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memorandum

date February 26, 2024

to Jacobo Jimenez

СС

from Pablo Quiroga, Dane Bahrens

subject Herring's House Park Shoreline Restoration Feasibility Study - Executive Summary

Executive Summary



This memorandum summarizes the key findings of the Herring's House Shoreline Restoration Feasibility Study conducted by Environmental Science Associates (ESA). The Seattle Parks and Recreation Department (SPR) commissioned the study to assess site conditions, conduct a comprehensive hydrologic study, and develop and propose preliminary alternative design concepts to restore the marsh and upland improvements. The primary focus of the study is to provide SPR with viable alternatives to enhance the site's ecological performance, with an emphasis on expanding the tidal channel to bolster estuarine habitats for Chinook salmon.

The proposed solutions look into enhancing the tidal connection between the marsh and the adjacent Duwamish River channel by widening and realigning the channel. It is expected that the restoration of natural hydrologic processes and tidal regimes will revive other natural processes such as sediment transport, tidal channel formation and maintenance, detritus import and export, and the exchange of aquatic organisms.

Site Background

Herring's House Park is situated on the Puget Sound along the Duwamish River in South Elliot Bay (See Figure 1-1). The current Hering's House Park layout was established in 2000, and it was purposefully designed primarily as a habitat for juvenile Chinook salmon. The park features an intertidal estuary surrounded by an upland area vegetated with native plants and a trail. The shoreline is armored with 8-9 inch diameter quarry stone. The park is used for leisure walks, nature viewing, and cycling via the Duwamish Trail.

The park holds historical significance as a site deeply rooted in the cultural heritage of the $dx^wdaw?abš$ Duwamish ("people of the inside"). The name of the park is derived from the Duwamish village located downstream from the park's location near the mouth of the Duwamish, known as $tu?ul?altx^w$, meaning "herring's house".

Key Findings

The feasibility study revealed a number of key considerations and findings that are the base for the proposed conceptual alternatives. Table 1-1 summarizes the study findings and recommendations.

TABLE 1-1
SUMMARY OF KEY FINDINGS

Design Parameter	Description / Recommendations
Inlet Stability	The inlet was found to be too narrow and too long relative to similar sites connected to Puget Sound. To restore the natural processes to the site, the inlet should be shortened and widened to at least 50 ft wide to meet hydrology requirements and to widen to at least 120 ft for salmon habitat.
	 It is also recommended to over-excavate the inlet channel to provide additional accommodation space for sedimentation.
Channel Geomorphology	 Rotate the channel alignment to be perpendicular to the existing shoreline. Dredge pilot channels to an elevation of 4 ft NAVD88 or lower through the marsh. This will allow the site to increase regular tidal inundation and "washing" of the imported soil, which is needed to alter the soil's physical and chemical components that support wetland vegetation.
Riparian and Wetland	Riparian and wetland re-vegetation is recommended:
Vegetation	 Riparian and wetland vegetation from 8 ft to 10 ft NAVD88.
	 Seeding on the existing estuary (5 to 8 ft NAVD88) once tidal flow is established.
Sea Level Rise	2 to 5-year water level events will be higher than 12.5 ft NAVD by the 2030-2050 period. These events will inundate some upland areas of the park and will become annual occurrences by the 2050-2070 period.
	 It is recommended to consider the effects of rising sea levels on the Upland design and elevate certain areas of the park during this process. This could be done using a phasing process, and upland areas could be created with a gentle transition from the marsh to higher upland areas.
Upland Improvements and Park Use Opportunities	The proposed inlet alterations and associated improvements will allow Park visitors to witness and track the restoration of this shoreline segment. Several actions are recommended:
	 Selective trimming and thinning of existing vegetation to provide visual access to the Park.
	 Bird blinds are recommended at locations where overlooks are provided for views into the wetland.
	 Create clear demarcation of navigation routes to guide visitors away from critical habitat and restoration areas. This could include split-rail fencing, signage, and strategic planting.
	Signage identifying habitat planting locations.

Marsh Restoration

Informed by the technical studies, two conceptual alternatives were developed (Appendix A) that will enhance the marsh ecosystem and restore the tidal flow on the estuary. The concept-level alternatives take into account improvements in the hydrodynamics of the site, ecological benefits, changes to the coastal geomorphology, potential impacts, future recreational use of the park, constructability, and cost.

Construction costs were developed for each concept, and total costs are summarized in Table 1-2 and shown in detail in Appendix B.

Concept 1.

In Concept 1 (See Appendix A), we propose to widen the existing channel inlet and realign it to the shoreline by removing material from the neighboring upland. The channel will be excavated to elevation 2-3 ft NAVD88, and the removed riprap from the upland will be reused as scour protection along the channel. A topsoil with 1 ft minimum thickness will be placed. Planting of low and high marsh will occur on the sides of the channel. This will improve the site's ecological value, help stabilize the channel, and reduce park users walking into the channel.

High Marsh planting will occur along the estuary from elevation 8 to 10 ft NAVD, and seeding of the estuary will occur from elevation 6 ft to 8 ft NAVD88. Pilot channels along the estuary will be excavated up to elevation 3 ft NAVD to reinstate a tidal flow regime.

This option is advantageous because it maximizes the use of the existing channel alignment, reducing the required amount of excavation. It also minimizes disruption of access to the existing shoreline trail. However, excavated material might require hauling offsite.

Concept 2.

Concept 2 (See Appendix A) proposes the excavation of a new inlet channel northeast of the existing channel. This alignment takes advantage of a narrow segment of the shoreline to create a more direct, wider opening to the Duwamish River channel. The inlet channel will have similar characteristics as the Concept 1 channel but with gentler slopes, providing more space for high and low marsh planting. Planting and excavation of pilot channels are also proposed, as done in Concept 1.

Similar to Concept 1, this concept will allow for the reuse of excavated material onsite for constructing neighboring upland areas. The primary advantage of this Concept is that it allows for a shorter, wider channel. However, since it would occupy an existing shoreline area, it would require larger excavation volumes.

Upland Improvements

Although the project focuses on marsh restoration, ESA also considered the implications of the different concepts on upland areas of the park. Combining the tidal inlet, marsh, and upland improvements will create a more holistic restoration project and a more coherent improvement of the park amenities and park-user experience. This approach will help SPR take into account not only the marsh ecology but also other factors like cultural resources, construction costs, improvements and phasing of upland ecology, coastal resilience, and use of the park.

ESA proposes three varying alternatives (Appendix C) that can be divided into two categories. Radial improvements (Alternative A) and Circuit Improvements (Alternative B and C).

Construction cost estimates were developed for each alternative and are summarized in Table 1-2 and shown in detail in Appendix D.

Alternative A

The radial improvements scheme places a focus on park improvements that provide enhanced accessible circulation routes originating from the parking area to focus points within the park where visitors are afforded a view of the restoration area and the Duwamish Waterway as well as connection points to həʔapus Village Park. This option considers limiting access to the Park so large areas of the Park will have limited human intervention.

Alternative B

Circulation routes will be enhanced with a focus on accessibility through a combination of surface replacement and selective re-alignment. Circulation routes that navigate through dynamic topography and amidst mature trees on the northern half of the site will rely on natural trail surfacing and boardwalks to bring visitors to a waterway overlook. Existing overlook locations will receive updates for structural integrity and safety, which may require replacement. It is further recommended that waterway overlooks be revised to include bird blinds where they may impact wildlife.

Alternative C

The circuit improvements scheme will focus on park improvements that allow visitors to circumnavigate the wetland restoration via accessible paths originating at the parking lot and connecting to həʔapus Village Park to the south. Visitors will be routed around the wetland, including navigation of a bridge spanning the re-aligned inlet. Further study will be required for the design and positioning of the bridge. The provision of accessible paths on the northern half of the site will require selective grading which may require some tree removal. It is recommended that plantings be provided along the property fence lines to assist with screening the adjacent industrial properties.

No Action Alternative

The No Action alternatives is included as a basis for understanding the benefits of the restoration alternatives. We expect that this alternative would result in the following:

- Degradation and instability of the existing inlet channel.
- Deterioration of existing trails and lookouts
- Continued lack of functionality of existing ecology, especially for Chinook salmon.
- Projected sea level rises will change the vegetation without planned or phased changes. This will also mean an increase in coastal flooding frequency by 2050.

This alternative is not preferred and does not provide benefits compared to the other alternatives. No cost estimate was developed for this alternative.

Cost Estimate

A summary of the construction cost is shown in Table 1-2. Detailed cost estimates are shown in Appendix B and D. Total costs are shown as a first order of magnitude at a concept level and will require further refinement. Cost estimates between concepts 1 and 2 are considered closed for the marsh restoration. Construction costs do not consider the possible disposal of contaminated soil, which will need to be investigated in further phases of the project. If contaminated soil is found in the proposed areas of excavation, the cost estimate shown here will be higher.

Upland improvement costs are shown as a first order of magnitude at the concept level and are meant to help Parks consider the cost of different approaches and amenities proposed in this study. Cost estimates for Alternative C are considerably higher due to the use of a boardwalk along the park, the proposed regrading of the upland, and the use of a bridge to connect the Park trail.

TABLE 1-2
SUMMARY OF COST ESTIMATES

ALTERNATIVES	TOTAL COST
Marsh Restoration	
Concept 1	\$820,000
Concept 2	\$855,000
Upland Improvements	
Alternative A	\$930,000
Alternative B	\$1,800,000
Alternative C	\$3,640,000

Next Steps

ESA identified several areas that will require further investigation prior to the development of the preferred alternative design plans. These areas include.

Permitting Requirements

Before proceeding with the design of a preferred alternative, a study of the permitting requirements is needed. This should include identifying any potential permitting issues. The project will likely require federal, state, and local permits.

Cultural Resources

The location has a high sensitivity for cultural resources. Additional review will be necessary to identify and evaluate the potential impacts of cultural resources. The project might be required to comply with municipal, state, or federal regulations that require consideration of the potential effects of the project's cultural resources. If ground disturbance is planned within the boundaries of a recorded archaeological site, a state excavation permit may be required. from the Department of Archaeology and Historic Preservation (DAHP)

Contaminated Soils

Historical records show that contaminated soils may be present below grade at the project site. Further investigation of the location of the contaminated soil within the proposed excavated area is needed to inform future phases and decisions related to the preferred alternative.

