**Restoration**

Property Location

Property Name	Awad parcel Conservation Easement	**Property Description**	
Property Address (optional)	14110 Bear Creek Road NE	**Associated Worksite**	Middle Bear Creek Natural Area, adjacent
City	Redmond		
State	WA **Zip** 98077		

Landowner

Landowner Name	Ash Awad
Address (optional)	14110 Bear Creek Road NE
City	Redmond
State	WA **Zip** 98077
Landowner Type	Private

Control and Tenure

Instrument Type	Easement - Permanent
Timing	Existing
Term Type	Perpetuity
# Yrs	
Expiration Date	
Note	

Parcel Numbers

County Name	Parcel Number	Mapped	Notes (optional)
No parcels			

Recording Numbers

Instrument Type	Recording Number	Notes

Sponsor Clarification

✓**The above information is correct and complete**

RCO Notes

✓**Property data verified by RCO Staff**

Property Report: Awad parcel Conservation Easement (Worksite #1: Middle Bear Creek Natural

Attachments

PHOTOS (JPG, GIF)

Photos (JPG, GIF)

PROJECT DOCUMENTS AND PHOTOS

Project Documents and Photos

File Type	Attach Date	Attachment Type	Title	Person	File Name, Number Associations	Shared

No attachments match filter criteria

WASHINGTON STATE Recreation and Conservation Office

Property Report

PROJECT: 22-1190 REST, SEAWEST GRANSTON (MIDDLE BEAR) NATURAL AREA REST.

Sponsor: King Co Water & Land Res Program: Salmon Federal Projects Status: Active
Project Start Date: 09/22/2022 Agreement End Date: 09/18/2024

PROPERTY: Seawest Granston-Middle Bear Nat Area (1: Middle Bear Creek Natural Area, adjacent easement)

Property Basics

Acquisition ✓**Restoration**

Property Location

Property Name Seawest Granston-Middle Bear Nat Area
Property Address (optional)
City
State **Zip**

Property Description
Associated Worksite Middle Bear Creek Natural Area, adjacent

Landowner

Landowner Name King County Department of Natural Reso
Address (optional) 201 S Jackson St Ste 700
City Seattle
State WA **Zip** 98104-3855
Landowner Type Local

Control and Tenure

Instrument Type Sponsor owned property (deed)
Timing Existing
Term Type Perpetuity
 # Yrs
Expiration Date
Note

Parcel Numbers

County Name	Parcel Number	Mapped	Notes (optional)
No parcels			

Recording Numbers

Instrument Type	Recording Number	Notes
No recordings		

Sponsor Clarification

✓**The above information is correct and complete**

RCO Notes

✓**Property data verified by RCO Staff**

Property Report: Seawest Granston-Middle Bear Nat Area (Worksite #1: Middle Bear Creek Natural

Attachments

PHOTOS (JPG, GIF)

Photos (JPG, GIF)

PROJECT DOCUMENTS AND PHOTOS

Project Documents and Photos

File Type	Attach Date	Attachment Type	Title	Person	File Name, Number Associations	Shared

No attachments match filter criteria