Marsh and Upland Vegetation

A more detailed study of the proposed re-vegetation of the marsh and the upland by a biologist will be needed to advance the preferred alternative design further.

Coastal Resilience

During this study, Coastal vulnerabilities of the existing park were identified. A comprehensive analysis of sea level rise implications on upland vegetation and coastal inundation is recommended. Proposed solutions for the preferred alternative must also undergo evaluation. ss



Basemap: Esri; County Boundaries: WA DNR; City Boundary: ArcGIS; Study Area: ESA

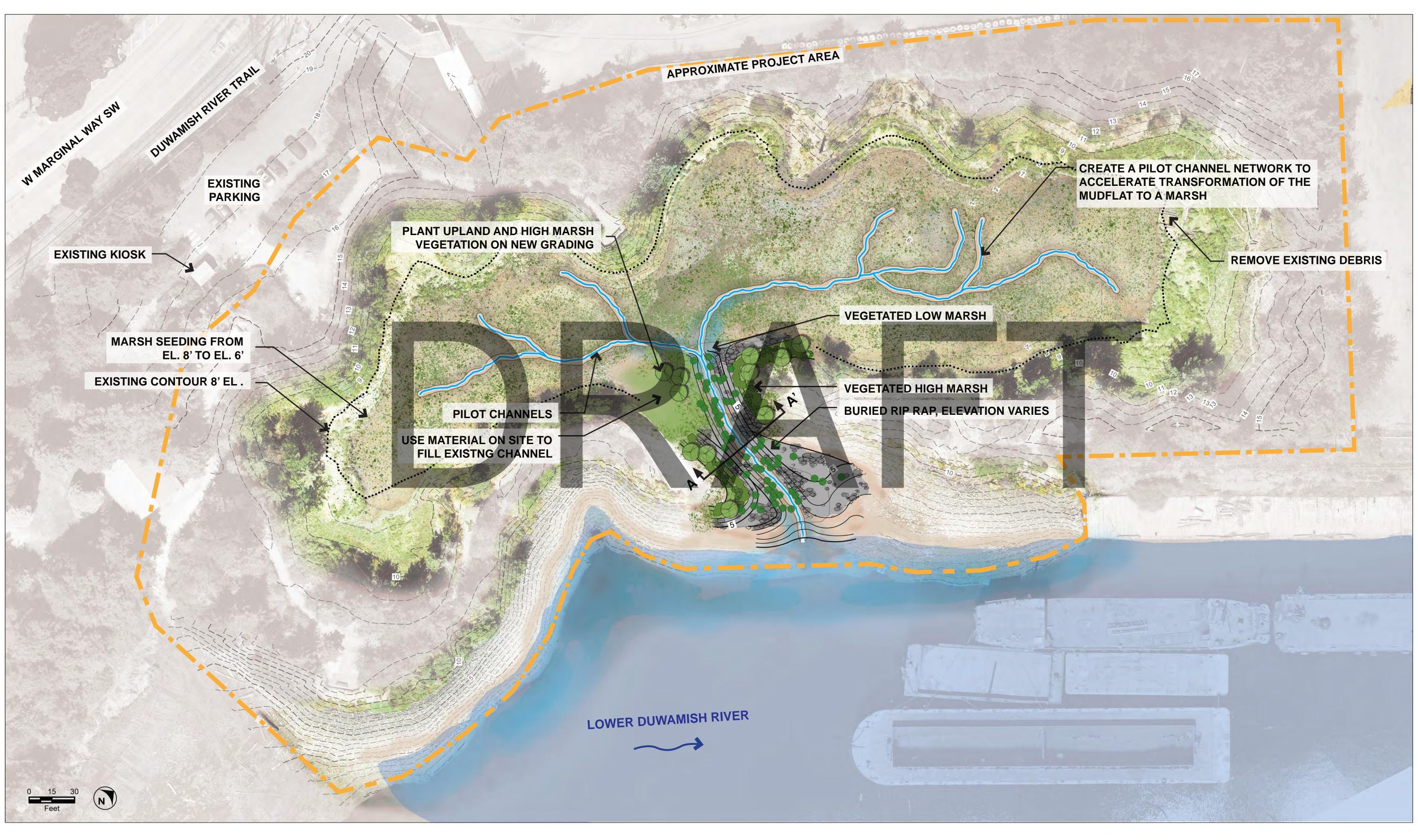
Herrings House Shoreline Restoration

Figure 1-1
Project Location and Vicinity Map



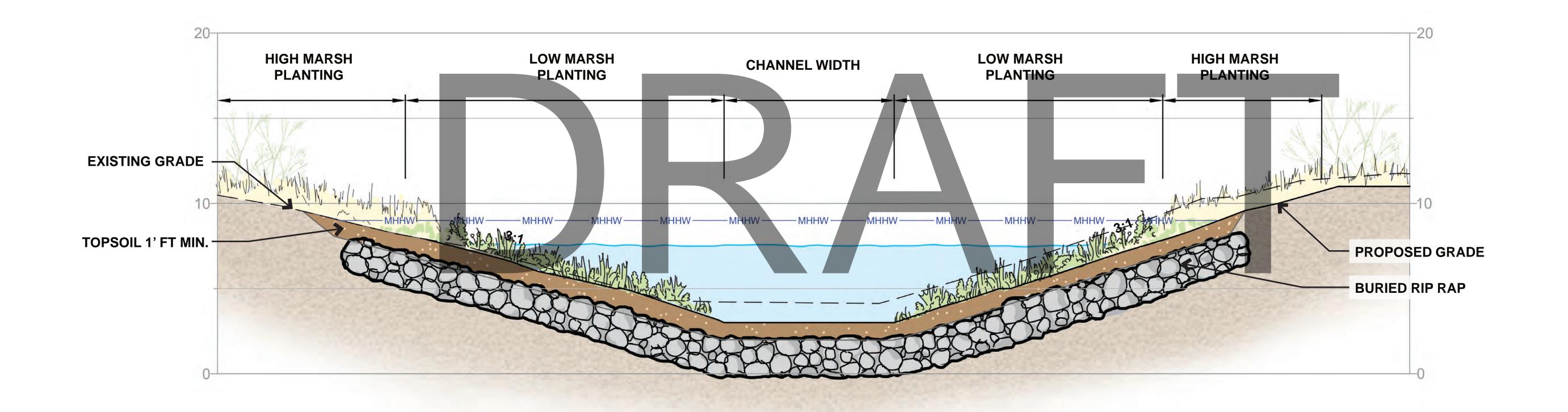
APPENDIX A

Marsh Conceptual Restoration Design



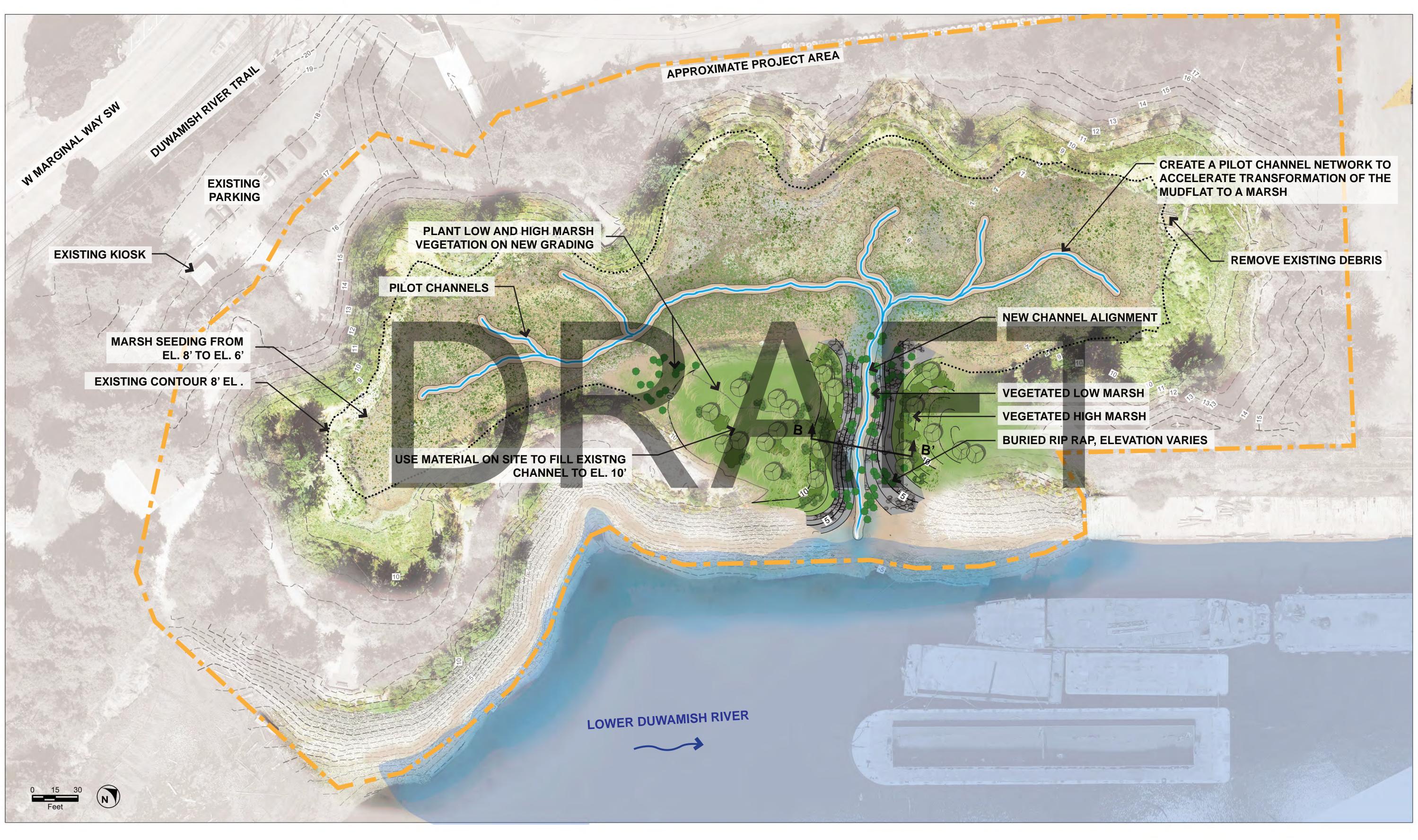
Herring's House





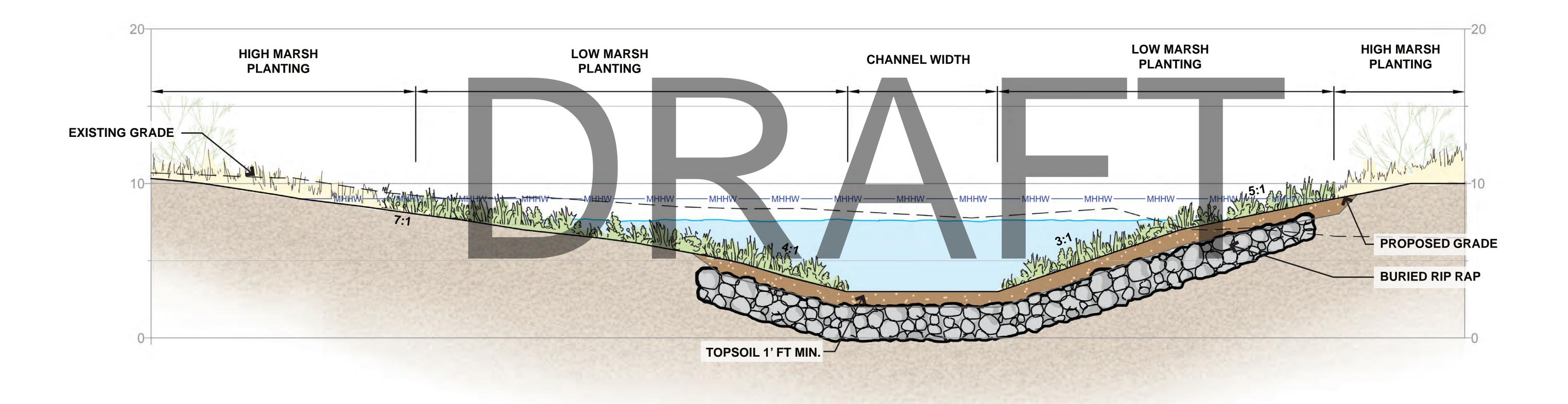
Section A-A': Channel Cross Section (Not to Scale)





ESA





Section B-B': Channel Cross Section (Not to Scale)



APPENDIX B

Marsh Restoration Quantities and Costs

Herring's House Park - MARSH RESTORATION CONCEPT 1

Estimate of Probable Construction Cost

By: PDQ Date: 1/24/2020 Checked: DB



ITEM NO.	ITEM DESCRIPTION	QTY	UNIT		UNIT PRICE	COST
	REPARATION					\$ 23,800
1	TREE REMOVAL	3	EA	\$	300.00	\$ 900
2	CLEARING AND GRUBING	9200	SF	\$	0.75	\$ 6,900
3	HIGH VISIBILITY FENCE	200	LF	\$	5.00	\$ 1,000
4	CONSTRUCTION SURVEY	1	LS	\$	15,000.00	\$ 15,000
EROS	ON CONTROL					\$ 150,000
5	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS	\$	20,000.00	\$ 20,000
6	INSTALL, MAINTAIN AND REMOVE TURBIDITY CURTAIN	1	LS	\$	120,000.00	\$ 120,000
7	STABILIZED CONSTRUCTION ENTRANCE	1	EA	\$	10,000.00	\$ 10,000
EARTI	HWORK AND CHANNEL INLET					\$ 207,200
8	EXCAVATION AND STOCKPILE	1,600	CY	\$	40.00	\$ 64,000
9	HAUL AND DISPOSE EXCESS RIPRAP	120	CY	\$	70.00	\$ 8,400
10	HAUL AND DISPOSE EXCESS AND UNSUITABLE MATERIAL	1,2 90	CY	\$	40.00	\$ 51,600
11	EXISTING CHANNEL FILL	50	CY	\ \$	40.00	\$ 2,000
12	ROCK FOR EROSION CONTROL AND SCOUR PROTECTION REUSED RIPRAP	520	CY	\$	30.00	\$ 15,600
13	TOPSOIL MATERIAL	1,100	CY	\$	40.00	\$ 44,000
14	PILOT CHANNEL EXCAVATION	360	CY	\$	60.00	\$ 21,600
SITE F	ESTORATION					\$ 105,500
15	PLANTING AREA	16,000	SF	\$	5.00	\$ 80,000
16	HAND SEEDING	6,500	SY	\$	3.00	\$ 19,500
17	TREES - 6'-8' HT.	12	EA	\$	500.00	\$ 6,000
	DIRECT ITEM SUBTOTAL					\$ 486,500
	BONDING AND INSURANCE	2%				\$ 9,730
	GENERAL CONDITIONS	10%				\$ 48,650
	MOBILIZATION/DEMOBILIZATION	10%				\$ 48,650
	CONTINGENCY	40%				\$ 194,600
	CONTRACTOR OVERHEAD AND PROFIT	6%				\$ 29,190
	SALES TAX (not included, 10.1%)					\$ -
	CONSTRUCTION TOTAL	(Rounded)				\$ 820,000

NOTES:

- 1. Cost does not include permitting, engineering design, management, or other soft costs.
- 2. Costs provided in 2024 dollars.
- 3. This estimate represents upland/public acces related work only.
- 4. Cost do not reflect geotechinical study or input.
- 5. Cost do not include any utilty alterations or upgrades.
- 6. Sales tax is not included.

Herring's House Park - MARSH RESTORATION CONCEPT 2

Estimate of Probable Construction Cost

By: PDQ Date: 1/24/2020 Checked: DB



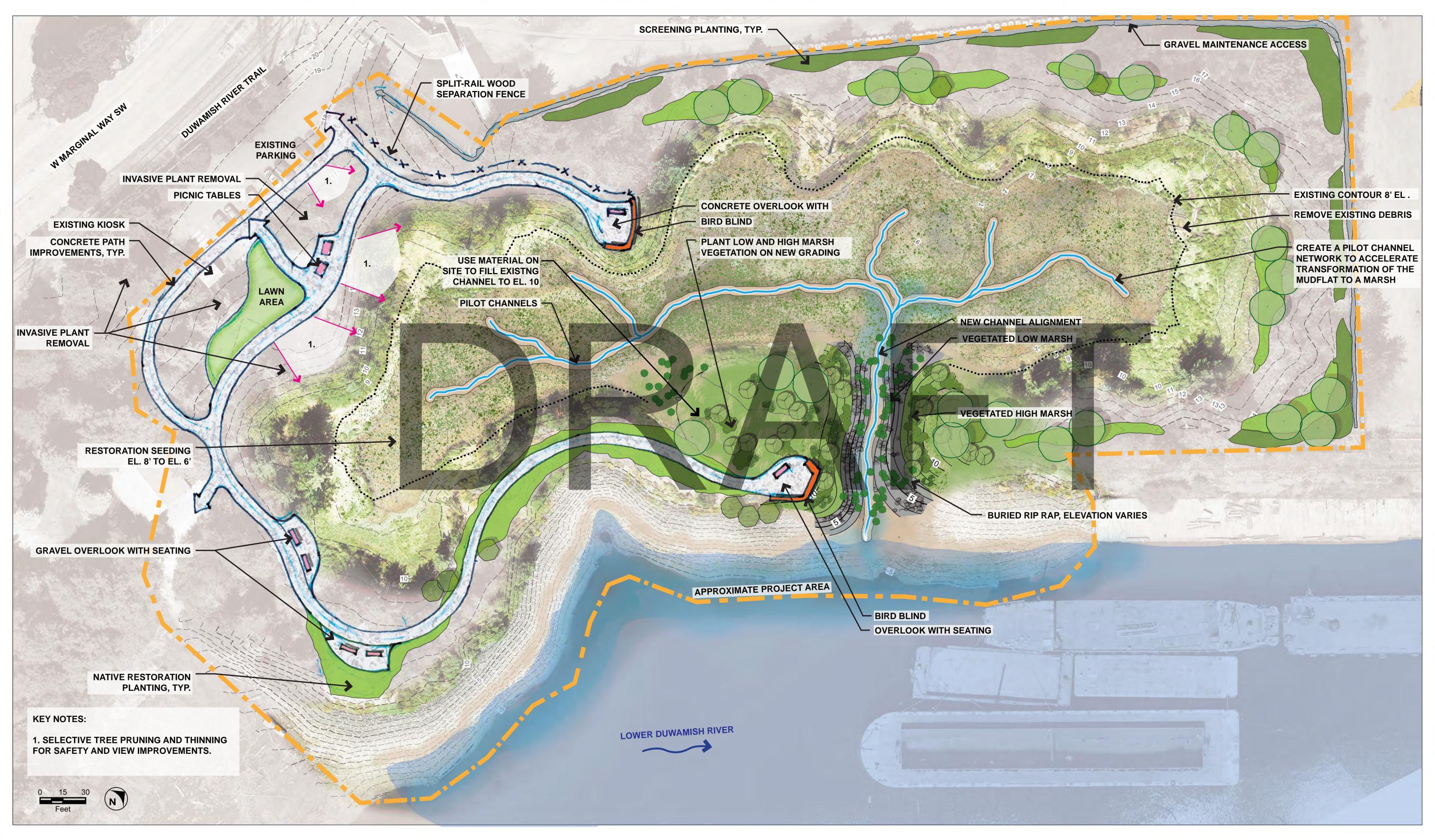
ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	UNIT PRICE		COST
SITE P	REPARATION				\$	29,500
1	TREE REMOVAL	7	EA	\$ 300.00	\$	2,100
2	CLEARING AND GRUBING	15200	SF	\$ 0.75	\$	11,400
3	HIGH VISIBILITY FENCE	200	LF	\$ 5.00	\$	1,000
4	CONSTRUCTION SURVEY	1	LS	\$ 15,000.00	\$	15,000
EROSI	ON CONTROL				\$	155,000
5	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS	\$ 25,000.00	\$	25,000
6	INSTALL, MAINTAIN AND REMOVE TURBIDITY CURTAIN	1	L S	\$ 120,000.00	\$	120,000
7	STABILIZED CONSTRUCTION ENTRANCE	1	EA	\$ 10,000.00	\$	10,000
EARTH	HWORK AND CHANNEL INLET			_	\$	218,000
8	EXCAVATION AND STOCKPILE	1,800	CY	\$ 40.00	\$	72,000
9	HAUL AND DISPOSE EXCESS RIPRAP	200	CY	\$ 70.00	\$	14,000
10	HAUL AND DISPOSE EXCESS AND UNSUITABLE MATERIAL	820	CY	\$ 40.00	\$	32,800
11	EXISTING CHANNEL FILL	800	CY	\$ 40.00	\$	32,000
12	ROCK FOR EROSION CONTROL AND SCOUR PROTECTION REUSED RIPRAP	360	CY	\$ 30.00	\$	10,800
13	TOPSOIL MATERIAL	900	CY	\$ 40.00	\$	36,000
14	PILOT CHANNEL EXCAVATION	340	CY	\$ 60.00	\$	20,400
-	ESTORATION				\$	105,500
15	PLANTING AREA	16,000	SF	\$ 5.00	\$	80,000
16	HAND SEEDING	6,500	SY	\$ 3.00	\$	19,500
17	TREES - 6'-8' HT.	12	EA	\$ 500.00	\$	6,000
	DIRECT ITEM SUBTOTAL				\$	508,000
	BONDING AND INSURANCE	2%			\$	10,160
	GENERAL CONDITIONS	10%			\$	50,800
	MOBILIZATION/DEMOBILIZATION	10%			Ş	50,800
	CONTINGENCY	40%			\$	203,200
	CONTRACTOR OVERHEAD AND PROFT	6%			\$	30,480
	SALES TAX (not included, 10.1%)	15			\$	-
	CONSTRUCTION TOTAL	(Rounded)			\$	855,000

NOTES:

- 1. Cost does not include permitting, engineering design, management, or other soft costs.
- 2. Costs provided in 2024 dollars.
- 3. This estimate represents upland/public acces related work only.
- 4. Cost do not reflect geotechinical study or input.
- 5. Cost do not include any utilty alterations or upgrades.
- 6. Sales tax is not included.

APPENDIX C

Upland Conceptual Design





Upland Alternative - A

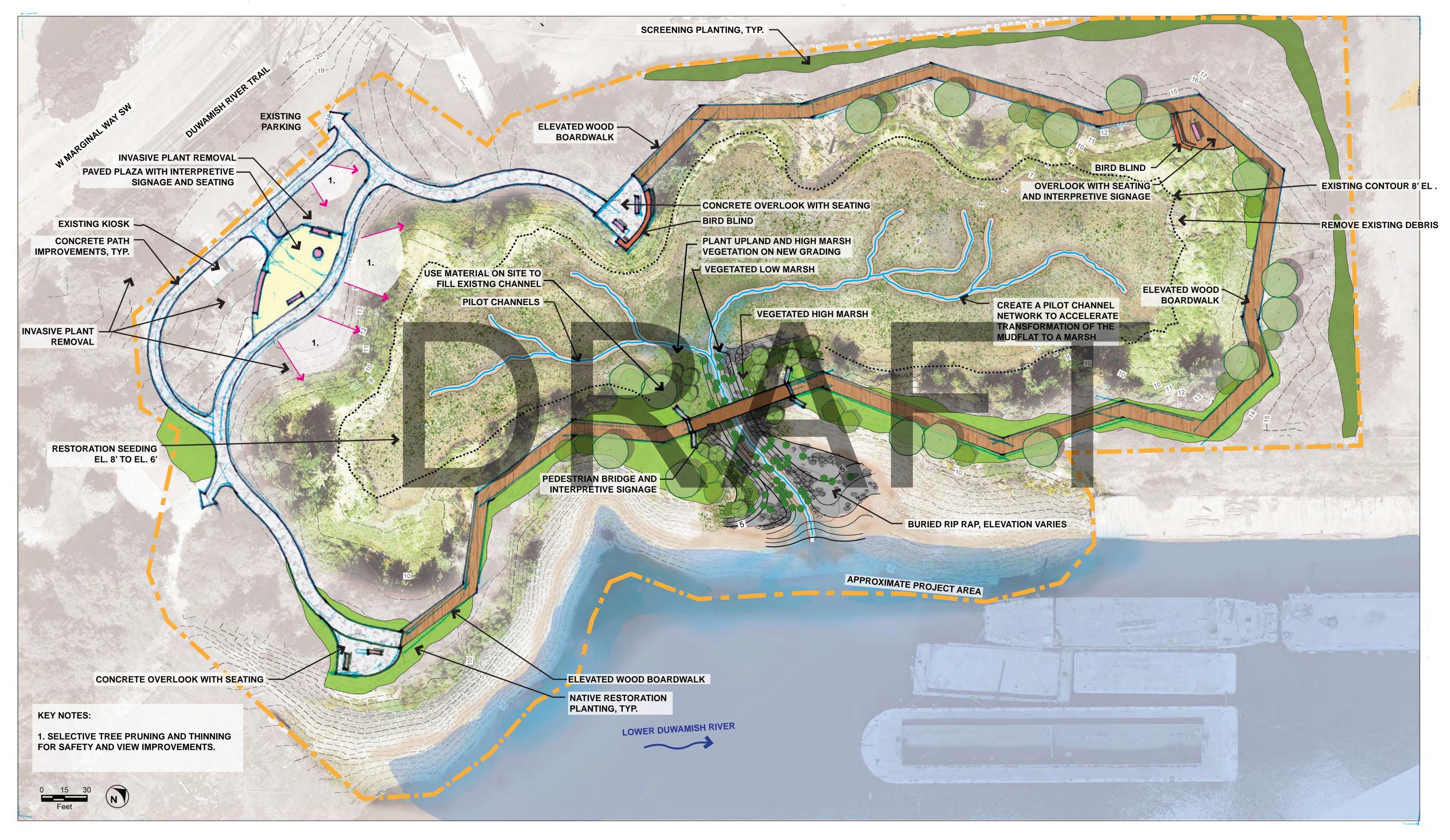






Upland Alternative - B





Herring's House

Upland Alternative - C



APPENDIX D

Upland Quantities and Costs

Herring's House Park - UPLAND ALTERNATIVE 'A'

Estimate of Probable Construction Cost

By: TTF, MAC Date: 1/24/2020 Checked: PDQ



ITEM NO.	ITEM DESCRIPTION	QTY	UNIT		UNIT PRICE		COST
	REPARATION					\$	51,800
1	CLEARING AND GRUBBING	47000	SF	\$	0.50	\$	23,500
2	TREE REMOVAL	1	LS	\$	300.00	\$	300
3	CONSTRUCTION SURVEY AND STAKING	1	LS	\$	20,000.00	\$	20,000
4	TARGETED INVASIVE REMOVAL	16000	SF	\$	0.50	\$	8,000
	ON CONTROL					\$	71,000
5	EROSION/WATER POLLUTION CONTROL	1	LS	\$	15,000.00	\$	15,000
6 7	HIGH VISIBILITY FENCE	1350 2600	LF	\$ ¢	4.00 6.00	\$ \$	5,400
8	FILTER FENCE TREE AND VEGETATION PROTECTION ALLOWANCE	2600	LF LS	\$ \$	10,000.00	\$ \$	15,600 10,000
9	STRAW WADDLE	1200	LF	\$	2.50	\$	3,000
10	STABILIZED CONSTRUCTION ENTRANCE	1	EA	\$	10,000.00	\$	10,000
11	UTILITY PROTECTION ALLOWANCE	12	MO	\$	1,000.00	\$	12,000
DEMC	DLITION & TEMPORARY STRUCTURES				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	\$	45,830
12	SAW CUT	140	LF	\$	2.00	\$	280
13	ASPHALT PATH	9,250	SF	\$	3.00	\$	27,750
14	BELOW GRADE STRUCTURE AT OVERLOOKS	3	LS	\$	2,500.00	\$	7,500
15	GUARDRAIL AT OVERLOOKS	100	LF	\$	8.00	\$	800
16	BENCH	4	EA	\$	550.00	\$	2,200
17	GRAVEL PATH	4,200	SF	\$	1.50	\$	6,300
18	CONCRETE PAD	300	SF	\$	2.50	\$	750
19	PRESERVE AND PROTECT KIOSK	1	EA	\$	250.00	\$	250
20	IMPORTED FILL	560	CV	,	40.00	\$	45,900 22,400
20	IMPORTED TOPSOIL AMMENDMENT	100	CY CY	\$ \$	40.00	\$	4,000
22	ROUGH GRADING	30,000	SF	\$	0.25	\$	7,500
23	FINE GRADING	30,000	SF	\$	0.40	\$	12,000
PLAN1		00,000	3.	Ĭ	31.10	\$	112,770
24	PLANTING AREA	18,500	SF	\$	3.00	\$	55,500
25	IRRIGATION - MODIFY EXISTING SYSTEM	18,500	SF	\$	1.00	\$	18,500
26	FINE COMPOST	115	CY	\$	40.00	\$	4,600
27	SEEDING	6,890	SY	\$	3.00	\$	20,670
28	TREES - 6'-8' HT.	22	EA	\$	500.00	\$	11,000
29	TREE LIMBING	1	LS	\$	2,500.00	\$	2,500
	ESTORATION				25.00	\$	224,800
30	CONCRETE CURB	130	LF	\$	35.00	\$	4,550
31 32	CONCRETE PAVING	10,000	SF SF	\$ \$	12.00 15.00	\$	120,000
33	SPECIALTY CONCRETE PAVING GRAVEL PAVING - 1/4" MINUS	2,850	SF	\$	5.00	\$	14,250
34	BOARDWALK	0	SF	\$	120.00	\$	14,230
35	BIRD BLIND	2	EA	\$	5,000.00	\$	10,000
36	BOARDWALK OVERLOOK	0	EA	\$	15,000.00	\$	-
37	BOARDWALK GUARDRAIL	0	LF	\$	100.00	\$	-
38	OVERLOOK GUARDRAIL	0	LF	\$	200.00	\$	-
39	AT GRADE OVERLOOK	4	EA	\$	10,000.00	\$	40,000
40	SIGNAGE ALLOWANCE	1	LS	\$	10,000.00	\$	10,000
41	PREFABRICATED BRIDGE	0	LF		1000		-
42	BRIDGE HEADWALLS	0	LF		250		-
43	BENCH	6	EA	\$	1,500.00	\$	9,000
44	SPLIT RAIL FENCE	220	LF	\$	50.00	\$	11,000
45	PICNIC TABLE	2	EA	\$	3,000.00	\$	6,000
	DIRECT ITEM SUBTOTAL	2%				\$	552,100
	BONDING AND INSURANCE GENERAL CONDITIONS	2% 10%				\$ \$	11,042 55,210
	MOBILIZATION/DEMOBILIZATION	10%				\$	55,210 55,210
	CONTINGENCY	40%				\$	220,840
	CONTRACTOR OVERHEAD AND PROFT	6%				\$	33,126
	SALES TAX (not included, 10.1%)					\$	
	CONSTRUCTION TOTAL	(Rounded)				\$	930,000
NOTES	ς.						

- ${\bf 1.}\ Cost\ does\ not\ include\ permitting,\ engineering\ design,\ management,\ or\ other\ soft\ costs.$
- 2. Assume no stormwater treatment is required for existing parking lot.
- 3. Assume additional fire/emergency access turnaround not required.
- 4. Costs provided in 2024 dollars.
- 5. This estimate represents upland/public acces related work only.
- ${\it 6.}\ Cost\ do\ not\ reflect\ geotechinical\ study\ or\ input.$
- 7. Cost do not include any utilty alterations or upgrades.
- 8. Cost assume no interruption to traffic patterns.
- 9. Sales tax is not included.

Herring's House Park - UPLAND ALTERNATIVE 'B'

Estimate of Probable Construction Cost

Date: 1/24/2020

By: TTF, MAC Checked: PDQ



NO. IEM DISCRIPTION COTT CONT		1/24/2020	necked. FD	٠				
STEPREPARATION	ITEM NO.	ITEM DESCRIPTION	QTY	UNIT		UNIT PRICE		cost
2 TREE REMOVAL 1 LIS \$ 300.00 \$ 300.00 4 TARGETED INVASIVE REMOVAL 14500 SF \$ 0.00.00 \$ 30,000 4 TARGETED INVASIVE REMOVAL 14500 SF \$ 0.00.00 \$ 7.7,55 **ROSION CONTROL*** 5 EROSION/WATER POLLUTION CONTROL 1 LIS \$ 15,000.00 \$ 15,000 6 HIGH VISIBILITY FERCE 1250 LF \$ 4.00 \$ 5,500 7 FILTER FERCE 1250 LF \$ 4.00 \$ 15,000 8 TREE AND VEGETATION PROTECTION 1 LIS \$ 10,000.00 \$ 10,000 9 STRAW MADDLE 10 STABALWADDLE 10 STABALWADDLE 10 STABALWADDLE 11 UTILITY PROTECTION ALLOWANCE 1 LEA \$ 10,000.00 \$ 10,000 10 STABALWADDLE 11 UTILITY PROTECTION ALLOWANCE 1 LEA \$ 10,000.00 \$ 10,000 11 UTILITY PROTECTION ALLOWANCE 1 LEA \$ 10,000.00 \$ 10,000 12 STABALWADDLE 12 SAW CUT 1 UTILITY PROTECTION ALLOWANCE 1 LEA \$ 5,000.00 \$ 7,500 13 ASPHALT PATH 1 PROTECTION ALLOWANCE 1 LEA \$ 5,000.00 \$ 7,500 14 BELDW GRADE STRUCTURE AT OVERLOOKS 3 LS \$ 2,500.00 \$ 7,500 15 GUARDRAIL AT OVERLOOKS 3 LS \$ 5,000.00 \$ 7,500 16 BENCH 4 LEA \$ 5,000.00 \$ 7,500 17 GRAVEL PATH 4 LOOKER PAD 18 CONCRETE PAD 19 PRESERVE AND PROTECT KIOSK 1 LEA \$ 5,000.00 \$ 7,500 18 CONCRETE PAD 19 PRESERVE AND PROTECT KIOSK 1 LEA \$ 5,000.00 \$ 7,500 11 LANDROW SF \$ 1,000 11		REPARATION					\$	73,050
3 CONSTRUCTION SURVEY AND STAKING 4 TARGETED INVASIVE REMOVAL 5 F S DAOS S S 7,255 CROSSION CONTROL 5 F S DAOS S S 15,000.00 S S 7,255 CROSSION CONTROL 5 F S DAOS S S 15,000.00 S S 15,000 5 F S DAOS S S S S S S S S S S S S S S S S S S	1	CLEARING AND GRUBBING	71000	SF	\$	0.50	\$	35,500
TARGETED INVASIVE REMOVAL	2	TREE REMOVAL	1	LS	\$	300.00	\$	300
STROSION CONTROL	3	CONSTRUCTION SURVEY AND STAKING	1	LS		30,000.00	\$	30,000
S EROSION/WATER POLLUTION CONTROL	-		14500	SF	\$	0.50		7,250
6 HIGH WISBILITY FENCE 1350								71,000
FILTER FENCE		•						
R TREE AND VEGETATION PROTECTION 1								-
9 STRAW WADDLE								
10 STABILIZED CONSTRUCTION ENTRANCE 1 EA \$ 10,000,00 \$ 12,000								-
THE UTILITY PROTECTION ALLOWANCE 12 MO \$ 1,000.00 \$ 12,000								
SEMOLITION & TEMPORARY STRUCTURES						•		,
12 SAW CUT			12	1410	٧	1,000.00		
13 ASPHALT PATH 14 BELOW GRADE STRUCTURE AT OVERLOOKS 15 GUARDRAIL AT OVERLOOKS 16 BENCH 17 GRAVEL PATH 18 CONCRETE PAD 18 CONCRETE PAD 19 PRESERVE AND PROTECT KIOSK 10 IF \$ 8.0.0 \$ 800 18 CONCRETE PAD 19 PRESERVE AND PROTECT KIOSK 10 IF A \$ 250.00 \$ 250 19 PRESERVE AND PROTECT KIOSK 10 IF A \$ 250.00 \$ 250 19 PRESERVE AND PROTECT KIOSK 10 IF A \$ 250.00 \$ 250 19 PRESERVE AND PROTECT KIOSK 10 IF A \$ 250.00 \$ 250 19 PRESERVE AND PROTECT KIOSK 10 IF A \$ 250.00 \$ 250 10 IMPORTED FILL 10 IMPORTED TOPSOIL AMMENDMENT 10 IMPORTED TOPSOIL AMMENDMENT 10 IMPORTED TOPSOIL AMMENDMENT 11 IMPORTED TOPSOIL AMMENDMENT 12 IMPORTED TOPSOIL AMMENDMENT 12 IMPORTED TOPSOIL AMMENDMENT 13 SOO 14 CONCRETE PAD 18 FIRE GRADING 15 SOO 15 S S S S S S S S S S S S S S S S S S S			140	1 F	\$	2.00		•
14 BLOW GRADE STRUCTURE AT OVERLOOKS 3 LS \$ 2,500.00 \$ 7,500								27,750
15 GUARDRAIL AT OVERLOOKS			-					7,500
17 GRAVEL PATH	15	GUARDRAIL AT OVERLOOKS	100	LF		8.00	\$	800
18 CONCRETE PAD 19 PRESERVE AND PROTECT KIOSK 1 EA \$ 250.00 \$ 255.00 19 PRESERVE AND PROTECT KIOSK 1 EA \$ 250.00 \$ 255.00 10 MPORTED FILL 20 IMPORTED FILL 21 IMPORTED TOPSOIL AMMENDMENT 22 ROUGH GRADING 300 CY \$ 40.00 \$ 14,200 315,755 22 ROUGH GRADING 63000 SF \$ 0.25 \$ 115,755 31 FINE GRADING 300 CY \$ 40.00 \$ 12,000 315,755 32 FINE GRADING 300 SF \$ 0.25 \$ 115,755 33 FINE GRADING 300 SF \$ 0.25 \$ 115,755 34 FINE GRADING 35 FINE GRADING 36 SP \$ 30.00 \$ 25,000 37 SEEDING 36 FINE COMPOST 37 SEEDING 38 FIRES - 6'-8' HT. 39 FIRES - 6'-8' HT. 30 CONCRETE FURB 31 CONCRETE CUBB 31 CONCRETE CUBB 31 CONCRETE FURB 31 CONCRETE FURB 31 CONCRETE PAVING 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 34 BOARDWALK 3,000 SF \$ 120.00 35 BIRD BLIND 36 BOARDWALK OVERLOOK 37 BOARDWALK OVERLOOK 38 FOR ST 15,000 39 AT GRADE OVERLOOK 39 AT GRADE OVERLOOK 30 SP \$ 15,000 30 SP \$ 15,000 30 SP \$ 15,000 30 SP \$ 15,000 30 SP \$ 10,000 31 SP \$ 10,000 32 SPECIALTY CONCRETE PAVING 35 BIRD BLIND 36 BOARDWALK GUARDRAIL 37 BOARDWALK GUARDRAIL 38 OVERLOOK GUARDRAIL 39 AT GRADE OVERLOOK 30 SP \$ 120.00 31 SIDGE HEADWALK 31 BOARDWALK GUARDRAIL 31 SP \$ 15,000 32 SPECIALTY CONCRETE BRIDGE 42 PLANTING SP \$ 15,000 43 SIDGE HEADWALK 44 SPLIT RAIL FENCE 45 PICNIC TABLE 46 SPICKET FRANTON 47 SPECIALTY CONCRETE BRIDGE 48 SPICKET FRANTON 48 SPICKET SPONDO SP \$ 10,000 49 SIDGE HEADWALK 40 SIGNAGE ALLOWANCE 41 PREFABRICATED BRIDGE 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE 45 PICNIC TABLE 46 SPICKET SUBTOTAL 47 BODDING AND INSURANCE 48 SPICKET SPONDO SP \$ 12,000 49 SIDGE HEADWALLS 40 SIGNAGE ALLOWANCE 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE 45 PICNIC TABLE 46 SPICKET SUBTOTAL 47 BODDING AND INSURANCE 48 SPICKET SUBTOTAL 49 SPICKET SUBTOTAL 40 SPICKET SUBTOTAL 40 SPICKET SUBTOTAL 41 SPICKET SUBTOTAL 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE 47 SPICKET SUBTOTAL 48 SPICKET SUBTOTAL 49 SPICKET SUBTOTAL 40 SPICKET SUBTOTAL 40 SPICKET SUBTOTAL	16	BENCH	4	EA	\$	550.00	\$	2,200
19 PRESERVE AND PROTECT KIOSK 1 EA \$ 250.00 \$ 250.00 \$ 77.15 CARTHWORK 20 IMPORTED FILL 21 IMPORTED FILL 22 ROUGH GRADING 300 CY \$ 40.00 \$ 12,000 23 FINE GRADING 63000 SF \$ 0.25 \$ 15,750 24 PLANTING 24 PLANTING AREA 25 IRRIGATION - MODIFY EXISTING SYSTEM 26 FINE COMPOST 27 SEEDING 6,890 SF \$ 3.00 \$ 20,670 28 TREE LIMBING 1 125 CY \$ 40.00 \$ 20,500 26 FINE COMPOST 125 CY \$ 40.00 \$ 5,000 27 SEEDING 6,890 SF \$ 3.00 \$ 20,670 29 TREE LIMBING 1 1 LS \$ 2,500.00 \$ 3,500 20 TREE ELIMBING 1 1 LS \$ 2,500.00 \$ 3,500 20 TREE ELIMBING 1 1 LS \$ 2,500.00 \$ 3,500 20 TREE ELIMBING 1 1 LS \$ 2,500.00 \$ 3,500 20 CNCRETE CURB 130 CONCRETE CURB 131 CONCRETE PAVING 7,000 SF \$ 12.00 \$ 84,000 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 12.00 \$ 360,000 37 BOARDWALK GUARDRAIL 100 LF \$ 8,500.00 \$ 12,500 37 BOARDWALK GUARDRAIL 100 LF \$ 10,000 \$ 20,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 20,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 20,000 37 SIRDAE OVERLOOK 38 EA \$ 15,000.00 \$ 45,000 39 AT GRADE AVEL PAVING 1 LS \$ 15,000.00 \$ 45,000 39 AT GRADE AVEL PAVING 1 LS \$ 15,000.00 \$ 45,000 31 GRADE AVEL PAVING 1 LS \$ 15,000.00 \$ 45,000 31 GRADE AVEL PAVING 1 LS \$ 15,000.00 \$ 22,500 31 GRADE AVEL PAVING 1 LS \$ 15,000.00 \$ 12,000 32 SPECIALTY CONCRETE PAVING 1 LS \$ 15,000.00 \$ 12,000 33 GRAVEL PAVING 1 LS \$ 15,000.00 \$ 12,000 34 BOARDWALK GUARDRAIL 38 OVERLOOK GUARDRAIL 38 OVERLOOK GUARDRAIL 39 AT GRADE OVERLOOK 30 EA S S S S S S S S S S S S S S S S S S	17	GRAVEL PATH	4,200	SF	\$	1.50	\$	6,300
MPORTED FILL	18	CONCRETE PAD	300	SF	\$	2.50	\$	750
20 IMPORTED FILL 21 IMPORTED TOPSOIL AMMENDMENT 22 ROUGH GRADING 300 CY \$ 40.00 \$ 12,000 300 CY \$ 40.00 \$ 12,000 300 SF \$ 0.25 \$ 15,752 23 FINE GRADING 63000 SF \$ 0.40 \$ 25,200 24 PLANTING 24 PLANTING AREA 20,500 SF \$ 1.00 \$ 20,500 25 IRRIGATION - MODIFY EXISTING SYSTEM 20,500 SF \$ 1.00 \$ 20,500 26 FINE COMPOST 125 CY \$ 40.00 \$ 5,000 27 SEEDING 6,890 SY \$ 3.00 \$ 20,500 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 8,500 30 CONCRETE PAVING 30 CONCRETE CURB 130 LF \$ 35.00 \$ 4,550 31 CONCRETE PAVING 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 12.00 \$ 84,000 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 12.00 \$ 84,000 36 BOARDWALK OVERLOOK 37 BOARDWALK OVERLOOK 38 BIRD BLIND 2 EA \$ 8,500.00 \$ 17,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 36,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 45,000 38 OVENLOOK GUARDRAIL 100 LF \$ 200.00 \$ 45,000 39 AT GRADE OVERLOOK 30 EA \$ 15,000.00 \$ 45,000 40 SIGNAGE ALLOWANCE 1 LF \$ 500.00 \$ 22,500 40 SIGNAGE ALLOWANCE 1 LF \$ 500.00 \$ 22,500 40 SIGNAGE ALLOWANCE 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPILT RAIL FENCE 44 BRIDGE HEADWALLS 45 PICNIC TABLE 5 CY \$ 40.00 \$ 5 12,000 5 CONTINGENCY 40% SEEDING 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 ALEST AX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD AND PROFFT 5 SALES TAX (not included, 10.1%) 5 106,925 6 CONTRACTOR OVERHEAD	19	PRESERVE AND PROTECT KIOSK	1	EA	\$	250.00	\$	250
21 IMPORTED TOPSOIL AMMENDMENT 22 ROUGH GRADING 3000 CY \$ 40.00 \$ 12,000 23 FINE GRADING 63000 SF \$ 0.25 \$ 15,750 15,750 24 PLANTING 24 PLANTING AREA 20,500 SF \$ 0.00 \$ 25,200 25 IRRIGATION - MODIFY EXISTING SYSTEM 20,500 SF \$ 1.00 \$ 20,500 26 FINE COMPOST 125 CY \$ 40.00 \$ 5,000 27 SEEDING 6,890 SY \$ 3.00 \$ 20,670 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 2,500 SITE RESTORATION 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 2,500 SITE RESTORATION 5 F \$ 12.00 \$ 84,500 SITE RESTORATION 5 F \$ 12.00 \$ 84,500 SITE RESTORATION 7,000 SF \$ 12.00 \$ 84,500 SITE RESTORATION 7,000 SF \$ 12.00 \$ 84,000 SITE RESTORATION 7,000 SF \$ 12.00 \$ 84,000 SITE RESTORATION 7,000 SF \$ 12.00 \$ 84,000 SITE RESTORATION 8 SPECIALTY CONCRETE PAVING 10 BOARDWALK 3,000 SF \$ 12.00 \$ 360,000 SITE RESTORATION 11 LS \$ 15,000.00 \$ 45,000 SITE RESTORATION 12 EA \$ 8,500.00 \$ 17,000 SITE RESTORATION 13 GRAVEL PAVING - 1/4" MINUS 14,500 SF \$ 12.00 \$ 360,000 SITE RESTORATION 14 BOARDWALK 3,000 SF \$ 10,000 \$ 45,000 SITE RESTORATION 15 BIRD BIIND 16 BOARDWALK QUERLOOK 17 BOARDWALK GUARDRAIL 18 BOARDWALK GUARDRAIL 19 AT GRADE OVERLOOK 19 AT GRADE OVERLOOK 10 S 10,000 \$ 22,500 SITE RESTORATION 10 S 10,000 \$ 15,000 SITE RESTORATION 11 LS \$ 15,000.00 \$ 15,000 SITE RESTORATION 12 EA \$ 3,000.00 \$ 12,000 SITE RESTORATION 13 BENCH 14 PREFABRICATED BRIDGE 16 LF 1000 17 SOARDWALK SUARDRAIL 18 DIRECT ITEM SUBTOTAL 19 DIRECT ITEM SUBTOTAL 19 DIRECT ITEM SUBTOTAL 19 DIRECT ITEM SUBTOTAL 10 DIRECT	EARTH							67,150
22 ROUGH GRADING 23 FINE GRADING 24 PLANTING AREA 20,500 SF \$ 0.25 \$ 15,750 24 PLANTING S \$ 118,675 24 PLANTING AREA 20,500 SF \$ 1.00 \$ 61,500 25 IRRIGATION - MODIFY EXISTING SYSTEM 20,500 SF \$ 1.00 \$ 20,500 26 FINE COMPOST 125 CY \$ 40.00 \$ 5,000 27 SEEDING 6,890 SY \$ 3.00 \$ 20,670 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 2,500 STE RESTORATION 5 693,55 31 CONCRETE PAVING 7,000 SF \$ 112.00 \$ 84,000 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 15.00 \$ 22,500 34 BOARDWALK GUARDRAIL 4,500 SF \$ 100.00 \$ 360,000 35 BIRD BLIND 2 EA \$ 8,500.00 \$ 17,000 36 BOARDWALK GUARDRAIL 850 LF \$ 100.00 \$ 85,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 360,000 38 OVERLOOK GUARDRAIL 100 LF \$ 200.00 \$ 22,500 39 AT GRADE OVERLOOK 30 EA \$ 1,500.00 \$ 22,500 31 CONCRETE PAVING 32 EA \$ 8,500.00 \$ 17,000 34 BOARDWALK GUARDRAIL 35 BIRD BLIND 40 LF \$ 200.00 \$ 360,000 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE DIRECT ITEM SUBTOTAL BONDING AND INSURANCE 46 PICNIC TABLE CONTRACTOR OVERHEAD AND PROFT 66 SALES TAX (not included, 10.1%) 5 SALES TAX (not included, 10.1%)			_		\$			14,200
23 FINE GRADING *** 118,67** *** 125,200** *** 118,67** 24 PLANTING AREA 20,500 SF \$ 3.00 \$ 61,500** 25 IRRIGATION - MODIFY EXISTING SYSTEM 20,500 SF \$ 1.00 \$ 61,500** 26 FINE COMPOST 125 CY \$ 40,00 \$ 5,000** 27 SEEDING 6,890 SY \$ 3.00 \$ 20,670** 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 2,500** 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 2,500** 30 CONCRETE CURB 31 CONCRETE PAVING 7,000 SF \$ 12.00 \$ 84,000** 31 CONCRETE PAVING 7,000 SF \$ 12.00 \$ 84,000** 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 12.00 \$ 84,000** 34 BOARDWALK 3,000 SF \$ 12.00 \$ 360,000** 35 BIRD BLIND 2 EA \$ 8,500.00 \$ 17,000** 36 BOARDWALK OVERLOOK 3 EA \$ 15,000.00 \$ 45,000** 37 BOARDWALK GUARDRAIL 850 LF \$ 100.00 \$ 85,000** 38 OVERLOOK GUARDRAIL 100 LF \$ 200.00 \$ 22,500** 40 SIGNAGE ALLOWANCE 1 LS \$ 15,000.00 \$ 12,000** 41 SPLIT RALLEWANCE 1 LF \$ 250** 42 BRIDGE HEADWALLS LF 250** 43 BENCH BONDING AND INSURANCE LF 1000 44 SPLIT RALLEWANCE LF 250** MOBILIZATION/DEMOBILIZATION CONTINGENCY 40% SHEES TAX (not included, 10.1%) 5 64,155* 5 106,925* CONTRACTOR OVERHEAD AND PROFT 6% 5 427,705* 5 64,155* 5 106,925* 5 64,155* 5 10,000 \$ 5 5,								12,000
PLANTING				h.				
24 PLANTING AREA 20,500 SF \$ 3.00 \$ 61,500			63000	SF	Ş	0.40	_	
25 IRRIGATION - MODIFY EXISTING SYSTEM 20,500 SF \$ 1.00 \$ 20,500 26 FINE COMPOST 125 CY \$ 40.00 \$ 5,000 27 SEEDING 6,890 SY \$ 3.00 \$ 20,670 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 8,500 30 CONCRETE CURB 31 CONCRETE CURB 31 CONCRETE PAVING 7,000 SF \$ 12.00 \$ 84,000 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 10.00 \$ 22,500 34 BOARDWALK 3,000 SF \$ 10.00 \$ 360,000 35 BIRD BLIND 2 EA \$ 8,500.00 \$ 12,000 36 BOARDWALK GUARDRAIL 30 BOARDWALK GUARDRAIL 10 LF \$ 100.00 \$ 85,000 37 BOARDWALK GUARDRAIL 10 LF \$ 100.00 \$ 85,000 40 SIGNAGE ALLOWANCE 11 LS \$ 15,000.00 \$ 22,500 40 SIGNAGE ALLOWANCE 11 LS \$ 15,000.00 \$ 20,000 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE 50 DIRECT ITEM SUBTOTAL 64 SPLIT RAIL FENCE 50 DIRECT ITEM SUBTOTAL 65 BONDING AND INSURANCE 7 SALES TAX (not included, 10.1%) 5 GALES TAX (not included, 10.1%) 5 GALES TAX (not included, 10.1%) 5 GALES TAX (not included, 10.1%) 5 GREEN A S 64,155 5 ALES TAX (not included, 10.1%) 5 GENERAL CONDITIONS 5 GENERAL CONDITIONS 5 SALES TAX (not included, 10.1%) 5 GENERAL CONDITIONS 5 SALES TAX (not included, 10.1%) 5 GENERAL CONDITIONS 5 SALES TAX (not included, 10.1%) 5 GENERAL CONDITIONS 5 SALES TAX (not included, 10.1%) 5 GENERAL CONDITIONS			20.500	-		2.00		•
26 FINE COMPOST 27 SEEDING 6,890 SY \$ 3.00 \$ 20,670 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 11 LS \$ 2,500.00 \$ 2,500 30 CONCRETE CURB 31 CONCRETE CURB 31 CONCRETE PAVING 32 SPECIALTY CONCRETE PAVING 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 12.00 \$ 84,000 34 BOARDWALK 3,000 SF \$ 12.00 \$ 360,000 35 BIRD BLIND 2 EA \$ 8,500.00 \$ 17,000 36 BOARDWALK OVERLOOK 37 BOARDWALK GUARDRAIL 38 OVERLOOK GUARDRAIL 39 AT GRADE OVERLOOK 40 SIGNAGE ALLOWANCE 41 PREFABRICATED BRIDGE 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 44 SPLIT RAIL FENCE 45 PICNIC TABLE 50 CY \$ 40.00 \$ 5,000 50 SY \$ 3.00 \$ 22,500 50 \$ 22,500 50 STER RESTORATION 50 SP \$ 12.00 \$ 360,000 50 SP \$ 12.00 \$ 360,000 51 SP \$ 100.00 \$ 360,000 52 SPECIALTY CONCRETE PAVING 50 SP \$ 100.00 \$ 360,000 51 SP \$ 100.00 \$ 17,000 52 SPECIALTY CONCRETE PAVING 50 SP \$ 100.00 \$ 100,000 51 SP \$ 100.00 \$ 100,000 52 SPECIALTY CONCRETE PAVING 51 SPECIALTY CONCRETE PAVING 52 SPECIALTY CONCRETE PAVING 53 GRAVEL PAVING - 1/4" MINUS 54 SPECIALTY CONCRETE PAVING 55 SPECIALTY CONCRETE PAVING 56 SPECIALTY CONCRETE PAVING 57 SPECIALTY CONCRETE PAVING 58 SPECIALTY CONCRETE PAVING 59 SPECIALTY CONCRETE PAVING 50 SP \$ 12.00 \$ 12.000 51 SP \$ 12.00 \$ 10.000 51 SP \$ 12.000 51 SP \$ 12				_		_	_	
27 SEEDING 6,890 SY \$ 3.00 \$ 20,670 28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 8,500 SITE RESTORATION			-					-
28 TREES - 6'-8' HT. 17 EA \$ 500.00 \$ 8,500 29 TREE LIMBING 1 LS \$ 2,500.00 \$ 2,500 SITE RESTORATION \$ 693,555 \$ 35.00 \$ 4,550 30 CONCRETE CURB 130 LF \$ 12.00 \$ 84,000 31 CONCRETE PAVING F \$ 12.00 \$ 84,000 32 SPECIALTY CONCRETE PAVING SF \$ 15.00 \$ - 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF \$ 5.00 \$ 22,500 34 BOARDWALK 3,000 SF \$ 120.00 \$ 360,000 35 BIRD BLIND 2 EA \$ 8,500.00 \$ 17,000 36 BOARDWALK OVERLOOK 3 EA \$ 15,000.00 \$ 45,000 37 BOARDWALK GUARDRAIL 100 LF \$ 200.00 \$ 20,000 39 AT GRADE OVERLOOK 3 EA \$ 7,500.00 \$ 22,500 40 SIGNAGE ALLOWANCE 1 LS \$ 15,000.00								•
TREE LIMBING			-					
### STORATION CONCRETE CURB								
30 CONCRETE CURB	SITE R					,		693,550
32 SPECIALTY CONCRETE PAVING SF S 15.00 S 22,500 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF S 5.00 S 22,500 34 BOARDWALK 3,000 SF S 120.00 S 360,000 35 BIRD BLIND 2 EA S 8,500.00 S 17,000 36 BOARDWALK OVERLOOK 3 EA S 15,000.00 S 45,000 37 BOARDWALK GUARDRAIL 850 LF S 100.00 S 85,000 38 OVERLOOK GUARDRAIL 100 LF S 200.00 S 20,000 39 AT GRADE OVERLOOK 3 EA S 7,500.00 S 22,500 40 SIGNAGE ALLOWANCE 1 LS S 15,000.00 S 15,000 41 PREFABRICATED BRIDGE LF 1000 42 BRIDGE HEADWALLS LF 250 S 43 BENCH 8 EA S 1,500.00 S 12,000 44 SPLIT RAIL FENCE LF S 50.00 S -	30	CONCRETE CURB	130	LF	\$	35.00	-	4,550
32 SPECIALTY CONCRETE PAVING SF S 15.00 S 22,500 33 GRAVEL PAVING - 1/4" MINUS 4,500 SF S 5.00 S 22,500 34 BOARDWALK 3,000 SF S 120.00 S 360,000 35 BIRD BLIND 2 EA S 8,500.00 S 17,000 36 BOARDWALK OVERLOOK 3 EA S 15,000.00 S 45,000 37 BOARDWALK GUARDRAIL 850 LF S 100.00 S 85,000 38 OVERLOOK GUARDRAIL 100 LF S 200.00 S 20,000 39 AT GRADE OVERLOOK 3 EA S 7,500.00 S 22,500 40 SIGNAGE ALLOWANCE 1 LS S 15,000.00 S 15,000 41 PREFABRICATED BRIDGE LF 1000 42 BRIDGE HEADWALLS LF 250 S 43 BENCH 8 EA S 1,500.00 S 12,000 44 SPLIT RAIL FENCE LF S 50.00 S -	31	CONCRETE PAVING	7,000	SF	\$	12.00	\$	84,000
34 BOARDWALK 3,000 SF \$ 120.00 \$ 360,000 \$ \$ \$ \$ \$ \$ \$ \$ \$	32	SPECIALTY CONCRETE PAVING		SF		15.00	\$	-
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36 BOARDWALK OVERLOOK 3 EA \$ 15,000.00 \$ 45,000 37 BOARDWALK GUARDRAIL 850 LF \$ 100.00 \$ 85,000 38 OVERLOOK GUARDRAIL 100 LF \$ 200.00 \$ 20,000 39 AT GRADE OVERLOOK 3 EA \$ 7,500.00 \$ 22,500 40 SIGNAGE ALLOWANCE 1 LS \$ 15,000.00 \$ 15,000 41 PREFABRICATED BRIDGE LF 1000 \$ 15,000 \$ 42 BRIDGE HEADWALLS LF \$ 15,000 \$ 12,000 44 SPLIT RAIL FENCE B LF \$ 50.00 \$ - 45 PICNIC TABLE DIRECT ITEM SUBTOTAL \$ \$ 1,069,250 \$ - \$ 1,069,250 \$ \$ 1,069,250 \$ \$ 1,069,250 \$ \$ 1,069,250 \$ \$	34	BOARDWALK	3,000	SF		120.00	\$	360,000
37 BOARDWALK GUARDRAIL	35	BIRD BLIND	2	EA		8,500.00	\$	17,000
38 OVERLOOK GUARDRAIL 100		BOARDWALK OVERLOOK					- 1	45,000
39 AT GRADE OVERLOOK 3 EA \$ 7,500.00 \$ 22,500 40 SIGNAGE ALLOWANCE 1 LS \$ 15,000.00 \$ 15,000 41 PREFABRICATED BRIDGE LF 1000 \$ 22,500 42 BRIDGE HEADWALLS LF 250 \$ 12,000 44 SPLIT RAIL FENCE LF \$ 50.00 \$ 45 PICNIC TABLE 2 EA \$ 3,000.00 \$ 6,000 45 PICNIC TABLE \$ 20,000 \$ 6,000 \$ 6,000 45 PICNIC TABLE \$ 3,000.00 \$ 6,000 45 PICNIC TABLE \$ 106,925 \$ 106,925 45 PICNIC TABLE \$ 106,925 \$ 106,925 45 MOBILIZATION/DEMOBILIZATION 10% \$ 106,925 40 \$ 20,000 \$ 106,925 \$ 106,925 40 \$ 20,000 \$ 106,925 \$ 106,925 40 \$ 20,000 \$ 106,925 \$ 106,925 40 \$ 20,000 \$ 106,925 \$ 106,925	37		850	LF	\$	100.00	\$	85,000
40 SIGNAGE ALLOWANCE 1 LS \$ 15,000.00 \$ 15,000 41 PREFABRICATED BRIDGE 42 BRIDGE HEADWALLS 43 BENCH 8 EA \$ 1,500.00 \$ 12,000 44 SPLIT RAIL FENCE LF \$ 50.00 \$ 45 PICNIC TABLE 2 EA \$ 3,000.00 \$ 6,000 EXAMPLE A SPLIT RAIL FENCE SUBTOTAL								20,000
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42 BRIDGE HEADWALLS LF 250 Contractor overhead and profit 43 BENCH 8 EA \$ 1,500.00 \$ 12,000 44 SPLIT RAIL FENCE LF \$ 50.00 \$ - 45 PICNIC TABLE 2 EA \$ 3,000.00 \$ 6,000 5 PICNIC TABLE \$ 1,069,250 \$ 1,069,250 \$ 1,069,250 6 SELECTOR ON THE SUBTOTAL \$ 2% \$ 21,385 \$ 106,925 6 SELECTOR ON THE SUBTOTAL \$ 106,925 \$ 106,925 \$ 106,925 6 SELECTOR ON THE SUBTOTAL \$ 106,925 \$ 106,925 \$ 106,925 6 SELECTOR ON THE SUBTOTAL \$ 106,925 </td <td></td> <td></td> <td>1</td> <td></td> <td>\$</td> <td></td> <td>\$</td> <td></td>			1		\$		\$	
A3 BENCH								0
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45 PICNIC TABLE DIRECT ITEM SUBTOTAL BONDING AND INSURANCE GENERAL CONDITIONS 10% \$ 1,069,250 \$ 21,385 GENERAL CONDITIONS MOBILIZATION/DEMOBILIZATION CONTINGENCY 40% CONTRACTOR OVERHEAD AND PROFT SALES TAX (not included, 10.1%)			0					12,000
DIRECT ITEM SUBTOTAL \$ 1,069,250			2					6 000
BONDING AND INSURANCE 2% \$ 21,385 GENERAL CONDITIONS 10% \$ 106,925 MOBILIZATION/DEMOBILIZATION 10% \$ 106,925 CONTINGENCY 40% \$ 427,700 CONTRACTOR OVERHEAD AND PROFT 6% \$ 64,155 SALES TAX (not included, 10.1%) \$	-+3		_	LA	ڔ	3,000.00		
GENERAL CONDITIONS 10% \$ 106,925			2%					
MOBILIZATION/DEMOBILIZATION 10% \$ 106,925 CONTINGENCY 40% \$ 427,700 CONTRACTOR OVERHEAD AND PROFT 6% \$ 64,155 SALES TAX (not included, 10.1%) \$								
CONTINGENCY 40% \$ 427,700 CONTRACTOR OVERHEAD AND PROFT 6% \$ 64,155 SALES TAX (not included, 10.1%) \$								106,925
CONTRACTOR OVERHEAD AND PROFT 6% \$ 64,155 SALES TAX (not included, 10.1%) \$		· · · · · · · · · · · · · · · · · · ·						427,700
SALES TAX (not included, 10.1%) \$								64,155
		SALES TAX (not included, 10.1%)						-
		CONSTRUCTION TOTAL	(Rounded)				\$	1,800,000

NOTES:

- ${\bf 1.}\ {\bf Cost}\ {\bf does}\ {\bf not}\ {\bf include}\ {\bf permitting,}\ {\bf engineering}\ {\bf design,}\ {\bf management,}\ {\bf or}\ {\bf other}\ {\bf soft}\ {\bf costs}.$
- $2. \ Assume \ no \ stormwater \ treatment \ is \ required \ for \ existing \ parking \ lot.$
- 3. Assume additional fire/emergency access turnaround not required.
- 4. Costs provided in 2024 dollars.
- 5. This estimate represents upland/public acces related work only.
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Herring's House Park - UPLAND ALTERNATIVE 'C'

Estimate of Probable Construction Cost

Date: 1/24/2020

By: TTF, MAC Checked: PDQ



ITEM NO.	ITEM DESCRIPTION	QTY	UNIT		UNIT PRICE		COST
	REPARATION					\$	58,550
1	CLEARING AND GRUBBING	51000	SF	\$	0.50	\$	25,500
2	TREE REMOVAL	8	EA	\$	300.00	\$	2,400
3	CONSTRUCTION SURVEY AND STAKING	1	LS	\$	30,000.00	\$	30,000
4	TARGETED INVASIVE REMOVAL	1300	SF	\$	0.50	\$	650
EROSI	ON CONTROL					\$	71,000
5	EROSION/WATER POLLUTION CONTROL	1	LS	\$	15,000.00	\$	15,000
6	HIGH VISIBILITY FENCE	1350	LF	\$	4.00	\$	5,400
7	FILTER FENCE	2600	LF	\$	6.00	\$	15,600
8	TREE AND VEGETATION PROTECTION ALLOWANCE	1	LS	\$	10,000.00	\$	10,000
9	STRAW WADDLE	1200	LF	\$	2.50	\$	3,000
10	STABILIZED CONSTRUCTION ENTRANCE	1	EA	\$	10,000.00	\$	10,000
11	UTILITY PROTECTION ALLOWANCE	12	MO	\$	1,000.00	\$	12,000
	DLITION & TEMPORARY STRUCTURES	140		4	2.00	\$	45,830
12 13	SAW CUT	140	LF	\$ \$	2.00 3.00	\$ \$	280 27,750
13	ASPHALT PATH STRUCTURE AT OVERLOOKS	9,250 3	SF LS	\$	2,500.00	۶ \$	7,500
15	GUARDRAIL AT OVERLOOKS	100	LF	\$	8.00	\$	800
16	BENCH	4	EA	\$	550.00	\$	2,200
17	GRAVEL PATH	4,200	SF	\$	1.50	\$	6,300
18	CONCRETE PAD	300	SF	\$	2.50	\$	750
19	PRESERVE AND PROTECT KIOSK	1	EA	\$	250.00	\$	250
	HWORK			Ť		\$	49,350
20	IMPORTED FILL	295	CY	\$	40.00	\$	11,800
21	IMPORTED TOPSOIL AMMENDMENT	110	CY	\$	40.00	\$	4,400
22	ROUGH GRADING	51,000	SF	\$	0.25	\$	12,750
23	FINE GRADING	51,000	SF	\$	0.40	\$	20,400
PLAN1	ring					\$	122,370
24	PLANTING AREA	21,500	SF	\$	3.00	\$	64,500
25	IRRIGATION - MODIFY EXISTING SYSTEM	21,500	SF	\$	1.00	\$	21,500
26	FINE COMPOST	130	CY	\$	40.00	\$	5,200
27	SEEDING	6,890	SY	\$	3.00	\$	20,670
28	TREES - 6'-8' HT.	16	EA	\$	500.00	\$	8,000
29	TREE LIMBING	1	LS	\$	2,500.00	\$	2,500
SITE R	ESTORATION					\$	1,817,550
30	CONCRETE CURB	130	LF	\$	35.00	\$	4,550
31	CONCRETE PAVING	7,000	SF	\$	12.00	\$	84,000
32	SPECIALTY CONCRETE PAVING	2,500	SF	\$	15.00	\$	37,500
33	GRAVEL PAVING - 1/4" MINUS	0	SF	\$	5.00	\$	
34	BOARDWALK	10,000	SF	\$	120.00	\$	1,200,000
35	BIRD BLIND	2	EA	\$	8,500.00	\$	17,000
36	BOARDWALK OVERLOOK	1	EA	\$	10,000.00	\$	10,000
37	BOARDWALK GUARDRAIL	2,000	LF	\$ \$	100.00	\$	200,000
38	OVERLOOK GUARDRAIL	50	LF	-	200.00	\$	10,000
39 40	AT GRADE OVERLOOK	2	EA	\$ \$	7,500.00 20,000.00	\$	15,000 20,000
40 41	SIGNAGE ALLOWANCE	1	LS	Ş	1500	\$ ¢	180,000
41	PREFABRICATED BRIDGE BRIDGE HEADWALLS	120 80	LF LF		250		20,000
43	BENCH	9	EA	\$	1,500.00	۶ \$	13,500
44	SPLIT RAIL FENCE	0	LF	ڔ	1,300.00	\$	13,300
45	PICNIC TABLE	2	EA	\$	3,000.00	\$	6,000
73	DIRECT ITEM SUBTOTAL		LA	Ţ	3,000.00	\$	2,164,650
	BONDING AND INSURANCE	2%				\$	43,293
	GENERAL CONDITIONS	10%				\$	216,465
	MOBILIZATION/DEMOBILIZATION	10%				\$	216,465
	CONTINGENCY	40%				\$	865,860
	CONTRACTOR OVERHEAD AND PROFT	6%				\$	129,879
	SALES TAX (not included, 10.1%)	•				\$	-
	CONSTRUCTION TOTAL	(Rounded)				\$	3,640,000

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